braintumour foundation OF CANADA

Pam and Rolando Del Maestro Family Undergraduate Student Research Competition

Saturday, September 27, 2025
11:00 am - 1:15 pm EST

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Pam & Rolando Del Maestro

In 2017, the **Pam and Rolando Del Maestro Family Undergraduate Student Research Competition** was established to promote scientific innovation among Canadian undergraduate students.

Forty-three years ago, Pam and Rolando Del Maestro and Steve Northey co-founded Brain Tumour Foundation of Canada. Over the years, Pam and Rolando have fostered students in the field of brain tumour research by providing them with varied opportunities to present their ideas and engage with physicians and researchers in the field of neuro-oncology and neuroscience.

We would like to thank our co-founders, Pam and Rolando Del Maestro, for their support of this opportunity.

Attend the Pam and Rolando Del Maestro Family Virtual Undergraduate Student Research Competition!

We encourage all students to join the virtual competition, a valuable opportunity to deepen your understanding of brain tumours and connect with peers from across the country.

The event will be livestreamed on Zoom on **Saturday, September 27, 2025, at 11:00 a.m. EST**. Register and share this opportunity with your fellow students, school staff, and department contacts. To register, simply complete this registration form (**Rebrand.ly/studentcompetition2025**) or scan the QR code.

Once submitted, you'll receive the Zoom link by email to access the event.

Overview:

The Pam and Rolando Del Maestro Family Undergraduate Student Research Competition provides students with the opportunity to present their work to an audience of scientists, researchers and health-care professionals, with a focus on topics relevant to the brain tumour research community.

Participants will develop a research proposal, refine their presentation skills, and receive valuable feedback from a panel of professionals. The event also offers opportunities for networking, raising awareness and engaging with the broader brain tumour community.

Process:

Brain Tumour Foundation of Canada's Research Committee has created a standardized clinical case study relevant to brain tumours. A letter of intent to participate is due no later than **Friday, August 1, 2025, at 4:30 p.m. (EST). No exceptions.**

Participants will be required to work in teams of 2 to 4 members. Grant proposals will be evaluated through a two-step review process conducted by the judging committee.

1) **Letter of Intent: Please follow the format below using the case provided.**
   The Letter of Intent (LOI) must include the following:
   - **Background of the field**
     Describe any background information on the research topic. This must include key principles for understanding the proposal.
   - **Research problem**
     This should clearly state an unresolved concern in the scholarly literature that needs to be improved or eliminated. The significance of your proposal should be illustrated here.
   - **Hypothesis**
     State the hypothesis of the proposed study in the context of the research problem.
   - **Specific aims**
     Present up to three specific aims. These should be the narrower and more specific objectives of the proposed study in relation to the hypothesis. Under each specific aim, elaborate on the methodologies. Where applicable, describe theoretical results.
   - **Methodologies**
     This section should elaborate on the experimental procedures that will allow any other scientist to replicate your experiments. Data collection and analysis protocol must be included.
   - **Hypothesized results**
   - **Rationale for proposed research/therapeutic relevance**
     The following questions should be addressed in this section: How is the proposed study innovative and supportive of the goals of brain tumour research? Why should this project be done? How is it therapeutically relevant?
   - **Key references**
     Maximum of 30 references

Additional information:

- All necessary information above is required
- Letters of Intent should be no more than 2 pages, single-spaced.
- Font should be Arial and at least 12 points
- To submit your Letter of Intent, please email it as a PDF attachment to sruypers@braintumour.ca

Deadline: Friday, August 1, 2025
Results to be provided by: August 29, 2025
(all those who submitted LOI's will be notified regardless of the outcome)

2) **Oral Presentation**
   After reviewing the full research grant applications, teams will be invited to deliver an oral presentation to the selection committee at the Brain Tumour Foundation of Canada Research Symposium on ***Saturday, September 27, 2025***. This presentation will be delivered via Zoom.

Participants will be given the opportunity to select their own specific topic of interest **relating to the case provided** and encouraged to form a research proposal that is experimental and not an observational study or a clinical survey.

