

# Department of Pediatrics Research Report

Dec 2022



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## Pediatric Rheumatic Disease Research and Innovation Laboratory: The lab that cultivates curiosity through a culture of community and collaboration with the goal to improve the lives of children with rheumatic diseases.

In the early years of Dr. Alan Rosenberg's medical career, the field of pediatric rheumatology was in its infancy. Dr. Rosenberg was trained under the first pediatric rheumatologist in Canada, Dr. Ross Petty in Winnipeg, Manitoba. After his training it was his mentor, Dr. Don Mitchell who helped recruit Dr. Rosenberg to the University of Saskatchewan where he started as the first pediatric rheumatologist in the province and laid the groundwork to establishing a career that would prove to be award worthy.

In 1981, Dr. Rosenberg founded the Pediatric Rheumatic Disease Research and Innovation Laboratory. Dr. Rosenberg's idea for the laboratory is rooted in his desire to contribute to the next generation of discovery of the causes and biological processes associated with childhood arthritis and related autoimmune rheumatic diseases. The laboratory was designed with the research aims of identifying immune and inflammatory mechanisms and biologic markers.



These research goals were intended to place his patients' needs at the forefront, so as to aid in diagnosing, managing, and improving the outcomes of childhood rheumatic diseases as well as inform prevention strategies. This laboratory embarks on a broad array of diverse yet complementary research projects (Figures 1 and 2). The research program focuses on Juvenile Idiopathic Arthritis (JIA), multi-systemic inflammatory and auto-inflammatory syndromes, and prenatal and early childhood antecedents of inflammation-mediated chronic diseases. Examples of his team's current research projects include:

**Predicting childhood arthritis outcomes:** The Canadian Biologically-based Outcome Predictors in Juvenile

Arthritis Study (The BBOP Study) aims to gain new understanding of factors that predict JIA occurrence and outcomes. The BBOP study has identified psychosocial, nutritional, genetic, and biologic processes that are distinguishable among different childhood arthritis subtypes.

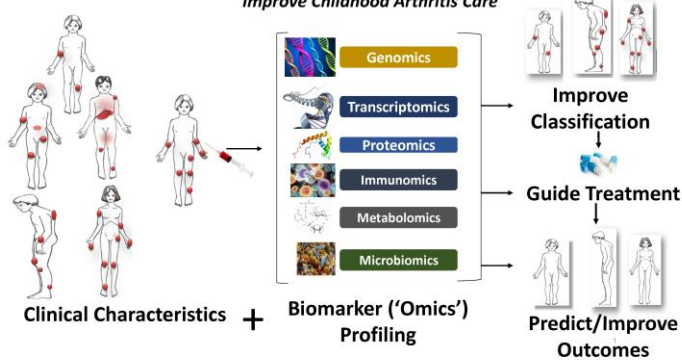
**Understanding the association of arthritis and uveitis:** The team is leading an international study to explain the enigmatic association between arthritis and uveitis in children with JIA. **Oral health in childhood arthritis:** In collaboration with dentistry colleagues, Dr. Rosenberg and his team are studying associations between dental disease and JIA phenotypes and courses.

**Discovering the targets for antinuclear antibodies (ANA) in JIA:** Using advanced imaging techniques, including confocal microscopy and synchrotron imaging, we are aiming to discover the precise targets for ANA in JIA.

Continued on pg. 2...

**Metabolomic profiles predictive of treatment responses in childhood arthritis:** The team is studying how metabolites in the blood can assist in predicting and assessing methotrexate treatment responses. **Identifying diagnostic markers in multisystem inflammation syndromes:** They are investigating if high mobility group box 1 protein [HMGB1], an upstream inflammatory protein, can help predict courses of certain inflammatory conditions including macrophage activation syndrome, systemic JIA, Kawasaki Disease, and COVID-19-related multisystem inflammatory syndrome in children. **Synchrotron Imaging:** They are undertaking studies in collaboration with synchrotron scientists to better understand how joints grow and to produce more detailed images of bone affected by chronic non-bacterial osteomyelitis, a suspected autoimmune inflammatory bone disease. **Earliest Origins of Disease:** The laboratory continues to explore the role that prenatal and early childhood inflammation plays in influencing the occurrences of chronic inflammatory-mediated diseases later in life. **National and International Collaborative Studies:** The team collaborates in national and international research consortia that aim to understand childhood arthritis and vasculitis and provide reliable predictors of treatment response to advanced, biologically-based therapies. The goal of this research program is to improve the lives of children with rheumatic diseases now and over their lifetimes. Childhood rheumatic diseases, which are chronic and multisystem in nature, can adversely affect a child's growth and development, quality of life, and future productivity and impose burdens on the family and health care systems. By better understanding the biologic, lifestyle, and environmental factors that influence the occurrence, course, treatment responses, and outcomes of childhood rheumatic diseases, cure and prevention become realistically achievable objectives.

