Cancer Biology Newsletter

Issue No. 1 | January 2025

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Advancing Childhood Cancer
Experience, Science & Survivorship

Agir Contre le Cancer
des Enfants avec Succès

The aim of the Cancer Biology research theme is to better understand the biology of pediatric cancers and accelerate research efforts by removing barriers to collaboration, increasing research pathways, and building infrastructure to enable knowledge, expertise, and data sharing across Canada.

Learn more here: Cancer Biology

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Advancing Childhood Cancer Experience, Science & Survivorship

Agir Contre le Cancer des Enfants avec Succès

Cancer Biology Theme

CONTENT OVERVIEW

FOR MORE INFORMATION, please visit the Cancer Biology section of the ACCESS website or contact the Cancer Biology Theme's Project Manager at emily.nakada@mail.mcgill.ca or the ACCESS Project Manager at tricia.schneider@sickkids.ca

Featured Contributor

Addy (left) & Jessica (right)

Photo provided by Jessica Hill

Jessica Hill

Jessica (JH) is a Person With Lived Experience (PWLE) that joined ACCESS in 2023. She is an active Cancer Biology **(CB)** Theme stakeholder, as a member of the Pediatric Cancer Models & Mechanisms (PCMM) Network's Governance and Scientific Oversight Committee and the Sarcoma MetAstasis Research Taskforce (SMART). We asked Jessica to share her and her daughter Addy's story with the community.

CB: What motivated you to join ACCESS and get involved in projects initiated through the Cancer Biology Theme?

JH: My motivation comes from my personal experience with losing my daughter, Addy, to angiosarcoma cancer. Throughout her battle, I witnessed firsthand the limitations in research and treatment options for rare cancers. It became clear to me that more needed to be done to advance the understanding of these diseases, and I wanted to be part of a network that prioritizes research innovation and collaboration. Through ACCESS, I see an opportunity to be a part of meaningful change — working alongside clinicians, scientists, and others in the cancer research community to ensure that families facing pediatric cancer have better outcomes and more hope for the future. It's about making sure Addy's fight, and the fight of so many other children, leads to breakthroughs that will ultimately save lives.

"Through ACCESS, I see an opportunity to be a part of meaningful change..."

CB: Can you share with us Addy's journey and what it was like for your family during her diagnosis and treatment?

JH: Addy was diagnosed with angiosarcoma when she was just 13, passing away nine months later, two days after she turned 14 years old. She faced her diagnosis with remarkable strength and resilience, but the journey was incredibly challenging for all of us. Treatment was gruelling, filled with endless hospital stays, surgeries, chemotherapy and radiation sessions. Beyond the physical toll, the emotional strain on our family was immense, as we grappled with fear, uncertainty, and heartbreak. Despite everything, Addy's spirit never wavered — she was determined to live fully and left a lasting impact on everyone who knew her.

Responses were edited for length and clarity, without altering the meaning of the original answers

Featured Contributor

CB: What inspired you to turn your grief into advocacy for pediatric cancer research?

JH: After losing Addy, I knew I couldn't let her battle end without a purpose. Advocacy became my way of channelling my grief into action, ensuring her story would contribute to finding answers for other families facing this devastating disease. Addy's own wish was to help other children at SickKids who were battling cancer. Even while she was receiving chemotherapy, she expressed a desire to start fundraising to make a difference. Her fight then became our fight. I wanted to honour her courage by transforming our pain into purpose and hope, creating a future where no child has to endure what Addy did. Through advocacy, we continue her mission, striving to make sure that her legacy of compassion and determination lives on in the fight for better outcomes for children facing cancer.

CB: Can you share with us some of the details of your advocacy work?

JH: As Team Addy, we've raised over $500,000 for sarcoma research in support of SickKids Hospital. Our efforts include hosting annual events, such as the 3x3 basketball tournament in July — Sarcoma Awareness Month — which has grown to become the largest of its kind in Canada. This tournament not only raises vital funds but also brings the community together to celebrate Addy's lasting legacy. Additionally, we partner with Riverfest Elora to host a concert every fall, furthering our mission. Through these events, our goal is to not only raise funds for sarcoma research but also increase awareness of this devastating disease.

CB: What are the biggest challenges families face when dealing with a child's cancer diagnosis?

JH: The challenges are profound and overwhelming — emotional, financial, and physical. Nothing prepares you for the gut-wrenching reality of watching your child suffer in pain, knowing that each day of treatment steals away their childhood and innocence. You witness the physical and emotional toll cancer takes, feeling powerless as a parent to alleviate their suffering. Life becomes consumed by a never-ending stream of doctor's appointments, medications, and treatment decisions, all while trying desperately to hold onto some semblance of normalcy for your child. But that normalcy slips further away with each passing day, replaced by the harsh realities of the illness.

Being a parent in this situation means putting your child's needs above all else, even while falling apart inside. You become their rock, their constant source of comfort and stability, no matter how hard it is. The fight to protect them from pain, even when you can't shield them from everything, becomes all-consuming. It's a battle that affects every aspect of your life, but you keep going because of your love for them.

