

**The Brain Imaging Laboratory** Donor report – 2024

# With your help, we are making a difference.

The Brain Cancer Group

# **Background of The Brain Cancer Group**

The registered charity The Brain Cancer Group – Care2Cure, (formerly named Sydney Neuro-Oncology Group Ltd), was established on the Royal North Shore Hospital campus in Sydney, Australia in the year 2000 by neurosurgeons Dr Raymond Cook and Dr Michael Biggs, who were soon after joined by medical oncologist Associate Professor Helen Wheeler.

While passionate about improving the care and outcomes for their patients with brain cancer, it was clear to the doctors that this was not enough. These patients stood largely alone in a community that focused much of its fundraising and awareness on other more common cancer types.

They recognised the need for a highly focused community group, consisting of like-minded individuals of different medical and business backgrounds, who would dedicate their time and expertise pro bono, specifically to brain tumour research, education and patient and carer support. This group became the TBCG Board.

We are focused on improving patient outcomes across the spectrum – from patient care to working towards finding a cure for this devastating disease.

We do this by taking a multi-disciplinary and collaborative approach to deliver meaningful programs which are aimed at improving the lives of those impacted by brain cancer.

Our tag line, Care2Cure, was chosen to reflect our commitment to the 3 Pillars of: RESEARCH, EDUCATION and SUPPORT.



*From left to right:* **Dr Jonathon Parkinson** Neurosurgeon, TBCG Director; **Mrs Tracey O'Donoghue** Accountant, TBCG Director/Company Secretary; **A/Prof Michael Back** Radiation Oncologist, TBCG Director; **Dr Raymond Cook** Neurosurgeon, TBCG Chairman; **Dr Helen Wheeler** Medical Oncologist, TBCG Director; **Mr Richard Ryan** CEO North Shore Private Hospital, Ramsay Health, TBCG Director; **Mrs Suzane Peponis-Brisimis** Business person and community representative, TBCG Director; **Dr Adrian Lee** Medical Oncologist, TBCG Director.

With your help, we have been able to expand our research programs and improve the care that we provide to those impacted by brain cancer.

# What is the TBCG Brain Imaging Laboratory?

"The TBCG Brain Imaging Laboratory will challenge what we know about brain cancers and help transform the management of this relentless disease." - Associate Professor Michael Back

#### Context

Neuro-oncology management now has become increasingly dependent on imaging to guide decision-making both at time of diagnosis and post treatment evaluation.

More sophisticated imaging techniques have been developed which may improve the mapping of a cancer; calculate a tumour's response to treatment or define the structure of a tumour. Similar assessments can be performed on Nuclear Medicine PET imaging which enhance its utility as a decision-making tool, as well as novel radiotracers which can define biological aspects of tumour or treatment response. Deep learning analysis through Artificial Intelligence is a potential feature to get this information into the clinic.

### Aim and scope

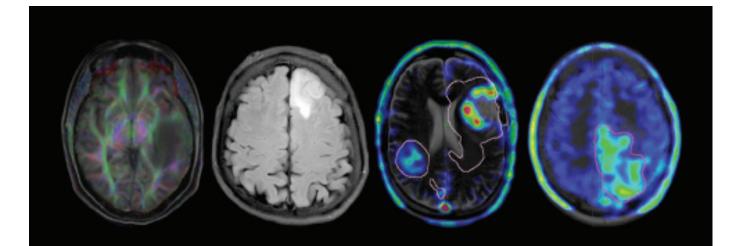
The TBCG Brain Imaging Laboratory focusses on brain imaging research and radiology education in neurooncology. It takes a multimodality approach, harnessing novel imaging methods in both radiology with MRI and nuclear medicine with PET.

#### The research goals of the TBCG-BIL are fourfold:

- 1. Improve diagnostic accuracy of imaging prior to surgery and chemoradiotherapy
- 2. Offer new solutions to more accurately delineate the extent of disease by harnessing new imaging methods in MRI and PET
- 3. Improve patient imaging experience with accelerated imaging protocols
- 4. Improve clinical outcomes and survival by leveraging these novel imaging methods to predict patterns of recurrence, offer personalised adaptive radiotherapy plans and improve treatment effectiveness.