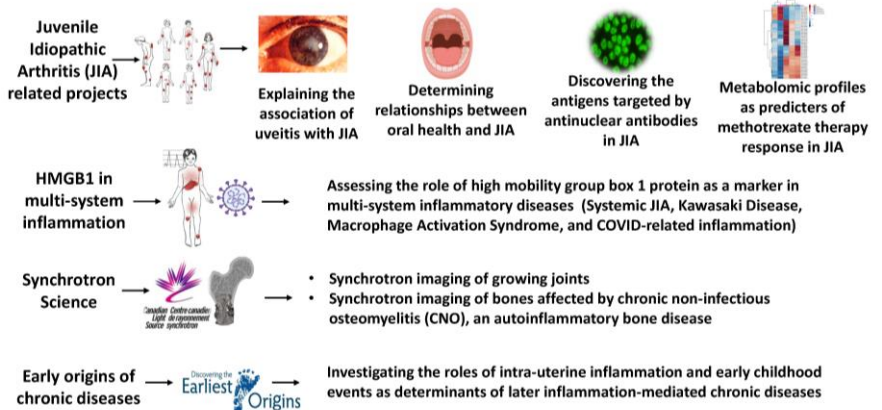
**Figure 1. Pediatric Rheumatology Research and Innovation Laboratory: Understanding Associations Between Clinical Characteristics and Biology to Improve Childhood Arthritis Care**



The Pediatric Rheumatic Disease Research and Innovation Laboratory embodies a multitude of strengths that many research programs hope to emulate. For example, the robust culture of collaboration in this program exemplifies how transdisciplinary alliances can ignite and propel research and provide a productive environment to inspire and guide the next generation of care providers and investigators. As described in the research projects above the partnerships span multiple colleges, departments, and disciplines both locally and globally. The 41-year-old laboratory has continued to prosper by staying engaged in the ever-changing environment of research and discovery.

Knowledge translation and dissemination are vital to linking research to practice and ensuring that patients are benefiting from new scientific discoveries in a timely manner. To better communicate their research activities and progress, and to help in mobilizing their findings into action, the Pediatric Rheumatic Disease Research and Innovation Laboratory is in the process of implementing an ambitious knowledge translation initiative. The Pediatric Rheumatology Online Portals to Enhance Research Project (PROPER Project), will create a diverse suite of online platforms to enhance communications relating to their research with patients, families, funders, and investigators.

**Figure 2. Examples of Current Pediatric Rheumatology Research Projects**



Continued on pg. 3...

## Child Health Research Trainee Spotlight – Dr. Olivia Griffin

Born and raised in Saskatchewan **Dr. Olivia Griffin** is a PGME – 4 at the University of Saskatchewan. Prior to her starting her residency in pediatrics she completed her Bachelor of Science in Food, Nutrition and Health from University of British Columbia in 2014. Following this she returned to Saskatchewan and received her Doctor of Medicine in 2019 from the University of Saskatchewan.



During her residency she has assisted critical care researchers **Drs. Tanya Holt and Gregory Hansen** with two quality improvement (QI) projects. The retrospective studies reviewed the continuous renal replacement therapy (CRRT) and therapeutic plasma exchange (TPE) programs.

Holt T, Griffin O, Cyr A, Brockman R, Wihak L, Hansen G. [Lessons Learned from a Small Pediatric Continuous Renal Replacement Therapy Program](#). Crit Care Res Pract. 2021 Nov 7;2021:6481559.

The CRRT project reviewed 13 years of patients data while the TPE project reviewed 5 years of patient data.

The purpose of each project was to identify efficiencies, effectiveness, and outcomes of the programs compared to other centres. This data collection identified both areas of strength and areas that require further development.

Interestingly, the results illustrated that despite being a smaller center, the PICU unit at JPCH is able to deliver safe and effective care with positive patient outcomes.

She plans to continue research as part of her future career. In her own words research is an essential component of medicine to ensure doctors continue to evolve to meet the ever changing-needs of patients.