Visual Aids (i.e., illustrative slides) and lay language should be used where possible to make the presentation easy for judges and the audience to understand the proposed research. Presentations will be scored based on how well the panel of judges believes your presentation meets each of the above criteria.

NOTE: Please respect copyright and academic citation standards when using images and data from textbooks and academic journals.

What we do not expect:
The goal for this competition is not "ready for the lab projects."
The competition is not meant to be based on student thesis projects.
The basic idea is "If you were attempting to get funding for a whole project, what would you present to a panel of scientists to convince them?"

Possible Topics (yet can deviate from below list)

Surgery
Recent evidence casts doubt on whole-brain radiation therapy as a main treatment option for brain metastases. Tumour bed-directed stereotactic surgery may be a promising alternative for its localized therapy approach.

Endoscopic procedures enable precise observation of the tumour surface while avoiding vessels during resections, thereby creating the possibility for almost complete resections of deep-seated tumours.

Pharmacology
Systemic drug therapy is a management option for meningioma that cannot be completely resected. Antiangiogenic agents that interfere with tumour-induced angiogenesis may serve as rational novel treatments in such cases.

The blood-brain barrier hinders drug delivery to the brain due to its selective nature. Increasing the blood-brain barrier permeability without disturbing other brain cells can be an innovative approach to increasing the success of targeted cancer therapies.

Palliative & End-of-Life Care
Discussing palliative and end-of-life care with parents of children with a brain tumour remains a challenge to healthcare providers. This study examines training procedures to prepare medical professionals to deliver the Communication Plan: Early Through End of Life (COMPLETE) intervention to parents.

Stem Cells
Cancer stem cells may contribute to tumour growth via their self-renewal capacity. Therapies that selectively target cancer stem cells may help eradicate cancer and prevent recurrence.

Patient Selection
Responses to one treatment may vary from patient to patient. For instance, age can largely influence treatment consequences for patients with medulloblastoma. Novel methods of risk stratification will be necessary to personalize approaches per case.

Molecular Biology
MicroRNAs are implicated in the regulation of gene expression at the post-transcriptional level. It is hypothesized that they may alter key tumour suppressor activity to result in brain cancer development. MicroRNAs may thus be potential biomarkers and/or therapeutic targets for embryonal tumours.

Day of Conference:

On the day of the Conference, each team will be provided **8 minutes** to present their proposals, followed by **5 minutes of questions** from the judging panel. Three winning teams will be selected and awarded monetary prizes at the end of the competition. Rankings are based on presentation performance and the content of abstract and full proposal scores previously earned. This will be conducted via ZOOM for all participants.

Monetary Prizes as follows:
1st Place- $1000
2nd Place- $750
3rd Place- $500

Ranking Committee/Case Study Development: Dr. Joseph Megyesi, Dr. Adrianna Ranger and Dr. Ryan Wang

Moderator of Event: Sue Ruypers

CASE STUDY

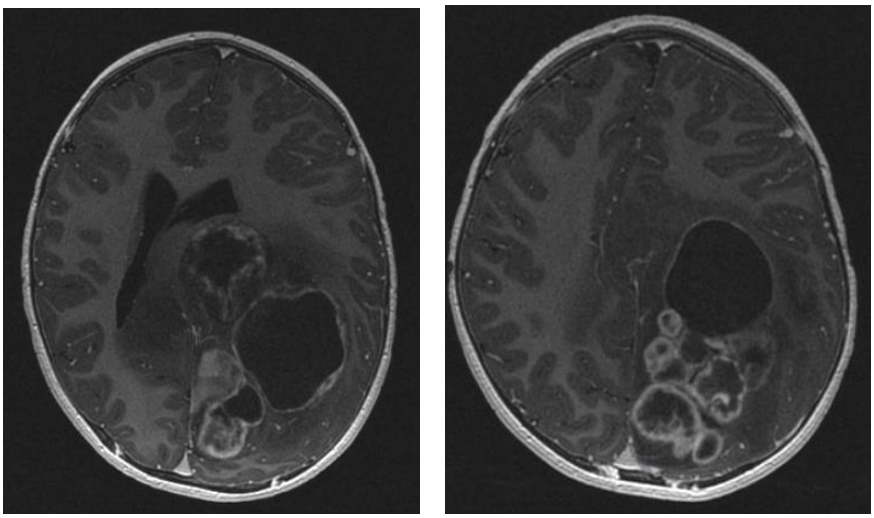
Jacob is a 7-year-old right-handed boy, brought to the Children's ER by his father after a fall with the sudden onset of right-sided hemiparesis.