CB: What message would you convey to clinicians and scientists within and outside of the ACCESS community?

JH: As a PWLE, I want clinicians and scientists to understand just how deeply their work impacts families like mine. Your dedication, innovation, and compassion are essential, and your efforts offer hope to families navigating the unimaginable. Collaboration is critical—by working together and listening to the voices of those directly impacted, we create meaningful progress. Remember that behind every research, treatment, and breakthrough, are human stories—stories of children and families relying on your work. Those stories are what make every discovery so significant.

"Remember that behind every research, treatment, and breakthrough, are human stories…"

Featured Project

National Research Project: Sarcoma

Project Name: Sarcoma MetAstasis Research Taskforce, SMART Project

Project Co-Leads: Livia Garzia, Rebecca Gladdy, and Poul Sorensen

Brief Description

In high-risk pediatric sarcomas, such as osteosarcoma, Ewing sarcoma, and rhabdomyosarcoma, we have made progress in understanding the biology of the primary (original) tumours. However, we still do not fully understand what causes these cancers to relapse or spread to other parts of the body. This gap in knowledge partly explains why treatment outcomes for patients with metastatic (spread) or relapsed disease have not improved as much as those for patients whose cancer is still localized, and why progress has stalled over the past few decades.

The current research into why sarcomas relapse or spread has mostly focused on analyzing gene activity in bulk (the overall gene expression in the tumour), with the assumption that this approach will give us a clear picture of what drives the disease and what could be targeted with therapies. However, this method might not be entirely accurate, as gene activity does not always reflect the actual protein levels in the tumour, which are often more important in driving cancer. The limited understanding of how sarcoma tumours relapse and spread has become a major obstacle in developing better treatments, including targeted therapies and new immunotherapies.

Another challenge is that metastatic or relapsed sarcomas can be very different from one tumour to another, both within the same patient and compared to other patients. This means that we may need to study multiple samples from a variety of patients to fully understand the disease and find potential targets for treatment. It is also important to consider that certain potential targets may only appear in some patients or in their metastases, not in the original tumour. To move the field forward, we need to make sure our research includes a diverse range of patient samples and models that reflect this complexity.

Lastly, because each type of sarcoma has its own unique biology, it is important to gather patient data from across the country and standardize how we conduct experiments and analyze results. By doing this, we can make meaningful progress in improving treatments for children with aggressive sarcomas, both in Canada and globally.

Aims

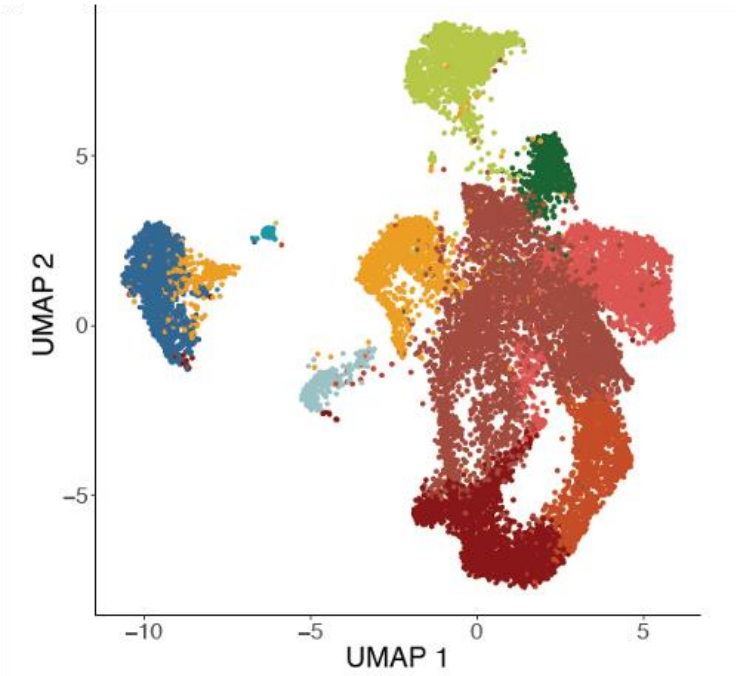
The goal is to identify therapeutic targets that might be relevant to prevent or treat

Featured Project: SMART

metastasis and relapse in pediatric high-risk sarcomas. The three main aims are to: I) leverage existing human biobanked samples to infer potential targets in metastatic and therapy resistant pediatric sarcoma through molecular profiling at high-resolution and by looking at liquid biopsy (blood) samples for early detection of metastasis and target selection; II) develop a pipeline for preclinical validation of potential targeted therapy approaches for metastatic pediatric sarcoma; and III) develop novel approaches and tools for the above aims using discovery type strategies.