...Rheumatic Lab, continued from pg. 2

Although Dr. Alan Rosenberg is the first to acknowledge all the people who contributed to the success of the Pediatric Rheumatic Disease Research and Innovation Laboratory, it is arguably both his dedication to his patients, colleagues, trainees, and community, and his precocity in the pursuit of scientific discovery that underlie the laboratory’s accomplishments. Indeed, the broader community has recognized his exceptional contributions: Dr. Rosenberg was recently awarded the province’s highest honour: the Saskatchewan Order of Merit. He was also honoured with the title of distinguished professor by the University of Saskatchewan. With an inspiring and lauded record of achievements so far, we look forward to what visionary ideas he will bring next.

We thank Dr. Alan Rosenberg for providing content for this article.

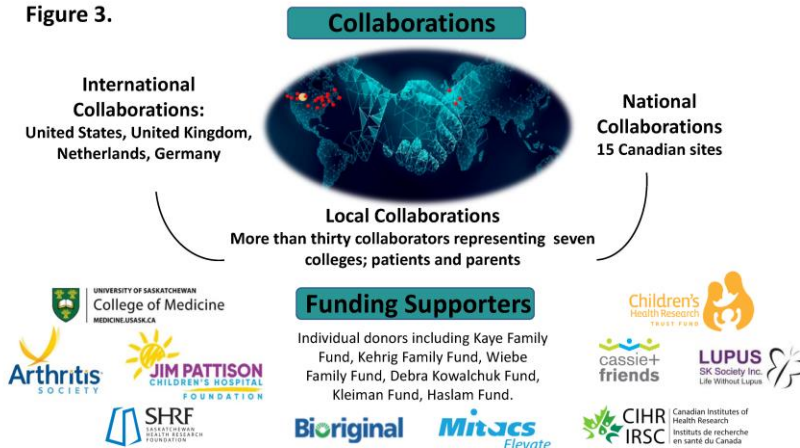
He would also like to acknowledge the program’s collaborators:

List of collaborators:

Research team within the Division of Rheumatology, Department of Pediatrics includes **Dr. Alan Rosenberg**, Director of The Pediatric Rheumatic Disease Research and Innovation Laboratory; **Dr. Mehul Jariwala**, Division Head; **Drs. Tristan Kerr** and **Kate Neufeld**, pediatric rheumatologists; **Joan Dietz**, Research Nurse Coordinator; **Fahmid Islam**, Laboratory Research Officer; **Leah Samson**, Advanced Clinical Practitioner in Arthritis Care; **Shauna Richards**, Clinic Nurse; and **Alyssa Bilodeau**, Clinical Administrative Assistant. We are privileged to have **parents and former patients** as members of our research teams.

He would also like to acknowledge the many funders of this research program: Our research program, which has operated without interruption for 41 years ago, has benefited from strong support from a broad array of local and national funding agencies, and from many generous individual donors as shown in Figure 3.

Figure 3.



## Congratulations to Dr. Netusha Thevaranjan (Resident-Pediatrics) for being awarded 2<sup>nd</sup> place (Clinical Research category) at the CoM 2022 Virtual REACH - Resident Research Day

Dr. Thevaranjan presented her project entitled: Dried blood spot (DBS) test for HbA1c measurement in pediatric diabetes care in Saskatchewan  
 Netusha Thevaranjan, Mallory McNiven, S. Flavelle, J. Robertson, J. Buse, M. Inman

### DRIED BLOOD SPOT (DBS) TEST FOR HBA1C MEASUREMENT IN PEDIATRIC DIABETES CARE IN SASKATCHEWAN

Netusha Thevaranjan, Mallory McNiven, J. Robertson, S. Flavelle, J. Buse, & M. Inman  
 Department of Pediatrics, University of Saskatchewan

#### ADVANTAGES OF THE DBS METHOD

- Remote laboratory access (at home testing)
- Less anxiety provoking for children
- Effectively cost neutral within the lab when compared to venous blood draw

#### RESULTS

Analysis reveals a strong correlation between HbA1c levels measured through venous sampling, compared to DBS samples (R = 0.89, p-value < 0.0001)

#### INTRODUCTION

- HbA1c: serum glucose over ~3 months
- Test used for diagnosis, monitoring, +/- screening of pediatric type 1 and 2 diabetes
- Traditionally measured using venous blood
- DBS: small volumes of blood collected via capillary sample [akin to newborn screening]

#### AIMS

- To validate the use of DBS cards to measure HbA1c levels compared to the standard approach of a venous HbA1c in the pediatric population with diabetes
- To identify potential barriers to implementing this novel method provincially including access, time (processing), transportation and cost

#### METHODS

62 pediatric patients with diabetes were consented and mailed DBS cards, final analysis, N = 55

Simultaneous collection of venous and DBS HbA1c samples. All DBS samples time stamped and mailed to one provincial lab

Data analysis with correlation studies

#### CONCLUSION

The DBS is a novel method for the collection of HbA1c and has a strong correlation with the venous HbA1c. Due to its sensitivity, this could be used as a screening tool. It could improve access to diabetes care for rural and remote populations.