The laboratory also provides education both internally within medical multidisciplinary teams but also more broadly to our referring clinicians and our brain cancer patients and their families. TBCG-BIL also explores a neuro-imaging research focus on neuro-inflammation, demyelination and neurovascular imaging, which indirectly may provide clues into brain cancer.

With our research partners the brain imaging laboratory has access to state-of-the-art imaging equipment on the North Shore campus including 5x MRI scanners, 2x PET scanners as well as Interventional Neuroradiology, PET radiochemistry and neuro-nuclear therapies.



# **TBCG Director's Message**



**A/Professor Michael Back,** Radiation Oncologist and Director of The Brain Cancer Group and the TBCG Databank

Improvements in digital technology have positively impacted on society in many facets including healthcare. The efficiency, diversity and sophistication of medical imaging has allowed paradigm shifts in the understanding of brain tumours, and altered the pathways of treatment delivery. These imaging advances parallel and enhance the impact that breakthroughs in knowledge of the genomic and molecular aspects of cancer have produced. Establishing the physical laboratory of cell cultures, petri dishes and genetic sequencing has developed research ideas that can translate from the bench to bedside; and these have become standard part of academic research institutions. However, this laboratory model for the medical imaging of brain cancer has historically been neglected.

In 2020 reflecting during the COVID lockdown, The Brain Cancer Group recognised the imperative for harnessing the complexity of medical imaging, specifically MRI and PET scan imaging, into a novel centralised research platform that could develop and integrate imaging knowledge for patient care. The Brain Imaging Laboratory was established as part of an overall TBCG Databank integrated with the TBCG Biological Laboratory and TBCG Clinical Outcomes Database. The high volume advanced clinical and academic neuro-oncology service on the North Shore Campus was the ideal site to explore this novel model and allow translation into clinical care.

Over the subsequent three years, generous assistance from TBCG

Supporters, NSW Health and our patients has facilitated the development of a virtual "laboratory bench" where images can be gathered, interrogated, and analysed to further understand the natural history of brain cancer infiltration. Linking these image sequences with patient's treatment data and outcomes has allowed novel concepts to be explored. Linkage to patient's tumour specimens enhances that knowledge.

Through the TBCG Brain Imaging Laboratory multiple research projects have already been assessed, implemented, analysed and peer-reviewed published; taking concepts from clinician experience within 2-3 years directly to the production of information that fuels current and future patient care.

The next phase of research from the TBCG Brain Imaging Laboratory generating novel MRI sequences has now commenced with initial developments being shared widely with the international research community. Clinical trials arising from these imaging breakthroughs are soon to start on the North Shore Campus, specifically with the MANGO and GUAVA trials. Importantly the TBCG Brain Imaging Laboratory is actively collaborating with national and international researchers.

The initiatives undertaken so far has not received any continual funding from the government and thus future developments depend on your generous support. TBCG is committed to research that aims to directly improve patient outcomes and work towards a cure. Patients and their families are integral to our vision and their needs are at the heart of every aspect of our work.

This report will provide an overview of TBCG's Imaging Laboratory's work in the past year and on behalf of The Brain Cancer Group, I would like to express our sincerest gratitude for your ongoing commitment to our cause.

# Imaging Laboratory Update

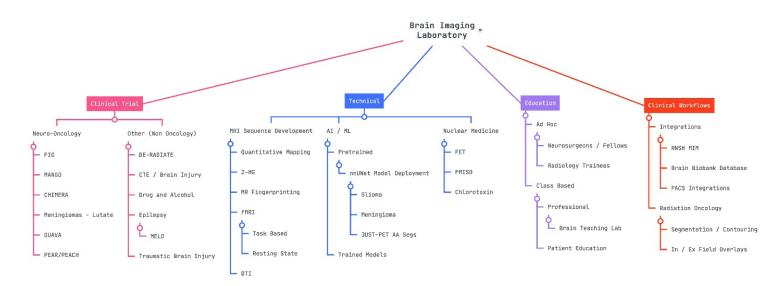


**Dr James Drummond** Neuroradiology Chief – The Brain Imaging Laboratory – The Brain Cancer Group

"The TBCG Brain Imaging Laboratory provides a platform for the research, development, and translation of advanced imaging techniques for all our patients, giving our multidisciplinary teams a personalised precision approach to brain cancer."