Key Deliverables

They include genomic profiling of pediatric sarcoma relapses and metastases at single cell resolution; and validation of preclinical models to be shared across the consortium for future drug discovery and validation work. We will demonstrate utility of sarcoma circulating tumour DNA (ctDNA; DNA that is released from cancer cells into the bloodstream) assays or plasma/extracellular vesicle (EV) proteome assays specifically for early detection of metastasis and for detection of targets at progression. We will also validate novel potential targets for metastatic sarcomas in vitro and in vivo and the discovery of novel antigens on the surface of sarcoma metastases to be used for novel immunotherapies. Finally, we will explore new liquid biopsy tools based on ctDNA and EVs.



The UMAP figure shows the overlay of 8 different osteosarcoma tumours. Each dot represents a single cell and cells with similar molecular features are labelled by the same color. The presence of multiple colors indicates that each osteosarcoma tumour is composed of molecularly different cell types.

Achievements to Date

We have brought together a group of experts in the field of pediatric sarcoma and People With Lived Experience (PWLE) to work together on this explorative project, identified and/or consolidated samples from 70+ patients from local biobanks and biobanking studies across Canada, have access to several patient-derived xenograft (PDX) models that have been validated using an atlas of pediatric cancers that analyse patient samples at the transcriptomic level and applies a machine-learning algorithm to classify childhood cancers.

Current Focus

We are continuing to validate PDX models using the transcriptomics atlas of pediatric cancers, proteomic and transcriptomic testing strategies for plasma samples are being finalized, and single cell genomic profiling is underway and plans for proteomic profiling of tumour samples is being finalized.

Novelty of SMART

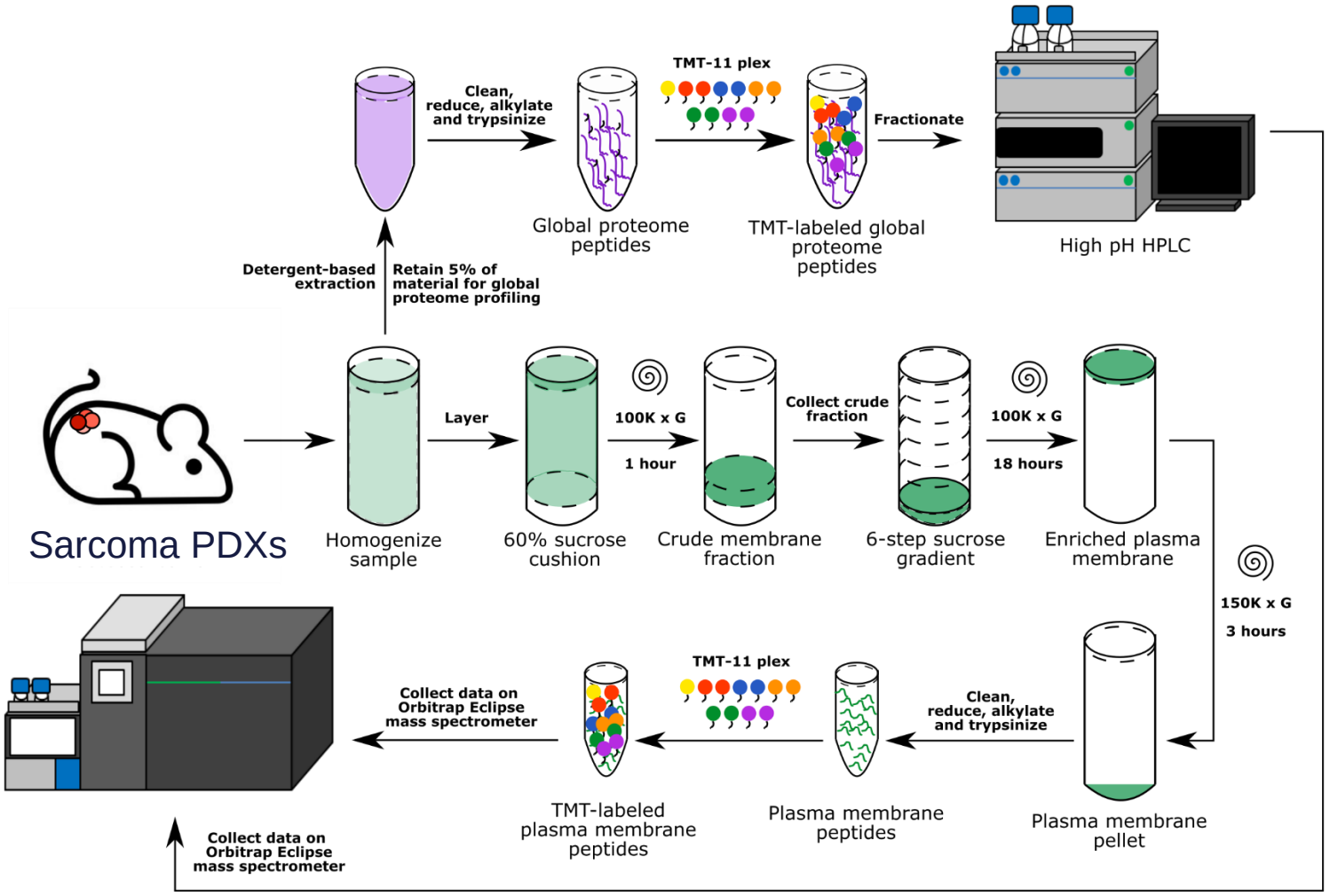
The SMART project will apply the approach that has been recently introduced by Dr. Sorensen's lab to study the proteins present on the surface of sarcoma cells. His recent study (Mooney *et al.*, 2024) focused on Ewing sarcoma, a type of bone cancer primarily affecting children and young adults. Despite advancements in treating localized Ewing sarcoma, survival rates for metastatic and treatment-resistant cases remain low. To address this, researchers conducted a comprehensive analysis of the proteins present on the surface of Ewing sarcoma cells, known as the "surfaceome," using advanced proteomics techniques. By isolating and analysing these membrane proteins, the team identified several