NEXT STEPS: Verification of the DBS as a screening tool in type 2 diabetes in First Nations children (given the limited access to labs in rural settings and increased rates of T2DM in this population)



### Pediatric Residents In the News

Dr. Chris Christensen recently wrote a [CBC Opinion article](#) reflecting on his experiences with our health system. This article hit home for many and had over 370 comments!



Saskatchewan · Opinion

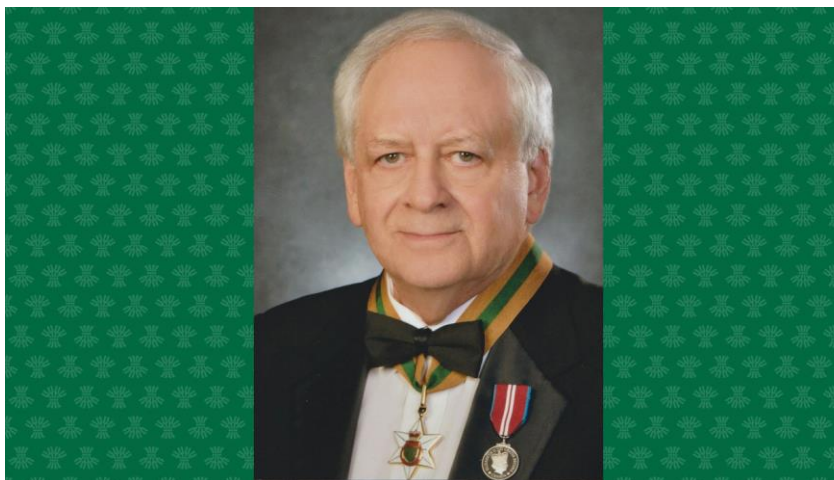
#### Our health system is struggling: what I see as a doctor at the frontlines of a health traffic jam



Failures to invest in preventative medicine are having a devastating pileup effect

[Dr. Chris Christensen](#) · for CBC Opinion · Posted: Nov 09, 2022 3:00 AM CT | Last Updated: November 9

**Congratulations to Dr. Alan Rosenberg who has been recognized with the Saskatchewan Order of Merit- the province's highest honour.**



**Dr. Rosenberg** has shown an extraordinary commitment to making the Province of Saskatchewan a better place for everyone. Department of Pediatrics congratulates Dr. Rosenberg and thanks him for the positive impact he has made on our province and its people.

**Congratulations to Dr. Alan Rosenberg for being honoured with the Distinguished Professor designation.**

The University of Saskatchewan (USask) honours professors from across campus for their exceptional achievements in research, scholarly or artistic work. This year Dr. Rosenberg was one of seven who received this prestigious honour. Check out the other recipients at the link in the photo:



## Coming Events

<b>Jan 17</b>	<p style="text-align: center;">SPSS Workshop hosted by Clinical Research Support Unit</p> <ul style="list-style-type: none"> <li>• Available to all faculty, staff, residents, and students in the College of Medicine</li> <li>• In-Person, GA70 (Computer Lab) Health Sciences Building 1:00 to 4:00 p.m.</li> <li>• Registration: \$20 (Maximum 20 participants) Registration deadline: January 13th, 2023</li> </ul> <p>Contact Clinical Research Support Unit at <a href="mailto:clinical.research@usask.ca">clinical.research@usask.ca</a> or 966-1740 to register.</p>
<b>Jan 19</b>	SPSS Workshop hosted by Clinical Research Support Unit
<b>Jan 19</b>	<a href="#">Pediatric Grand Rounds</a> : Dr. Darryl Adamko - Update on Nasal High Flow Therapy in Children
<b>Jan 20</b>	SPSS Workshop hosted by Clinical Research Support Unit
<b>Jan 30 – Feb 24</b>	<p style="text-align: center;"><a href="#">Foundations of Collaborative Research USask Micro-credential</a></p> <ul style="list-style-type: none"> <li>• Our micro-credentials offer high-quality, industry-aligned, skills-focused, short, and accessible certification of a specific set of skills or competencies.</li> <li>• You will develop and refine your skills through lessons, practice, and coaching, and will have the opportunity to apply what you learn in situations where the skills would typically be used.</li> </ul>
<b>April 20</b>	<b>Save the Date</b> – Child Health Research Trainee Day

HOME / CLINICAL PRACTICE / POSITION STATEMENTS AND... / ANXIETY IN CHILDREN AND...

