

# Research

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## Lab Unit of Paediatric Brain Tumour Research Office

The laboratory unit for the Pediatric Brain Tumour Research Office (PBTRO), SingHealth Duke-NUS Academic Medical Center was established in 2015, with competitive grants secured. We are a dynamic laboratory unit and have steadily expanded our team and international collaborations over the past few years. Our goal in research is to derive findings that enable a reflective change in the practice of medicine in brain tumors. Our team (PBTRO) share a common dream to present globally competitive research findings in the field of neuro-oncology, addressing these areas in the practice of medicine through science. We work on several types of brain tumors, both in pediatric and adult populations. One major research focus of our group is in the brain tumor microenvironment, translating research findings in tumor biology and genomics to bedside benefits for patients with brain tumors. Our research combines genomic methodologies and mouse models to study the complex regulation and developmental biology of brain tumors. We place a large emphasis on the preclinical development of therapeutics for brain tumors that currently have no cures, drawing from various strengths in genomics, high-throughput functional assays optimised in our laboratory, and a large, unique cohort of patient-derived orthotopic mouse models of brain tumors developed for preclinical testing.

Atypical teratoid rhabdoid tumor is an aggressive and deadly embryonal brain tumor in children. Our laboratory unit at Pediatric Brain Tumor Research Office (PBTRO) focuses on developing new therapeutic agents for brain tumors. Atypical teratoid rhabdoid tumor is one of our active areas of research.

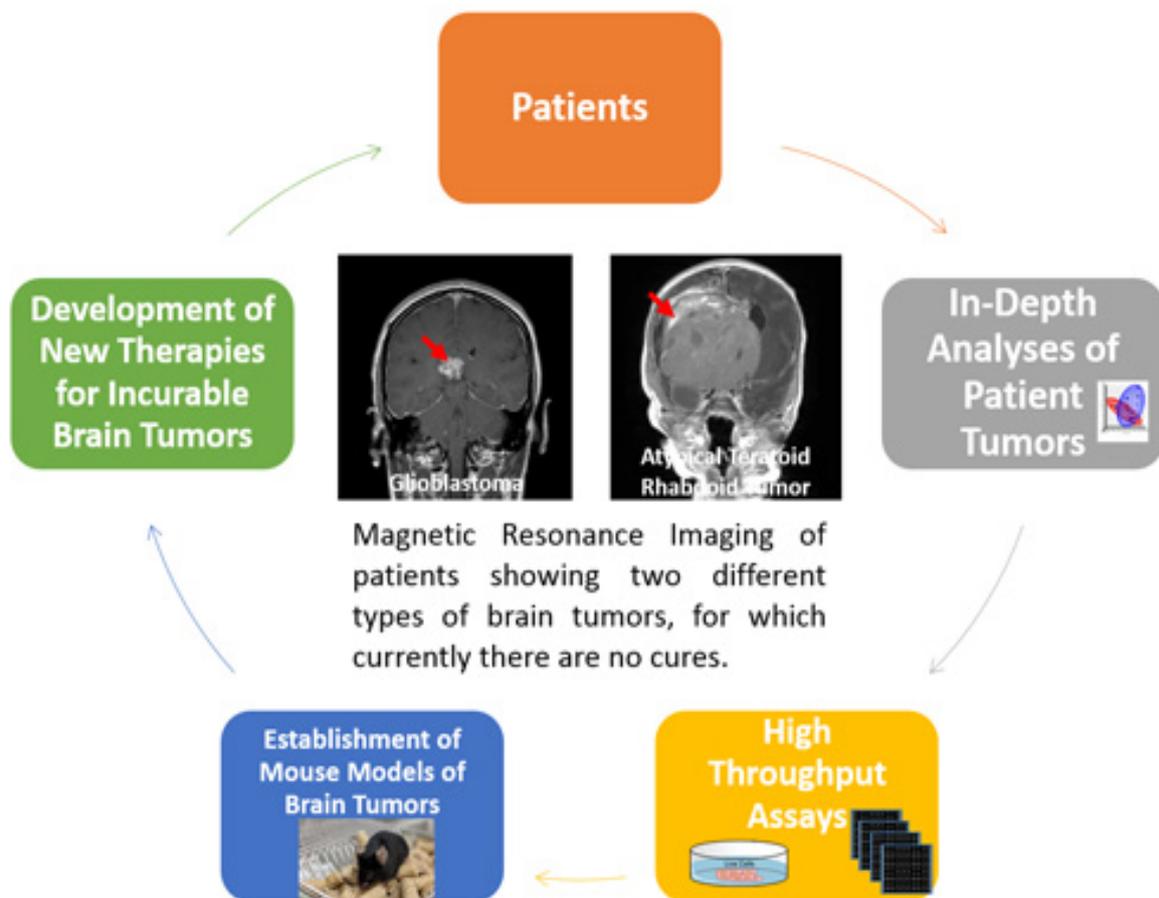
One of our major recent milestones was the joint collaboration with Institute of Molecular and Cell Biology (IMCB, A\*STAR), with the award of the SingHealth @IMCB Program Grant in 2017. This has resulted in a fruitful collaborative partnership which led to an expansion of our work at Pediatric Brain Tumor Research Office (PBTRO) and the launching of two programs: (1) **Cell Cycle Therapeutic Development Program for Human Cancers**, and (2) **Artificial Intelligence Laboratory for Human Cancer Translation**.

### **Cell Cycle Therapeutic Development Program for Human Cancers**

Our laboratory unit at Pediatric Brain Tumor Research Office (PBTRO) focuses on developing new therapeutics for incurable brain tumors. We have identified several cell cycle targets for pediatric brain tumors and currently conducting the preclinical testing phase in our mouse models. The expertise on cell cycle research at IMCB has enabled us to develop our work in this area to increasingly expand therapeutic development of these cell cycle targets for other adult human cancers.

### Artificial Intelligence Laboratory for Human Cancer Translation

We have an efficient, in-built collaborative network of genomics capability with several international institutions, including Texas Children's Cancer Center, Baylor College of Medicine, USA and Northwestern University Feinberg School of Medicine, USA. This initiative is hosted and driven by our unit in Singapore.



**Our Work at Laboratory 609-T**  
**Laboratory Unit of Pediatric Brain Tumor Research Office,**  
**SingHealth Duke-NUS Academic Medical Center**