Featured Project: SMART

potential targets for immunotherapy, including ENPP1 and CDH11, which show high expression in Ewing sarcoma cells but low expression in normal tissues. This innovative approach of focusing on membrane proteins is crucial because these proteins are accessible to therapeutic antibodies and advanced immunotherapies, making them ideal targets for new treatments. The study's findings provide a valuable resource for developing targeted immunotherapies, potentially improving outcomes for patients with high-risk Ewing sarcoma.

SMART as an ACCESS Project

The ACCESS program facilitates joint work from diverse teams with complementary expertise across various research institutes in Canada. The geographic and institutional diversity fosters a rich exchange of ideas and approaches, leveraging regional strengths and specialized facilities. By pooling the unique skills and knowledge bases of different institutions, such a program can address complex research questions from multiple angles, increasing the likelihood of innovative solutions. Including PWLE and end-users in the research process further enriches the program. Their firsthand insights ensure that the research remains grounded in practical realities and addresses genuine needs, enhancing the relevance and potential impact of outcomes. This inclusive approach also builds trust and credibility with communities, facilitating knowledge translation and the adoption of findings. By



The figure shows surfaceome analysis of pediatric sarcomas. Pediatric sarcoma patient derived xenografts grown in mice were sourced from the Pediatric Preclinical Testing Consortium were subjected to a proprietary surface enrichment technique and proteomics to identify known and novel surface proteins as potential immunotherapy targets. Material was also utilized for global proteomics, and the two data sets were compared for down-selection of promising targets. HPLC= High-Performance Liquid Chromatography; TMT= Tandem Mass Tags.

Featured Project: SMART

bridging theoretical expertise, practical insights, and institutional diversity, the program not only accelerates progress but also ensures a more equitable and comprehensive approach to addressing national challenges in research and innovation.

Rare cancers, by their nature, pose challenges due to limited case numbers and resources for study. Collaboration across multiple institutions allows the SMART team access to a broader patient pool and more comprehensive datasets, critical for generating statistically significant findings. The integration of complementary expertise from diverse teams—such as bioinformatics, molecular biology, clinical oncology, and social sciences—enables a holistic approach to tackling complex biological and clinical questions specific to these cancers. Through ACCESS, the SMART project was able to streamline the pediatric onboarding of new investigators into the field of sarcoma research. The program provides new investigators access to established networks, resources, and mentorship, which accelerates their ability to contribute meaningfully. By bringing rare cancers to the attention of experienced investigators from different research areas, the program fosters the infusion of alternative perspectives and innovative ideas. These cross-disciplinary insights can lead to breakthroughs by applying novel methodologies or drawing parallels with other diseases. Involving PWLE, including families of pediatric sarcoma patients, ensures that research priorities align with patient needs, promoting impactful and patient-centred solutions. Providing access to national networks and infrastructure, such as advanced research facilities, biobanks, and supporting the generation of preliminary data paves the way to leveraging further funding opportunities, overall accelerating progress. This integrated approach fosters innovation, amplifies resources, and bridges gaps between research and real-world application, significantly advancing efforts to address the unique challenges of pediatric sarcomas.

Events: The project co-leads are giving a Spotlight Presentation on SMART at the ACCESS Annual Meeting on Tuesday, January 28, 2025 at 11:45AM ET.

Our Projects

National Research Project: Brain Tumour

Project Name: Deciphering 3D chromatin states permissive to driver alterations in High-Grade Childhood Brain Tumours

