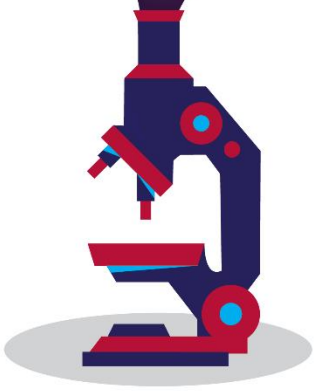
Winner, Best Science Rendezvous Event in Canada, 2019
Voted Best Virtual Science Rendezvous in Canada, 2021

DISCOVER

SCIENCE RENDEZVOUS KINGSTON
MAY 4 – 22, 2022



Queen's University
PRESENTS
SCIENCE RENDEZVOUS KINGSTON

ANNUAL report

THE 2022 LIVE & ON DEMAND EXPO EXPERIENCE

PREPARED BY *SCIENCE RENDEZVOUS KINGSTON* CO-COORDINATORS
Lynda Colgan and Kim Garrett

QUEEN'S UNIVERSITY PRESENTS

SCIENCE RENDEZVOUS KINGSTON 2022

CONTENTS

Queen's University

PRESENTS

SCIENCE RENDEZVOUS KINGSTON

2022 Team

Leadership Team

Dr. Lynda Colgan, Professor Emeritus, Faculty of Education, Queen's
Founder & Coordinator, *Science Rendezvous Kingston*

Kim Garrett
Coordinator, *Science Rendezvous Kingston*

Cheryl Hallam
Creative Director, Hallam Design

Special Collaborators

Dr. Alexander Wright
Connor Stone, Ph.D. Candidate
Department of Physics, Physics Engineering & Astrophysics

Brenda Reed, Head Education Librarian
Faculty of Education, Queen's

Elizabeth Coates, Manager, Programming and Outreach
Kristen LeMay, Librarian, Teen and New Adult Services
Brianne Peters, Librarian, Children's Services
Kingston Frontenac Public Library

Funding

Office of the Vice Principal (Research), Queen's

Mathematics, Science and Technology Education Group
Faculty of Education, Queen's

NSERC PromoScience Supplement (*Science Odyssey)*

Association of Ontario Land Surveyors

IT Support and Registration

Kye Hallam
Sydenham District High School

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Smith School of Business, Queen's

Pete Fowler
Smith School of Business, Queen's

Selena Pacheco
Smith School of Business, Queen's

Erin York
Digital Marketing Coordinator
Faculty of Education, Queen's

May 6-20, 2022

A Science Rendezvous Kingston Renaissance

After a full stop in 2020 and a pivot to virtual offerings in 2021, Science Rendezvous Kingston once again brought Queen's researchers and community members together in-person to share in science-based fun at Leon's Centre and on Tragically Hip Way.



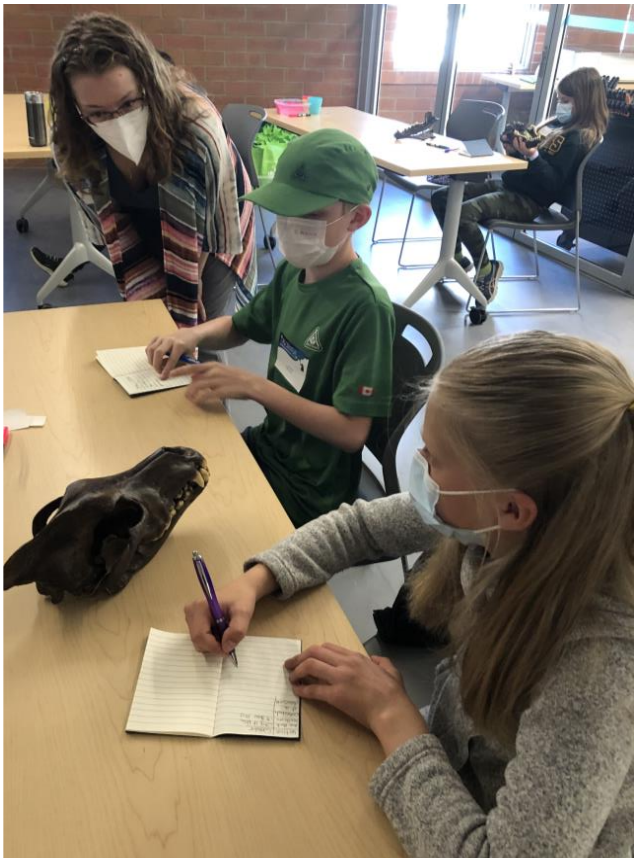
The Program

The goal for the hybrid *Science Rendezvous Kingston* 2022 event was to engage learners of all ages in hands-on learning while preserving the national award-winning aspects of both our 2019 in-person event and the 2021 virtual experience.