The TBCG Brain Imaging Laboratory was established in late 2021 to develop a program of research and teaching in neuro-oncology. Embracing the dawn of quantitative MRI and molecular era of medical imaging to empower our oncologists to tailor personalised neuro-oncology treatments to individual patient profiles. The Imaging Laboratory is now leveraging new Artificial Intelligence methods in neuro-imaging to further improve our diagnostic decision making and disease monitoring.

Our program comprises 4 primary domains: (1) Clinical Trials (2) Imaging Workflows (3) Technical Development and (4) Education. This work cannot be done in a silo, and we continue to actively develop national and international research collaborations. The lab is involved in multi-institutional projects and is also active in neuro-imaging research in multiple domains beyond brain cancer.

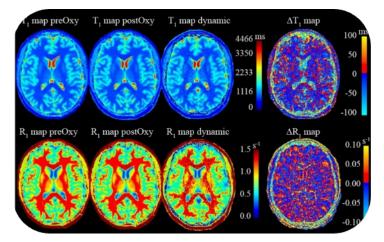


This year we are focussing on the Clinical Trials arm to further develop a personalised precision medicine approach. Leveraging our attachment to one of Australia's busiest neuro-oncology treatment centres, with access to high-fideilty MRI scanners at North Shore Radiology and the state-of-the-art total body PET scanner at RNSH / Usyd, we are exploring ways to improve brain cancer imaging at all stages of the patient journey. Patients treated by TBCG consultants already routinely have access to advanced imaging with 2-HG spectroscopy, DSC/DCE perfusion, task-based functional MRI, preoperative DTI and FDG/FET PET.

### Spotlight on the MANGO study

The MANGO study was developed through collaboration with the ACRF Image X Institute at the University of Sydney and post-doctoral researcher Dr Caterina Brighi. Magnetic Resonance Hypoxia Imaging for Radiation Treatment Guidance in Glioblastoma Multiforme (MANGO) is due to commence patient recruitment imminently after a prolonged period of testing and development on the North Shore Health Hub MRI scanners. The development of this study protocol is the culmination of 2 years work and in that time, we have overcome multiple obstacles and discovered many challenges along the way.

The primary goals of the MANGO study are ultimately to improve our radiotherapy treatments by using "dose painting" methods to "boost" radiotherapy dose to regions of tumours we know will be more resistant to radiotherapy. Long term, our hope is that this individualised radiotherapy approach with boost dosing will improve disease control and improve outcomes from radiotherapy whilst allowing us to reduce side effects.



Development of hypoxia imaging methods in the brain have also offered us the opportunity to deploy similar techniques in other cancers. TBCG's Brain Imaging Laboratory has subsequently developed similar methods in head and neck cancer for an exciting clinical trial between RNSH department of Radiation Oncology and Memorial Sloan Kettering (DE-RADIATE trial – Bergamin et al). This trial aims to significantly reduce the side effects of radiation therapy in head and neck cancer and is also due to open recruitment in Q2 2024.

### Spotlight on CHIMERA

The foundational support from TBCG's generous donors opens up avenues for highly investigational imaging research. The nascent CHIMERA research study offers a chance to implement multiple forms of cutting-edge imaging methods in the real-world clinical setting. These techniques include whole head 3D MRF (fingerprinting), resting state functional MRI, diffusion tractography and connectomics, multimodal perfusion imaging including qASL, CEST-MRI as well as molecular imaging with dynamic FET PET. The Imaging Laboratory has been developing and optimising each technique independently and CHIMERA brings these methods together. Employing deep learning with this multiparametric data offers unprecedented insight into tumour biology, proteomics and disease infiltration as well as improved MRI monitoring and recurrence prediction. The data gathered in CHIMERA will be "open-source" for external researchers to develop further imaging tools and techniques to the betterment of all brain cancer patients.