Project Co-Leads: Nada Jabado and Vijay Ramaswamy

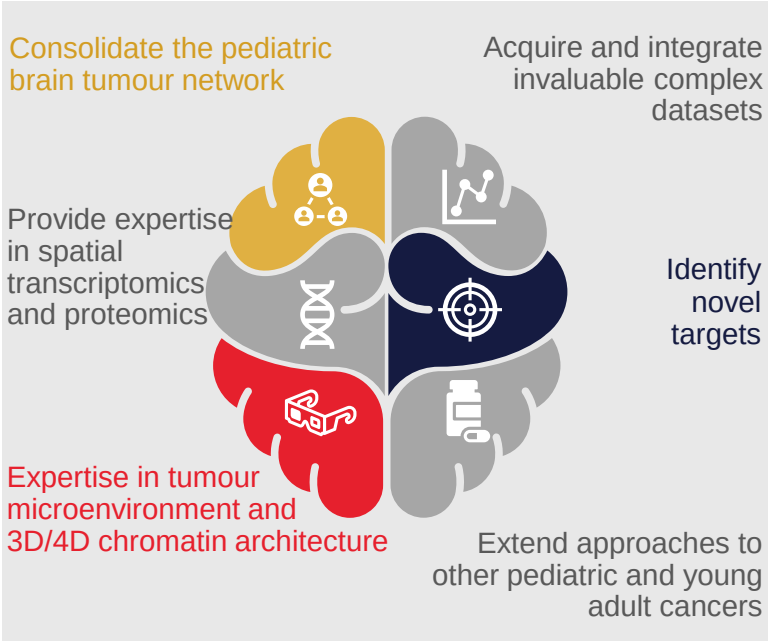
Brief Description

High-grade brain tumours including medulloblastoma, gliomas and ependymomas are devastating, with a huge societal burden and impact on patients, families and the health care system. Many survivors suffer from serious health issues that affect their quality of life and their ability to lead fulfilling lives in society. Unfortunately, for some, the diagnosis is often a grim one, with limited effective treatment options available. These brain tumours all have distinct genetic alterations and changes in the way DNA is organized (chromatin architecture) at the core of the processes that sustain tumour formation, but we have not fully understood what they represent and how to target them effectively. Research suggest that gaining a deeper understanding of how these 3D/4D chromatin changes function, as well as how tumour cells communicate with each other and their surrounding environment, is crucial for developing better treatments.

Aims

Investigate how cancerous brain cells manipulate their chromatin architecture and influence their immediate surroundings • Uncover what sustains these abnormal structures • Identify communication pathways that can be disrupted with therapy to effectively kill tumour cells.

Key Deliverables



Achievements to Date

Brought together investigators with the relevant expertise, patient advocates, and other stakeholders • Identified and collected relevant biospecimens • Proposed work underway, including preliminary results from brain tumours with the K27M alteration.

Current Focus

We are employing several cutting-edge methods in this project (nano-CUT&Tag, spatial transcriptomics and proteomics, single cell methyl-HiC) to identify exquisite vulnerabilities of pediatric high-grade brain tumours. With these approaches, we will unravel the communication between tumours and their microenvironment that is amenable to disruption with targeted therapies.

Requests and Opportunities

We are looking to access additional high-grade tumour samples to validate findings. Individuals interested in joining our meetings are always welcome.

Please scan this QR code to view this project's virtual poster at the ACCESS Annual Meeting.

Our Projects

National Research Project: Leukemia

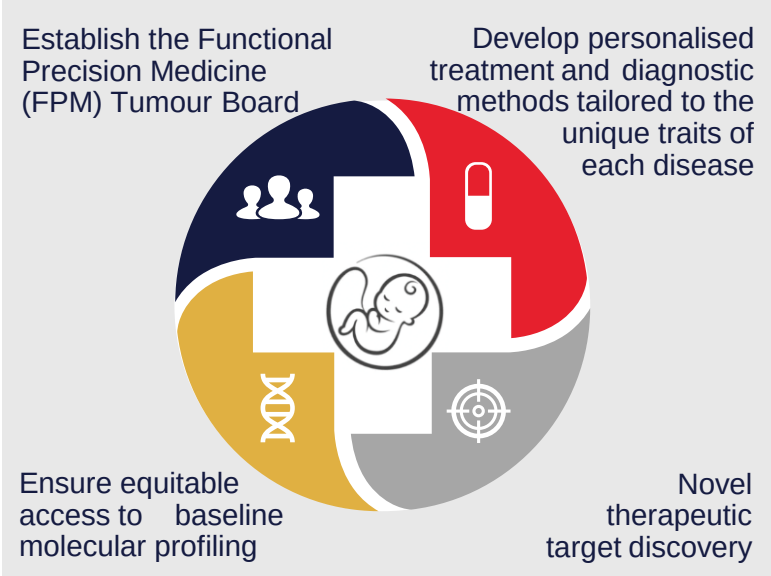
Project Name: Diagnostic and precision intervention for leukemia arising in infancy

Project Lead: Sonia Cellot

Brief Description
Recent advancements in genetics have revealed that pediatric leukemia is more diverse than previously thought, but this diversity is just starting to be considered in how we diagnose, treat, and monitor the disease. One major challenge is that we still do not have enough treatments tailored to each child, which is why cure rates for the most fatal forms of leukemia remain low, and standard treatments can cause harmful side effects for survivors. “Infant leukemia,” which arise in babies before 12 months of age, is a rare and highly varied form of leukemia with poor cure rates. Our goal is to create a national team of experts, gather detailed information about the different forms of the disease, and accelerate research to improve treatments and outcomes. This type of coordinated effort does not currently exist, and because infant leukemia are so rare, in the future, we can apply this as a model to other high-risk leukemia subtypes.