POSITION STATEMENT 157

**Anxiety in children and youth: Part 2 – The management of anxiety disorders**


Posted: Oct 20, 2022

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Principal author(s)

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**Congratulations to Dr. Susan Bobbitt!**  
 The Canadian Paediatric Society Position Statement titled '[Anxiety in Children and youth; Part 2 – The management of anxiety disorders](#)' was published on October 20, 2022



### RSV FAQ: What is RSV? Who is at risk?

Congratulations to **Dr. Athena McConnell** on her publication titled, '[RSV FAQ: What is RSV? Who is at risk?](#)' This article is written for The Conversation, an independent source of news and views, from the academic and research community, delivered direct to the public. Click on the link to read the full article!



Academic rigour, journalistic flair



**RSV FAQ: What is RSV? Who is at risk? When should I seek emergency care for my child?**

Published: November 27, 2022 8:09am EST

Athena McConnell, University of Saskatchewan

Pediatrics in the News

Health

### Wait times for eating disorder treatment in Canada grow during the pandemic

Some provinces, territories are still without publicly funded options

Stephanie Dubois - CBC News - Posted: Aug 01, 2022 4:00 AM ET | Last Updated: August 12

REGINA | News

### Cases of Hand Foot and Mouth Disease increasing in Regina daycares: SHA



### New guidelines outline how to diagnose anxiety in children as waitlists for mental health support grow

WENKY LEUNG - HEALTH REPORTER  
PUBLISHED OCTOBER 20, 2022



WATCH | Pediatrician and parent Dr. Ayisha Kurji on health considerations as students head back to school.



Most Saskatchewan students return to classes after a summer break  
CBC Newsroom - Back-to-School

KIDS HEALTH

### Will monkeypox derail the school year? We asked the experts

Monkeypox shouldn't keep parents up at night this back-to-school season, but it's important to be mindful of the risks.

Deleeny Sefferling  
August 26, 2022

Health

### What we know about why some kids are missing routine vaccinations

Health experts say some kids have just 'never caught up' during the COVID-19 pandemic

Stephanie Dubois - CBC News - Posted: Aug 19, 2022 4:00 AM ET | Last Updated: August 19

Dr. Darryl Adamko discusses the challenges of the season and why cases are on the rise.



HEALTH

### Low COVID-19 vaccine uptake in young kids concerning as viruses swirl, doctors say

Teresa Wright - Global News  
Posted October 31, 2022 2:15 pm

Toronto

### Students head into in-person school year with masking questions, hopes of normalcy

Most students resume class on Tuesday or Wednesday

Cassandra Sklarski - The Canadian Press  
Posted: Sep 04, 2022 11:00 AM ET | Last Updated: September 4

CANADA

### Saskatchewan's Chief Medical Health Officer calls for residents to get flu shots

Brody Langer - Global News  
Posted November 15, 2022 2:36 pm - Updated November 16, 2022 8:27 am

SASKATOON | News

### Why you may be seeing yellow 'dust' in Saskatoon



NATIONAL POST

### RSV FAQ: What is RSV? Who is at risk? When should I seek emergency care for my child?

Nov 28, 2022 - 3 days ago - 5 minute read

Saskatchewan

### Sask. government preparing to roll out COVID-19 vaccines for children aged 6 months to 5 years next week

Parents say they are relieved that their younger children will be protected

Laura Scarpelletti - CBC News - Posted: Jul 14, 2022 10:50 AM CT | Last Updated: July 14

Health

### Surge in RSV adds to pediatric hospital pressures. Here's what to do

Symptoms of respiratory syncytial virus resemble those of colds and flu

Amina Zafar - CBC News - Posted: Oct 27, 2022 4:03 PM ET | Last Updated: October 28

HEALTH

### Student absenteeism in Saskatchewan schools, emergency rooms filling

Jeanelle Mandes - Global News  
Posted November 15, 2022 8:31 am



Dr. Athena McConnell | PEDIATRIC INFECTIOUS DISEASES PHYSICIAN

Saskatchewan

### Sask. influenza cases surge 833 per cent in past month including 1 death: report

Report said 73 people in Sask. have died from COVID-19 during same period

CBC - Posted: Nov 25, 2022 8:41 AM CT | Last Updated: November 25

HEALTH

### Almost 2,000 doses of COVID-19 vaccines given to Sask. kids under 5

Brody Langer - Global News  
Posted July 29, 2022 5:10 pm



WATCH | Dr. Ayisha Kurji, University of Saskatchewan Pediatrics Professor

More news stories...