He had fatigue, reduced appetite and irritability over 2-3 months with several episodes of headache over that time. He was brought to their local ER several times and sent home, sometimes with bloodwork which appeared consistently reassuring, but without any brain imaging. He developed intermittent strabismus involving the left eye and was referred to ophthalmology for evaluation of this but had not yet been seen by the time of his presentation.

On the morning of admission to the hospital, he had a fall, witnessed by his father, whereby he abruptly started dragging the right leg and could not brace himself when he became unbalanced. He stumbled a few times but ultimately fell to the floor, striking his face without attempting to protect himself, which prompted this emergency visit. Jacob was unable to describe the recent events and seemed to have expressive aphasia, able to only nod his head, but unable to find the correct words.

A CT head scan was obtained by the pediatric emergency physician (shown), revealing an abnormality in Jacob's left hemisphere. This was followed by an MRI (shown), which better defined the abnormality, revealing a complex solid and cystic lesion involving Jacob's left hemisphere, centred in the parietal and occipital lobes, extending across the expanded splenium of the corpus callosum, with pronounced midline shift. There were areas of gadolinium enhancement, necrosis and hemorrhage seen.

Non-contrast enhanced axial CT head



Contrast-enhanced axial MRI head images

Jacob was referred to a pediatric neurosurgeon. His parents met with the neurosurgeon, and there was a discussion about the possible radiographic diagnoses. Management options were discussed. The neurosurgeon gave Jacob's parents Brain Tumour Foundation of Canada's handbook on pediatric brain tumours, and his parents agreed to urgent surgery for attempted resection of the brain lesion and to acquire tumour samples for diagnosis. The following day, Jacob underwent a craniotomy and partial resection of the brain lesion. Samples were sent for pathological analysis. The neuropathologist reported that the quick-section/frozen section was "lesional and consistent with a glioma showing moderate nuclear pleomorphism-lineage and grading deferred". Following more detailed pathology review, the diagnosis returned: "Pediatric-type diffuse hemispheric glioma, H3 G34-mutant-WHO Grade 4".

A week after the surgery, with a confirmed histopathological diagnosis, Jacob's family met with the neuro-oncology team, including his neurosurgeon, pediatric neuro-oncologist, radiation oncologist and social worker to discuss the next steps.

Jacob's parents had the following questions/concerns, having already searched the Internet:

1. What is the next best step for management of this high-grade glioma – more surgery, chemotherapy, radiation therapy or some combination? What is the supporting evidence? This was only partially resected. Are there surgical adjuncts that could help to achieve a total or near-total resection? Would it make a difference to his outcome/survival?

2. According to the Internet, certain factors might impact how Jacob responds to treatment. What are these factors, and what is their relative importance? What is being done to identify other factors?

3. Jacob's parents wanted to know if there were any experimental therapies for children with this kind of brain tumour. They wanted to know what a clinical trial was and if there might be any current clinical trials for which he might be eligible.

4. His parents are concerned that his having a brain tumour is going to negatively impact his quality of life. Is there any evidence to support their concern, and if so, is there anything being done to minimize this? They want to know if anything is being done to help families optimally deal with a child with a brain tumour.

Brain Tumour Foundation of Canada is inviting students to devise a proposal for scientific research that addresses one or more of the above issues surrounding Jacob's brain tumour (Pediatric-type diffuse high-grade glioma, H3 G34-mutant).