Aims
Create a national team of experts from different fields to develop personalized treatments and diagnostic methods that are tailored to the unique genetic and functional traits of each disease • Ensure equitable access to baseline molecular profiling for all pediatric cancer patients • Study the proteins (proteomics) in infant leukemia to discover new targets for treatment and better understand the disease at a molecular level • Meaningfully engage People With Lived Experience (PWLE) in this work.

Key Deliverables



Achievements to Date
Proposal approved by ACCESS in November (2024) • Gathered a project team of experts and PWLE

Current Focus
We are beginning the work of identifying and collecting patient samples from across the country and putting together a concrete strategy to conduct the proposed work. We are establishing connections with other project teams within the Cancer Biology Theme, specifically the Biobanking Network and Modelling Core, to harmonize some of our activities.

Requests and Opportunities
Requesting infant leukemia biospecimens (various materials).

Please scan this QR code to view this project’s virtual poster at the ACCESS Annual Meeting.

Our Projects

National Research Platform: PCMM Network

Project Name: Pediatric Cancer Models & Mechanisms (PCMM) Network

Project Lead: Chris Maxwell

Brief Description
New personalized treatments for childhood cancer and blood disorders require robust preclinical studies to inform investigator-initiated clinical trial design. Such a formal pipeline does not currently exist in Canada. While we are rich in expertise, technology, and knowledge, these capacities are not uniformly distributed, resulting in inequality in access across provincial authorities. The Pediatric Cancer Models and Mechanisms (PCMM) Network is a national platform that has created an Expert's registry and a matching program for preclinical and clinical researchers. The PCMM Network promotes preclinical investigations and enables all researchers across Canada to access leading experts and technologies.

Aims
Create infrastructure to collect expertise, technologies, research models and interests of investigators across Canada • Form a Governance & Scientific Oversight Committee (GSOC), which oversees a matching program for clinical and preclinical researchers, enables connections and supports projects that impact new treatments.

Key Deliverables
Searchable Expert's registry that allows preclinical and clinical researchers to connect. • A pipeline to support translational studies that may inform new treatment options (for more information, please visit the PCMM Network website).

Achievements to Date
Created the Expert's Registry and registered 50 investigators from across the country. The registry is also connected to 1000+ domestic and international investigators • Created the GSOC, which is composed of People With Lived Experience (PWLE) and researchers across Canada, including junior and senior scientists with diverse preclinical expertise • Launched the first round of matching/funding and received applications from across Canada. We supported 3 projects, one from each category: I) Developmental therapeutics; II) Biomarkers; and III) Variant functionalization • Reviewed round 1, edited and revised processes to improve the performance of round 2.

Current Focus & Opportunities
The second round of funding new collaborations in translational research is just getting underway.

Please visit https://registry.pcmmnetwork.ca to complete a profile, expected to take no more than ten minutes. During the registration, it is important that you fill out all the requested information that is applicable to you.

Benefits of registering include: 1) Your profile and associated research expertise will be searchable to identify new collaborations. You are also welcome to search the registry at https://registry.pcmmnetwork.ca/search; and 2) As a registered member of the network, you are eligible for awards.

Applications for translational research projects are being accepted in three prioritized areas: I) Developmental Therapeutics; II) Biomarkers and Molecular Pathology; and III) Gene or Variant Functionalization. For more details, visit www.pcmmnetwork.ca. The application is two-pages (maximum) with a deadline of March 14, 2025. In Round 2, we plan to fund no less than four applications, up to $70,000 each, and one-year to complete the proposed research.

Please scan this QR code to view this project's virtual poster at the ACCESS Annual Meeting.

