

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



braintumour
foundation

OF CANADA

Saturday, October 2, 2021
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.

35 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 establishing this visionary 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 will include 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 20, 2021 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.

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

Deadline: Friday August 20, 2021

Results to be provided by: September 10, 2021

(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 October 2, 2021**. This presentation will be given through **ZOOM**.

Participants will be given the opportunity to select their own specific topic of interest and be 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 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:

Day of Conference, each team will be provided 8 minutes to present proposals with 5 minutes of feedback. 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.

Certificates will be provided to all participating teams and local winners will be announced from 1st-3rd place.

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. Adam Mutsaers

Moderator of Event: Sue Ruyppers

Case Study:

Wilhelm is a 56 year old pipefitter who presents with a three month history of righted sided subtle weakness. Over the last three weeks he has noted a more obvious weakness of his right leg with a tendency to limp when walking. Over the past two days he has been experiencing seizure activity involving the right arm and leg. On examination he has moderate weakness in his right leg and mild weakness in his right arm. The reflexes in his right arm and leg are increased when compared to the left. 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 two brain lesions – one in the left frontal area and one in the right frontal area. A CT scan of the chest revealed a right upper lobe lung mass.

Wilhelm was referred to a neurosurgeon. Wilhelm and his family met with the neurosurgeon and there was discussion about the possible radiographic diagnoses. Management options were discussed. The neurosurgeon gave Wilhelm the Brain Tumour Foundation of Canada Handbook on brain tumour and after discussion with his family Wilhelm opted for resection of the brain lesions. Two days later Wilhelm underwent bilateral craniotomies and resection of the brain lesions and piece of each tumour was sent for pathological analysis. The neuropathologist reported that the lesions were both consistent with a metastatic brain tumour from a lung primary. Wilhelm and his family were informed.

A few days after the brain surgery, Wilhelm and his family met with the neurosurgeon, neuro-oncologist, radiation oncologist, medical oncologist and thoracic surgeon to discuss the next steps.

Wilhelm and his family had the following questions/concerns, having already searched the Internet:

1. What is the next best step for management of his brain tumours and lung mass – surgery, chemotherapy, radiation therapy or some combination? What is the supporting evidence?
2. According to the Internet certain factors might impact how Wilhelm 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, Wilhelm and his family read about certain forms of targeted chemotherapy for metastatic brain tumours (eg. tyrosine kinase inhibitors such as osimertinib). They asked for more information. How do the targeted therapies work and is he eligible?
4. Wilhelm and his family also read about newer forms of radiotherapy – radiosurgery, proton beam therapy and neutron capture therapy. How do they work and is he eligible?
5. Wilhelm 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. Wilhelm is concerned that his 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. Wilhelm 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 Wilhelm's brain tumour (metastasis from lung cancer).

