

**Research Symposium**  
**&**  
**The Pam and Rolando Del Maestro Family**  
**Undergraduate Student Research Competition**  
**Awards**



**braintumour**  
**foundation**  

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**OF CANADA**

**Saturday, September 28, 2024**  
**11:00 am - 1:15 pm EST**

**The Pam and Rolando Del Maestro Family Undergraduate Student Research Competition Awards**



Pam & Rolando  
Del Maestro

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

42 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.

Brain Tumour Foundation of Canada thanks our co-founders Pam and Rolando Del Maestro for supporting this opportunity.

## Overview:

This undergraduate research competition is an opportunity to showcase your work to other scientists, researchers, and professionals attending the Research Symposium. The top three (3) winning teams receive monetary prizes. Presentations will be relevant to the brain tumour research community. This competition provides students an opportunity to create a research proposal, practice presentation skills and receive constructive feedback from a panel that includes physicians and researchers. This competition allows students time to network and create awareness while engaging the brain tumour community in brain tumour research.

## 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 2, 2024 at 4:30pm (EST). No exceptions.**

Those participating will be asked to work in groups ranging from **2-4 group members**. Grant proposals will be assessed via a two-step mechanism 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 to 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 on 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 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 as a PDF attachment to [sruypers@braintumour.ca](mailto:sruypers@braintumour.ca)

**Deadline:** Friday August 2, 2024

**Results to be provided by:** August 16, 2024

(all those who submitted LOI's will be notified regardless of results)

**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 28, 2024**. This presentation will be given through 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 nor a clinical survey.

Visual Aids (i.e. illustrative slides) and lay language must be used where possible, to make the presentation easy for judges and the audience to understand the research proposed. 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 text books 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 permit precise observation of the surface of the tumour while avoiding vessels during resections, 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 Communication Plan: Early Through End of Life (COMPLETE) intervention to parents.

### **Stem Cells**

One emerging topic of research focuses on cancer stem cells that may contribute to tumour growth via their self-renewal capacity. Therapies that selectively target cancer stem cells may help eradicate cancer and prevent reoccurrence.

### **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:**

Day of Conference, each team will be provided 8 minutes to present proposals with 5 minutes of questions from 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 content of abstract and full proposal scores previously earned. This will be conducted via ZOOM for all participants.

Monetary Prizes as follows:

1<sup>st</sup> Place- \$2000

2<sup>nd</sup> Place- \$1500

3<sup>rd</sup> Place- \$1000

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

**Moderator of Event:** Sue Ruypers

## Case Study:

Barrett is a 65 year-old pipe fitter who presents with intermittent right arm and right leg numbness and tingling. These symptoms started approximately 3 months prior to assessment in the emergency department. More recently the numbness and tingling have started to involve the face. On examination he has impairment in the sensation in his right hand and right foot. He has a slight right pronator drift. The emergency room doctor ordered a computerized axial tomography (CT) scan of the head which was abnormal. He then went on to have magnetic resonance imaging (MRI) of the head which showed an enhancing lesion in the left temporal lobe extending into the left globus pallidus and left thalamus (see figure). A CT scan of the chest/abdomen/and pelvis was normal.

Barrett was referred to a neurosurgeon. Barrett and his family met with the neurosurgeon and there was discussion about the possible radiographic diagnoses. Management options were discussed. The neurosurgeon gave Barrett the Brain Tumour Foundation of Canada Handbook on brain tumour, and after discussion with his family Barrett opted for a biopsy of the brain lesion. Two days later Barrett underwent a frame-based stereotactic biopsy of the brain lesion. Pieces of the tumour were sent for pathological analysis. The neuropathologist reported that the lesion was consistent with a brain tumour called primary CNS lymphoma. Barrett and his family were informed of the diagnosis.

A few days after the brain surgery, Barrett and his family met with the neurosurgeon, neuro-oncologist, and radiation oncologist to discuss the next steps. Barrett and his family had the following questions/concerns, having already searched the Internet:

1. What is the next best step for management of his primary CNS lymphoma – observation, chemotherapy, radiation therapy or some combination? What is the supporting evidence?
2. According to the Internet certain factors might impact how Barrett responds to treatment. What are these factors and what is their relative importance? What is being done to identify other factors?
3. On the internet, Barrett and his family read that primary CNS lymphoma is different than systemic lymphoma. They wanted to know what the differences are, and how this might impact treatment and response.
4. Barrett and his family also read about newer forms of systemic therapy for brain tumours. They wanted to find out more information about these new forms of treatment.
5. Barrett and his family wanted to know if there were any experimental therapies for a patient 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.

6. Barrett is concerned that having a brain tumour is going to negatively impact his quality of life. He wants to know if there is any evidence to support his concern and, if so, is there anything being done to minimize this. Barrett also wants to know if anything is being done to help families optimally deal with a family member with a brain tumour.

The 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 Barrett's brain tumour (primary CNS lymphoma).