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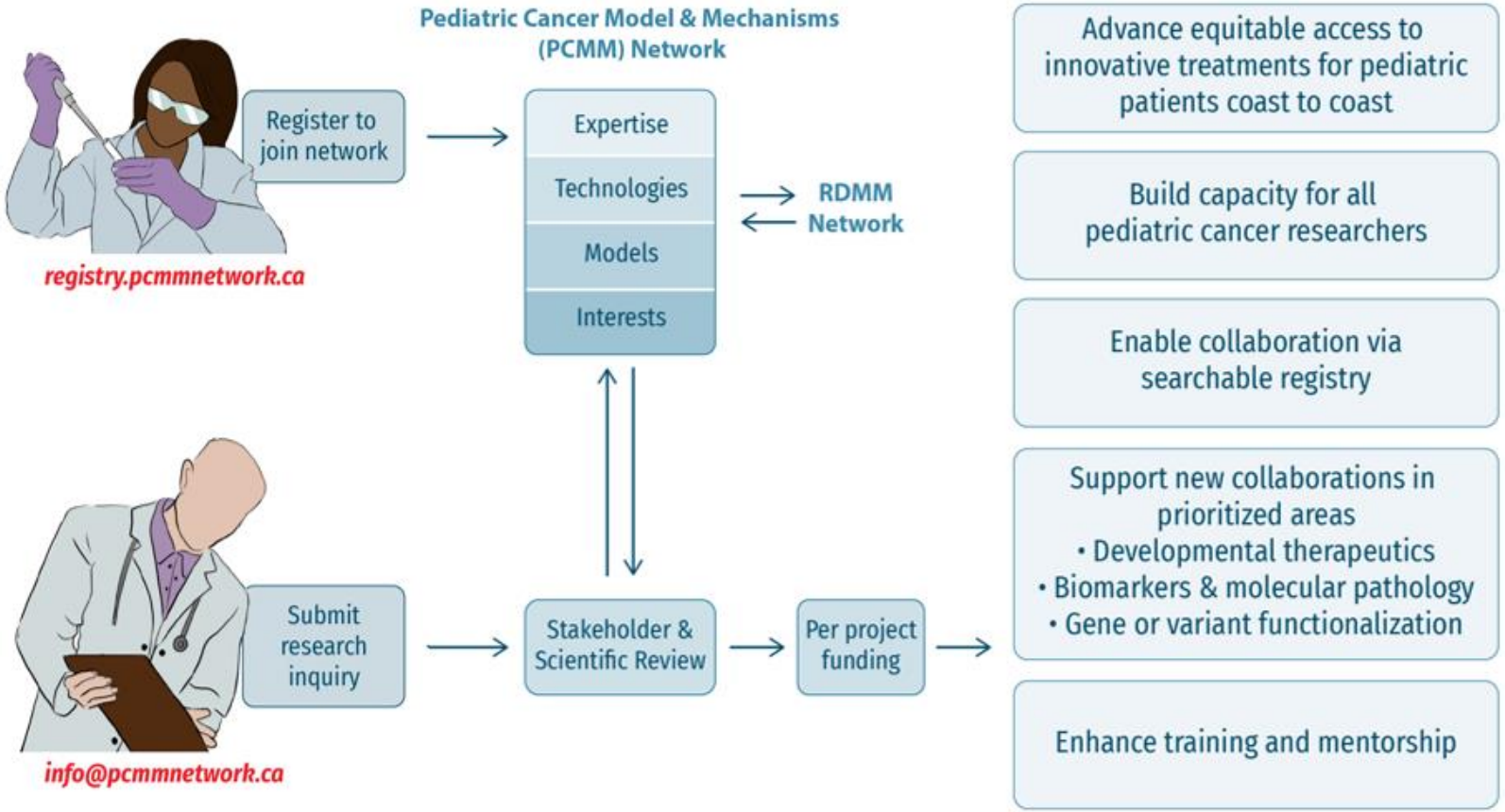
Overview of the PCMM Network



The figure shows an overview of the PCMM Network.
(Top) Investigators can register to the PCMM Network's Registry by completing their profile. The registry is searchable and interconnected with others like the RDMM (Rare Disease Models and Mechanisms) Network Registry. Registrants can benefit from funding opportunities, (Bottom) if matched with a research question submitted to the network by an applicant in one of three prioritized research areas. Information on current funding opportunities can be found on the PCMM Network's website.

National Research Platform: Molecular Pathology

Project Name: Molecular Pathology Strategy

Project Co-Leads: Philipp Lange and Liana Nobre

Brief Description

The increased accessibility to high throughput sequencing platforms has improved how we diagnose, classify, and treat pediatric cancers. We can now better identify specific genetic alterations in tumours, and patients with these alterations often respond remarkably well to targeted therapies. Over the past decade, sequencing technology has gone from being largely a research tool to becoming a routine part of clinical care, helping guide treatment decisions. Sequencing research studies like the SIGNATURE, Kids Cancer Sequencing (KiCS), Personalized OncoGenomics (POG), and Precision Oncology For Young people (PROFYLE) programs have been essential in demonstrating the feasibility and clinical utility of genome, exome and transcriptome sequencing. These studies have provided the foundational data to support clinical validation and incorporation into clinical practice. Quebec has already approved funding for whole exome and RNA sequencing for all children with cancer, and other provinces are considering similar moves. Nevertheless, there remains significant untapped

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Our Projects

potential in advanced molecular diagnostics, such as genomics of circulating tumour DNA (ctDNA), proteomics of biofluids and tissues, and assessment of DNA and protein modifications, to refine disease classification and treatment.

Aims

Identify and advance the next molecular pathology assays and platforms with clinical use • Accelerate the move of promising assays from research labs into everyday clinical practice • Make them accessible for all children with cancer across Canada.

Key Deliverables

Initiate the collection of liquid biopsy and Formalin-fixed Paraffin-embedded (FFPE) specimens for all patients • Establish national standards and protocols for the collection of liquid biopsy samples • Establish pediatric proteome centres to advance access and pipelines for proteome profiling • Demonstrate real-time ctDNA and proteomic profiling for patients • Form a national Molecular Pathology Board (MPB) to advances promising, preclinical molecular assays in development • Provide access to clinical assays and tests that are not accessible to all pediatric cancer patients on a case-by-case basis through the MPB.