### Imaging Laboratory Personnel

Access to subspecialist radiology reporting in neuro-oncology remains scarce in NSW and the RNSH campus / imaging laboratory continue to attract the best new neuroradiologist talent to provide these skills to our neurosurgical and oncology colleagues. Dr Drummond works closely with Dr Allison Newey (NYU fellow) and Dr David Brazier (director of MRI). And we are delighted to have welcomed Dr Louise Van Camp (NIISWA fellow) and Dr Vineet Goralay (UCSF fellow) to our neuroradiology reporting teams at NSR and RNSH. In 2024, we hope to add to our team and bring technical engineering support in-house. With TBCG funding, we are actively seeking post-doctoral researchers in neuroscience to help develop further AI tools and quantitative MRI mapping methods. We continue to foster research collaboration with University of Sydney colleagues at Image X, Brain & Mind Centre and at national / international research centres.

### Teaching

Disseminating fundamental imaging radiological science as well our pioneering technical research is essential to ensure the skillset and knowledge we develop is widely shared. Dr Drummond has been invited to talk on his research at both national and international conferences, and is responsible for teaching advanced neuro-imaging to radiology registrars and neurosurgical fellows prior to their final consultant examinations.

TBCG is also essential for the funding and development of our nascent teaching laboratory.

This teaching lab allows for immersive hands-on teaching for healthcare professionals more broadly. It also gives us the opportunity to share information with patients and their caregivers in an accessible way. We hope to slowly change the classical radiologist work paradigm so that our essential imaging skillset can be provided face-to-face in clinic with patients to help our oncologists discuss imaging findings and monitor disease. Development of teaching labs would not be possible without philanthropic support.

# PhD Research

We have 2 PhD candidates working with the Brain Imaging Laboratory team over the past year.

# Dr Patrick Horsley - Optimal methods for integrating FET-PET imaging into radiotherapy target delineation



Dr Patrick Horsley is a radiation oncologist who is currently completing a PhD focussed on integrating FET-PET into radiotherapy target delineation for gliomas. Accurate tumour delineation is a critical step in the radiotherapy planning process that seeks to maximise dose to the tumour whilst minimising dose to normal structures. MRI (primarily gadolinium-enhanced Tl and T2-FLAIR sequences) is the primary tool used to delineate these tumours, however both of these MRI sequences have limitations in their ability to distinguish tumour from swollen tissue and normal brain.

The focus of Dr Horsley's PhD is to harness the independent information provided by FET-PET to complement MRI in radiotherapy target volume delineation and thereby provide a pathway for better tumour coverage, dose-escalation and/or margin reduction (reducing the volume of normal brain irradiated). This could result in improved tumour control and a reduction in adverse effects for glioma patients undergoing radiotherapy. Dr Horsley will also be exploring novel parameters extracted from the dynamic scan data to maximise the benefit of FET-PET imaging. See below the work he is doing:

Title	Outline	Impact	Status
Systematic review	Systematic literature review of studies examining the use of amino acid PET for target volume delineation for gliomas	Existing literature supports FET-PET as a complementary tool to MRI in target volume delineation for glioblastoma Some evidence to support margin-reduction and dose-escalation trials for glioblastoma IDH-mutant gliomas identified as not well studied in existing literature	Submitted for publication, awaiting peer review
Characteristics of normal intracranial tissues on dynamic FET PET	Dynamic FET parameters of normal intracranial structures will be examined and reported in a series of patients	Aims to establish expected characteristics of normal intracranial structures with respect to a range of traditional and dynamic FET-PET parameters in order to allow distinction from pathology	Data collection
Volume comparison – IDH mutant gliomas	Radiotherapy target volumes based on traditional MRI sequences will be compared to those using FET-PET for patients with IDH-mutant gliomas	Aims to establish that FET-PET provides complementary information to MRI for target volume delineation in radiotherapy planning for IDH-mutant gliomas	Data collection
Patterns of failure comparison – IDH mutant gliomas	Areas of FET-PET uptake prior to radiotherapy will be compared to sites of subsequent failure for patients with IDH-mutant gliomas	Aims to establish that better dosimetric coverage of areas of high FET-PET uptake is linked to better tumour control and/or improved outcomes	Data collection

# Dr Alex Yuile - Establishing parallels between microscopic findings and imaging outcomes



Dr Alexander Yuile is a medical oncologist and TBCG's research fellow. He has developed key collaborations with laboratories across Australia and initiated the cultivation of brain cancer cell lines at the Bill Walsh Laboratory, Kolling Institute. This enables researchers to evaluate novel interventions for brain cancer.

