



Philanthropy is what enables SickKids to lead.

Behind each groundbreaking discovery; the global reach of our education initiatives; and the life-saving clinical care provided to our patients, are donors like you. Thank you for your commitment to child health.

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PHILANTHROPIC
impact report

TRANSFORMING CHILD HEALTH

Diffuse Intrinsic Pontine Glioma Research Ryan Chisim Golf Tournament



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Supporting brain tumour research excellence at SickKids. The Ryan Chisim Golf Tournament generously supports the leading-edge research at SickKids focused on diffuse intrinsic pontine glioma (DIPG) tumours. With your help, our world-class team is driving important discoveries that will contribute to improving the options we have available to fight these extraordinarily complex tumours.



Diffuse Intrinsic Pontine Glioma Research

At SickKids, we are working relentlessly to advance our understanding of why and how paediatric cancers, including brain tumours, develop and evolve, as well as to identify ever-more specific targets for treatments. We are profoundly grateful for your support of research on diffuse intrinsic pontine glioma (DIPG) tumours, research that is yielding promising new information that will benefit future young patients.

DIPG tumours are **devastating**; because they lie deep within the brainstem, they are inoperable, and radiation, the only treatment with proven efficacy, only works for the short term. For the 10 to 15 per cent of children with brain tumours who have DIPG—about 30 Canadian children each year—their lives are, tragically, always cut short.

The study of these tumours has been challenged by the fact that biopsy is nearly always impossible; surgery in this area of the brain stem carries heavy risks of its own, and therefore biopsy is relatively rare. Without the opportunity for biopsy, it is extremely difficult for researchers to fully understand these tumours, and to conclusively determine how best to treat them. That's why the ground-breaking research of Dr. Cynthia Hawkins, Neuropathologist and Senior Scientist in Cell Biology, in collaboration with Dr. Eric Bouffet, Director of the Brain Tumour Program and Head of Neuro-Oncology, and Dr. Ute Bartels, Staff Neuro-Oncologist, is so critical. In fact, SickKids is one of three top research centres in the world in this highly specialized area.

Already, our team has driven significant new learnings about DIPG. Most recently, in 2014, a SickKids-led study published in the prestigious journal *Nature Genetics* revealed for the first time that there are three distinct subgroups of DIPG, confirming that

these tumours are, in fact, quite different from adult glioblastomas. The study, which was based on detailed genetic analysis of more than 60 DIPG samples, found that these tumours have highly recurrent mutations—far higher than has been found in other tumour types. This is encouraging for researchers now looking at each of these mutations, exploring what therapeutic targets may make a difference.

Exploring PARP Inhibitors

In recently published research directly supported by the Ryan Chisim Golf Tournament, Dr. Hawkins and the SickKids team looked at the therapeutic potential of three medications called PARP inhibitors; these inhibitors are already in phase III clinical trials for adult cancers. PARP is an enzyme that repairs DNA; radiation damages the DNA in a tumour and PARP helps to repair that damage and allow the tumour to keep growing. The team's hypothesis was that, in combination with radiation, blocking the PARP would push tumour cells into cell death. The team's research confirmed one of the three PARP inhibitors did just that in cell lines; the team was also able to demonstrate extended survival associated with that particular PARP inhibitor in mouse models.

"It's not a home run in that it is not a cure, however, this animal evidence shows that this approach has the potential to extend life, which is something that we've never before been able to do," explains Dr. Hawkins. "We are now pushing for a clinical trial."

Dr. Bouffet is encouraged by the progress made on potential new therapeutic approaches, including PARP inhibitors and another medication currently under investigation called an aurora kinase inhibitor. The key now is to drive support from pharmaceutical companies who are in a position to advance this research to clinical trials.

"I know what we need to do, and we are pushing for it," explains Dr. Bouffet. "Our dream is to create our own clinical trial. Dr. Hawkins is also working on animal models, which will help us confirm the rationale for a clinical trial on these inhibitors."

Making Important Steps

With such monumental challenges to research and improving outcomes, every step forward should be celebrated. Recently, research has prompted a change to clinical practice; according to Dr. Bouffet, the team has started to implement a second round of radiation for children with DIPG. Dr. Bouffet says they are now seeing children live for months longer than previously thought possible—an incredible gift for families. A research fellow is working to gather and analyze the data for publication, in the hopes of adding another possible piece to the puzzle that is DIPG.

"This is one of the most challenging tumours in paediatric oncology," explains Dr. Bouffet.

"What we hope is that through support and help from donors, we

Hugh, was treated at SickKids for a rare and very aggressive type of brain tumour.



“(DIPG) is one of the most challenging tumours in paediatric oncology. What we hope is that through support and help from donors, we can capitalize on the research we’ve done and can build the protocols for clinical trials that will really make a difference in the lives of these kids.”

Dr. Eric Bouffet

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Dr. Hawkins echoes Dr. Bouffet's sentiment.

"The support we get from donors really makes a difference," she says. "It is very difficult to get funding for research in paediatric cancer, because the numbers are low in comparison to some adult cancers. Having funding from alternative sources makes the difference between doing research or not in a lot of cases."

Thank You

DIPG shatters the lives of children and their families. It is only through the relentless pursuit of the many

questions around DIPG that meaningful advances will be made. The team at SickKids is deeply committed to doing just that; the support of the Ryan Chisim Golf Tournament is helping them to make it happen. Together, we are making remarkable medical discoveries that are building understanding about DIPG and opening up potential new avenues of treatment. Thank you for your generous support, without which this life-saving work would not be possible.