Achievements to Date

Three project teams have formed the: 1) liquid biopsy working group; 2) proteomics project team; and 3) MPB • Two People With Lived Experience (PWLE) have joined.

Current Focus

We are harmonizing liquid biopsy protocols that will make the collection and processing of these samples more consistent • The MPB is reviewing its first patient cases as it establishes its workflow, pipelines, and connections with Molecular Tumour Boards, healthcare professionals, and laboratories • Three Pediatric Proteome Centre sites are being established • The proteomics team is working on a congruence study.

Opportunities

Requesting investigators with expertise and interest in liquid biopsy collection, protocol development and testing, join our liquid biopsy-focused meetings. If you are developing a preclinical molecular assay that could benefit from feedback and a small funding envelope from the MPB, a call for applications will soon go out. If you have a clinical assay relevant to the diagnosis, monitoring, or treatment of pediatric cancer patients that is not accessible to all patients across Canada, let us know. The MPB would like to consider and may recommend your assay for patient cases they review and will cover the cost of testing.

Please scan this QR code to view this project's virtual poster at the ACCESS Annual Meeting.

Events & Opportunities

EVENTS

at the 2nd ACCESS Annual Meeting
In Toronto (January 28 – 29, 2025)

- ✓ **Cancer Biology Theme Dinner (unofficial ACCESS event) at Valens Restaurant on Monday, January 27 @ 7:15PM ET. Website➤ Maps➤**
- ✓ **SMART Spotlight Presentation on Day 1 (Tuesday, January 28) @ 11:45AM ET.**
- ✓ **Rooms reserved during breakfast (8-9AM ET) on the January 28 & 29 for our theme's stakeholders.**

Annual Meeting Agenda

FUNDING

- ✓ **The PCMM Network has launched its second funding round for new collaborations in translational research. Website➤**

REQUESTS & OPPORTUNITIES

- ✓ **The Biobanking Project is looking to identify (and engage) Canadian biobanks currently managing biospecimens from pediatric cancer patients.**
- ✓ **The Modelling Core is looking to identify Canadian investigators establishing cancer models and that have the capacity and interest in drug screening.**
- ✓ **Both the Biobanking Project and the Modelling Core are seeking People With Lived Experience interested to join the respective project team.**

Proposals for both the ACCESS Biobanking Project & Modelling Core are currently under review.

FOR EVEN MORE INFORMATION, please reach out to the Cancer Biology Theme Project Manager, Emily Nakada, or ACCESS Project Manager, Tricia Schneider.

Glossary

Key Terms

Biomarkers: biological molecules like genes and proteins that suggest the presence of cancer in a patient.

Chromatin: a complex of DNA and proteins that form the chromosomes found in the cells. Its primary function is to package long DNA molecules so they are more compact.

Circulating Tumour DNA (ctDNA): DNA that is released from cancer cells into the bloodstream.

Congruence Study: a study that examines the consistency or "fit" between different elements within a research design, such as the methodology, or analysis technique.

Developmental Therapeutics: a type of clinical research that focuses on developing new, safe, and effective cancer treatments that improve the quality of life for cancer patients.

Driver Alteration: a specific change in the sequence or expression level of a gene that provides a significant growth advantage to a cell, allowing it to proliferate abnormally.

Extracellular Vesicle (EV): sacs released by cells into the space outside a cell but still within the respective tissue or organ.

K27M Alteration: referring to the H3K27M mutation; it is a significant genetic change found in certain brain tumours, indicating a poor prognosis due to its disruption of normal gene regulation.

Liquid Biopsy: a minimally invasive laboratory test that analyses bodily fluids to detect cancer cells or tumour DNA.

Methyl Hi-C: shows how DNA methylation patterns are linked between distant parts of the genome that are physically close to each other in the 3D space of the cell, potentially allowing us to better understand how DNA methylation impacts gene expression.

Nano-CUT&Tag: a method for analysing chromatin at the single-cell level.

Patient-Derived Xenograft (PDX) Model: a model of cancer where a patient's tissue or cells are engrafted in an animal to accurately represent the biology and heterogeneity of a cancer.

Proteomics: The study of the structures, composition, function, interactions and activities of proteins.

Spatial (Transcriptomics and Proteomics): methods that study the expression of genes and proteins across a tissue sample to understand how cell interact with each other and their environment.

Surfaceome Analysis: a technique used to study the complete set of proteins expressed on the surface of a cell.

Transcriptomics: the study of all RNA molecules in a cell, tissue, or organ at a specific time.

Uniform Manifold Approximation and Projection (UMAP): used to visually represent complex, high-dimensional data in a lower dimensional space, allowing researchers to identify patterns, clusters, and relationships within the data.

Thank you
Merci

accessforkidscancer.ca

accessforkidscancer.ca/project-category/cancer-biology/

FOR MORE INFORMATION, please contact the Cancer Biology Theme Project Manager, Emily Nakada, or ACCESS Project Manager, Tricia Schneider.

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