As part of his PhD, Dr Yuile is leading several 'first-of-its-kind' studies that integrate laboratory bench side work with an imaging component. These studies are unique as it attempts to correlate what is seen under the microscope with the appearance it has on imaging. He is on track for PhD completion early 2025.

Below are 3 studies that Dr Yuile has developed in the past year that integrates imaging with bench side laboratory research.

Title	Outline	Impact	Status
GUAVA Study	Exploring the effect of bevacizumab on PSMA PET scan avidity in patient with glioblastoma	This project is the first of its kind and has the potential to help us predict patient response to bevacizumab and explore theranostics as a novel treatment for glioblastoma.	Applying to ethics. Estimated patient recruitment to be completed by end of 2025
PEACH study	Analysing glioblastoma samples to further understand the role PSMA expression plays in glioblastoma and how this can be best leveraged to help patients in the clinic.	This project will allow us to better direct and design future PSMA PET/Imaging studies that follow GUAVA.	In the process of data collection and sample testing. Estimated to completion Q3 2025.
PSMA PET expression in gliosarcoma	Gliosarcoma is a rare subset of glioblastoma with no clear treatment pathway. Our research has shown that these tumours are usually PSMA avid which means that PSMA PET scans can be used to monitor patients for progression as well as a potential treatment option through theranostics.	This project involves reporting on the literature and reporting on our patients with PSMA avid gliosarcoma. The project will also include PSMA IHC staining of relatively large number of gliosarcoma samples. This project will be the first of its kind and has the potential to change management for gliosarcoma.	Data collection and sample testing. Estimated completion Q4 2024.

# **Research outputs**

The Brain Imaging Laboratory has provided a platform for our researchers to include imaging as part of their research studies. A number of presentations and publications were accepted at national and international forums in 2021-2024, see below.

### Scientific journal publications

Authors and Year	Title	Journal
O'Toole J, Picton M, Perez M, Back M, Jayamanne D, Le A et al. 2021	Improving efficiency in the radiation management of multiple brain metastases using a knowledge-based planning solution for single-isocentre volumetric modulated arc therapy (VMAT) technique	Journal of Medical Radiation Sciences
Cook T.A, Jayamanne D.T, Wheeler H.R, Wong M.H.F, Parkinson J.F, Cook R.J et al. 2021	Redo Craniotomy or Bevacizumab For Symptomatic Steroid Refractory True Or Pseudoprogression Following IMRT For Glioblastoma	Neuro-Oncology Practice
Wijetunga A.R, Jayamanne D.T, Adams J & Back M. 2021	Volumetric Response of Limited Brain Metastatic Disease to Focal Hypofractionated Radiation Therapy	Brain Sciences
Yuile A, Kastelan M, Lee A, Back M, Drummond J & Wheeler H. 2022	The use of Sonidegib in the adjuvant and advanced phases of Sonic Hedge Hog Mutant Medulloblastomas	Oxford medical Case Reports
Yuile A, Satgunaseelan L, Wei J, Kastelan M, Back M, Lee M, Wei H, Buckland M, Lee A & Wheeler H. 2022	Implications of Concurrent IDH1 and IDH2 Mutations on Survival in Glioma – A Case Report and Systematic Review	Current Issues in Molecular Biology
Yuile A, Khasraw M, Low J, Walsh K, Lipp E, Sy J, Satgunaseelan L, Kastelan M, De Silva M, Lee A & Wheeler H. 2022	Patterns of care in adult histone mutant gliomas: Results of an international survey	Neuro-Oncology in Practice
Metz G, Jayamanne D, Wheeler H, Wong M, Cook R, Little N, Parkinson J, Kastelan M, Brown C & Back M. 2022	Large tumour volume reduction of IDH- mutated anaplastic glioma involving the insular region following radiotherapy	BMC Neurology
Knight A, Horsley P, Yuile A, Yim, J, Suh M, Venketesha V, Kastelan M, Wheeler H & Back M. 2023	Volumetric response and pattern of failure of histone altered high grade glioma in adults following management with radiation therapy	Journal of Neuro- Oncology
Brighi C, Waddington DEJ, Keall PJ, Booth J, O'Brien K, Silvester S, Parkinson J, Mueller M, Yim J, Bailey DL, Back M & Drummond J. 2023	The MANGO study: a prospective investigation of oxygen enhanced and blood-oxygen level dependent MRI as imaging biomarkers of hypoxia in glioblastoma.	Frontiers in Oncology
Koh ES et al. 2023	[18F]-fluoroethyl- L- tyrosine (FET) in glioblastoma (FIG) TROG 18.06 study: protocol for a prospective, multicentre PET/CT trial	BMJ Open