Continued on page 9...

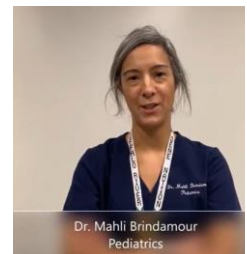
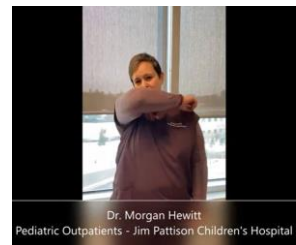
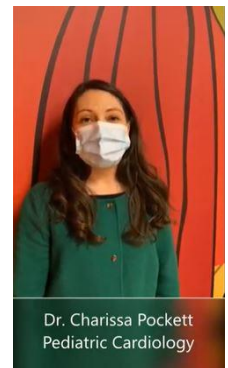
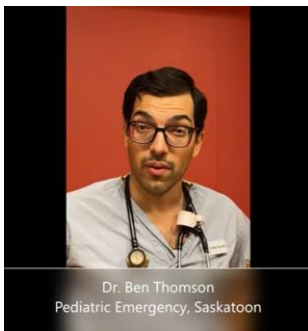
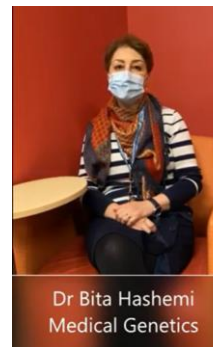
# Publications



Check out the [Department of Pediatrics new Google Scholar Page](#). Here you can find publications from all faculty and trainees from the department

## Childhood Seasonal Illness - Saskatchewan Health Authority

Drs. Matthew Bradshaw, Ben Thompson, and Tanya Holt, Anna Donovan, Keefe Davis, Linda Xiao, Darryl Adamko, Athena McConnell, Kate Moolman, Andrei Harabor, Morgan Hewitt, Mehul Jariwala, Bit Hashemi, Charissa Pockett, and Mahli Brindamour share health information about childhood seasonal illness. This is a [multi-part video presentation](#) produced by the Saskatchewan Health Authority





Pediatrics in the News continued from pg 7

Q & A — Back-to-school COVID questions answered

Story by CBC Kids News • September 2, 2022

Masks, booster shots, long COVID and more

Saskatoon children's hospital grapples with 'explosion' of respiratory illnesses



Q & A — Expert answers your flu and COVID-19 questions

Story by CBC Kids News • October 26, 2022

Mask up, get your flu shot and stay home when sick, says expert

Respiratory season worse than normal in Saskatchewan

Regina / 980 CJME

Lisa Schick

Nov 10, 2022 | 4:34 PM

Dr. Richard Huntsman was recently featured as a guest for the USask Podcast, 'Researchers Under the Scope'. He discusses the use of CBD Oil to Treat Severe Epilepsy in Children.



RESEARCHERS UNDER THE SCOPE

Using CBD Oil to Treat Severe Epilepsy in Children, with Dr. Richard Hunts...

30s

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30



libsyn

Listen to all episodes of [Researchers Under the Scope podcast](#).

The Children's Health Research Trust Fund (CHRTF) was established in 1983 to help raise funds to support child health research at the University of Saskatchewan. As all donated funds are endowed, the CHRTF has continued to grow to become an important part in helping advance research in the Department of Pediatrics. For further information about the CHRTF and to donate: <https://donate.usask.ca/online/chrtf.php>



Our Partners:

The Jim Pattison Children's Hospital has historically provided strong support for child health research in Saskatchewan. The recent \$50 million donation from Jim Pattison allows for a steady stream of revenue to help meet research and programming needs for generations to come. Groundbreaking opportunities for pediatric researchers in Saskatchewan are on the horizon!



Contact us

For more information about The Department of Pediatrics Research, SPRING, or to contribute content to the Department of Pediatrics Research Report, please contact: Tova Dybvig Department of Pediatrics Email:Tova.dybvig@usask.ca