The Kolling Institute Neurological Tumour Bank

Following are two recent international landmark studies of medulloblastoma that included specimens from this bank.

Cavalli *et al* ("Intertumoral Heterogeneity within Medulloblastoma Subgroups" published in *Cancer Cell* in 2017) identified 12 different subtypes of medulloblastoma including 2 clear subtypes of Sonic Hedgehog medulloblastoma that have disparate biology and clinical outcomes. These findings have important implications for the stratification of patients for future clinical trials.

Morrissy *et al* ("Divergent clonal selection dominates medulloblastoma at recurrence", published in *Nature* in 2016) demonstrated striking genetic evolution of medulloblastomas over time. They found that actionable genetic changes present at diagnosis were unlikely to be present in the majority of cancer cells at recurrence. From these data they concluded that therapeutic strategies based on more common susceptibilities of subgroup rather than highly individualised targets might be more efficacious both upfront and at recurrence for medulloblastoma.

The Kolling Brain Tumour Bank also underpins much of the laboratory-based research of The Brain Cancer Group at the Kolling Institute.

The Group was invited to present their recent research using banked glioblastomas at the 2016 Society for Neuro-Oncology Annual Meeting, USA. This is the premier international conference for neuro-oncology. The research by Parker, Hudson *et al* ("Intratumoral heterogeneity identified at the epigenetic, genetic and transcriptional level in glioblastoma" published in *Scientific Reports (Nature)* in 2016) demonstrated that the same glioblastoma can demonstrate different genetic and genomic characteristics in different parts of the tumour and this may complicate interpretation of predictive biomarker results.

Current research includes multi-omic studies on longitudinally collected specimens from the same patients.

In glioblastoma, Dr Amanda Hudson identified significant inflammatory status changes between primary and recurrent specimens. These findings (manuscript under review) have important implications for the application of immunotherapeutic approaches for glioblastoma.

In research funded by the Mark Hughes Foundation for Brain Cancer, PhD student Angela Cho is assessing how low grade IDH-mutated tumours change when they recur and progress. This is a rare brain cancer subtype and it has taken 10 years to amass sufficient specimens with some cases collected up to 9 years apart. Understanding how these tumours change over time and in response to therapy will lay the foundations for developing better treatments for this rare form of brain cancer.

The above research which is increasing our understanding of the characteristics of brain tumours and improving management of patients with these tumours would not have been possible without the patients who donated their tissues and also the Kolling Tumour Bank Team who collect, store, record and manage distribution of tissues to the researchers. The Brain Cancer Group recognises and thanks both the patients and the Kolling Tumour Bank Team.

For more information about The Brain Cancer Group (previously known as Sydney Neuro-Oncology Group) visit: http://www.snog.org.au/

For more information about the Kolling Tumour Bank visit:
http://www.kollinginstitute.org.au/groups.php/131/kolling-institute-tumour-banks

Photo: Kolling Tumour Bank Team: Ussha Pillai, Mikaela Holmes, Shannon Chan and Sam Yuen.

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