Authors and Year	Title	Journal
Lau KS, Ruisi I & Back M. 2023	Association of MRI Volume Parameters in Predicting Patient Outcome at Time of Initial Diagnosis of Glioblastoma	Brain Sciences
Sim HW et al. 2023	NUTMEG: A randomized phase II study of nivolumab and temozolomide versus temozolomide alone in newly diagnosed older patients with glioblastoma	Neuro-Oncology Advances
Wegener E, Horsley P, Wheeler H, Jayamanne D, Kastelan M, Guo L, Brown C & Back M. 2023	Leptomeningeal neuraxis relapse in glioblastoma is an uncommon but not rare event associated with poor outcome	BMC Neurology
Yuile A, Lee A, Moon EA, Hudson A, Kastelan M, Miller S, Chan D, Wei J, Back M & Wheeler H. 2023	PSMA Expression Correlates with Improved Overall Survival and VEGF Expression in Glioblastoma	Biomedicines
Yuile A, Pavlakis N, Satgunaseelan L, Wei J, Rodriguez M, Back M, Hudson A, Kastelan M, Wheeler H & Lee A. 2023	CDKN2A/B Homozygous Deletions in Astrocytomas: A Literature Review	Current Issues in Molecular Biology
Yuile A, Wei J, Mohan AA, Hotchkiss KM & Khasraw M. 2023	Interdependencies of the Neuronal, Immune and Tumor Microenvironment in Gliomas	Cancers
Hudson AL, Cho A, Colvin EK, Hayes SA, Wheeler HR & Howell VM. 2024	CA9, CYFIP2 and LGALS3BP—A Novel Biomarker Panel to Aid Prognostication in Glioma.	Cancers
Mills D, Horsley P, Venkatasha V & Back M. 2024	Volumetric response and survival of patients with bulky IDH-mutated grade 3 glioma managed with FET-FDG guided integrated boost IMRT.	Clinical Oncology
Berry N et al. 2024	[18]F-fluoroethyl-I-tyrosine positron emission tomography for radiotherapy target delineation: Results from a Radiation Oncology credentialing program	Physics and Imaging in Radiation Oncology
E. Tong et al. 2024	Hypofractionated re-irradiation with bevacizumab for relapsed chemorefractory glioblastoma after prior high dose radiotherapy: a feasible option for patients with large-volume relapse	Journal of Neuro- Oncology

### Peer-reviewed presentations (oral and posters)

Authors and Year	Title	Presentation type & conference
Back M, Wheeler H, Jayamanne D, Parkinson J, Cook R, Kastelan M, & Drummond J. 2022	Importance of white matter tract pathways for infiltration and relapse in glioblastoma: implications for radiation therapy target volume delineation	Poster presentation at World Federation of Neuro-Oncology Societies 2022
Knight A et al. 2022	Histone-altered high-grade gliomas in adults: Volumetric response and patterns of failure after radiotherapy	Oral presentation at 72nd RANZCR Annual Scientific meeting October 2022 (won the Advanced Trainee Varian prize for best oral presentation)
Tong E, Horsley P, Wheeler H, Venkatesha V, Chan J, Kastelan M & Back M. 2022	Re-irradiation with bevacizumab for large volume chemo-refractory glioblastoma after prior high-dose chemoradiotherapy	Oral presentation at 72nd RANZCR Annual Scientific meeting October 2022
Mills D et al. 2022	Large Volume IDH mutated Glioma: Post RT Volumetric response and outcome	Oral presentation at 72nd RANZCR Annual Scientific meeting October 2022
Back M, Lie B, Horsley P, Vankatesha V, Kastelan M & Wheeler H. 2022	Elderly patients with glioblastoma should be assessed for adjuvant therapy protocols based on known prognostic factors rather than age: implications for accrual into GBM Elderly Protocols	Oral presentation at 14th COGNO annual Scientific Meeting October 2022
Horsley P, Tong E, Wheeler H, Venkatesha V, Chan J, Kastelan M & Back M. 2022	Re-irradiation with bevacizumab for large volume chemo-refractory glioblastoma after prior high-dose chemotherapy	Poster presentation at 17th European Association of Neuro- oncology Annual Meeting September 2022.
Yuile A, Lee A, Moon E, Hudson A, Kastelan M, Miller S, Chan D, Wei J, Back M & Wheeler H. 2022	PSMA expression correlates with improved overall survival and VEGF expression in glioblastoma	Poster presentation at 14th COGNO annual Scientific Meeting October 2022
Back M 2022	Elderly patients with glioblastoma should be assessed for adjuvant therapy protocols based on known prognostic factors rather than age: Implications for accrual into GBM Elderly Protocols.	Oral presentation at 14th COGNO annual Scientific Meeting October 2022
Yuile A et al. 2022	Clinical impact of CDKN2A/B Deletions in IDH-Mutant Astrocytomas	Poster presentation at Society for Neuro-oncology Annual Meeting and Education Day November 2022

Authors and Year	Title	Presentation type & conference
Back M, Horsley P, Yim J & Drummond J 2022	Understanding patterns of tumour infiltration in patients with multifocal glioblastoma and impact on survival outcomes	Poster presentation at Society for Neuro-Oncology's 27th Annual Scientific Meeting and Education Day 2022
Back M, Horsley P, Yim J & Drummond J 2022	Patterns of infiltration and relapse of glioblastoma involving the anterior temporal lobe: implications for radiation therapy target volume delineation	Oral presentation at British Neuro-Oncology Society Meeting July 2023
Engel S.J, Yim J, Kastelan M, Wheeler H & Back M 2023	A exploration of survivorship issues and quality of life in a cohort of IDH mutated high grade glioma 5 years following definitive treatment	Poster presentation at 18th European Association of Neuro- Oncology Meeting September 2023
Back M, Horsley P, Yim J & Drummond J. 2023	A high rate of multifocal relapse and subsequent poor progression-free survival post salvage radiation therapy for who grade 2-3 meningioma managed with initial surgery alone	Oral presentation at 18th Meeting of the European Association of Neuro-Oncology 2023
Back M, Horsley P, Yim J & Drummond J. 2023	Using neuroanatomical subsite to predict patterns of glioblastoma infiltration: potential for individualising radiation therapy target volume delineation of the parietal and posterior frontal regions	Poster presentation at Neuro- Oncology 2023
Yim J, Griffin C, Satgunaseelan L, Wheeler H, Back M, Sim HW, Shivalingam B & Alexander KL. 2023	Harmonised database infrastructure to support local brain cancer biobanking and data registries for National linkage	Oral presentation at 15th COGNO Annual Scientific Meeting 2023
Yim J, Griffin C, Satgunaseelan L, Wheeler H, Back M, Sim HW, Shivalingam B & Alexander KL. 2023	Harmonised database infrastructure to support local brain cancer biobanking and data registries for National linkage	Poster presentation at 3rd ABCARA Annual Scientific Meeting 2023

# Thank you for supporting the Brain Imaging Laboratory

None of our progress to date would be possible without the generous support of our donors. The dire state of research funding from the NSW State and Federal government adds to the slow innovation and development of novel personalised therapies for our brain cancer patients.

TBCG allows our researchers to remain nimble and rapidly translate concepts for real world clinical implementation. With every new diagnosis we strive to continuously improve our management and clinical outcomes. We hope to bring patients and their families along our research journey and delight in sharing our accomplishments.

Your ongoing support is crucial in helping us make a tangible impact towards advancing treatments and enhancing patient outcomes.

### **Contact Us**

Please do not hesitate to contact us if you require further details:

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### The Brain Imaging Laboratory was established and is funded by generous donations from

The Family of Tim Cohen

# We would also like to acknowledge donations from

White Pearl Foundation

David and Judy Taylor Foundation

We remain committed to improving brain cancer patient outcomes and your ongoing support would be crucial in helping us make a tangible impact towards advancing treatments and enhancing patient outcomes.

Thank you for your time and support.