On Saturday May 7, 2022, Tragically Hip Way was a-buzz with working beehives, solar telescopes and models, ping pong ball cannons, simulated accident scenes requiring forensic investigation, overflowing tubes of elephant toothpaste and the roaring engine of the **Queen's Baja Dune Buggy**. Leon's Centre boasted everything from skulls of Ice Age mammals like Dire Wolves and Sabre Tooth cats to Spot, the **Ingenuity Lab's** high-tech robot and a back-to-the-future-style rideable **hoverboard** (designed and constructed by **Dr. Alexander Wright, Department of Physics, Physics Engineering and Astronomy**). At the nearby Central Library, children participated in hands-on Pleistocene workshops with scientist, Dr. Lindsey Carmichael while teens learned how to become positive climate change makers with Jasveen Brar from *Youth Climate Lab.* And in City Park, a few blocks away, groups joined **Drs. Fran Bonier** and **Paul Martin** on bird walks through the downtown core—to make the acquaintance of local feathered friends.

This year's virtual events included webinars from researchers including **Queen's Astrophysics PhD Candidate Connor Stone** and **Miller Musuem of Geology paleontologist Calla Carbone,** as well as virtual tours of a robot-intensive dairy farm and a trip 2 km underground to **SNOLAB** where Nobel Laureate, **Dr. Arthur MacDonald**, explained the basics of theoretical physics to kick-off the walk-through. All webinars were recorded and are available *on-demand* for streaming at any time.

STEM ON DEMAND (https://stemygk2022.expofp.com/) allowed those who could not make it to the Leon's Centre on Saturday May 7th or on scheduled webinar days with the opportunity to experience *Science Rendezvous Kingston* from the comfort of their own home or classroom! Downloadable, self-directed activities including book lists, video demonstrations, activity guides (e.g., to make a stethoscope, tetrahedral kite), a geosciences-themed escape room game, and a feature on *Two-Eyed Seeing* and *Indigenous Sky Stories* are but a small sample of 24 rich resources that will be available until 2023!



WORKSHOPS AND WALKABOUTS

After more than two years of pandemic restrictions that included social distancing, masking and a widespread reliance on virtual learning and conferences, *Science Rendezvous Kingston* was eager to return to in-person activities. In response to some continuing hesitancy from presenters and members of the public to participate in large-scale, indoor events, we included opportunities for small groups to engage in limited attendance, pre-registered workshops in both outdoor and carefully selected indoor venues. Each downtown Kingston bird walk attracted people who were interested in meeting their local avian neighbours. The *Ice Age* workshops for children in Gr 4-6 were fully registered. Every child went home with a "swag" bag containing puzzles, STEM activity kits, a museum-quality cast of a Velociraptor talon and a "thank you gift" for their family to further encourage their support of STEM—a copy of the *Inspiring your child to learn and love math* multimedia resource package to extend math learning in informal ways at home and on the go. Members of Kingston's *Youth Climate Council* (an initiative of the Kingston Frontenac Public Library System for secondary school students) participated in a practical leadership and advocacy workshop with Jasveen Brar, an experienced climate and ocean educator. The *Ice Age* and *Climate Policy Jam* workshops were held in large meeting rooms at KFPL's

COMPLEMENTARY READING LISTS

Each year, **Brenda Reed,** Queen's Head Education Librarian, prepares book lists to supplement and complement many of the activities and features at *Science Rendezvous Kingston.* The book lists include recommendations for elementary and high school students as well as general readers. Brenda always supports the community by including lists for French readers and books by Indigenous authors (Canadian, if possible).

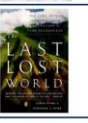
This year, our partners at the **Central Branch of the Kingston Frontenac Library** augmented these lists with special displays of books about STEM for readers of all ages. These books were a huge hit with the students who attended the pre-registered workshops at the branch.

The book lists are shared through social media channels during the ***Science Odyssey*** to keep interest high in our *Science Rendezvous* daily events, in-person or on-line.

And our Kingston Frontenac Public Library partners respond to our posts with information about how to borrow the books from their collections—something that is greatly appreciated by local educators and families.

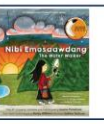
You can view all the 2022 book lists at https://bit.ly/3MYYKsr

Science Rendezvous Reading on the Pleistocene Era

	**Sabertooth Cats,** by Melissa Higgins & Gail Saunders-Smith Published by Capstone, 2015 Ages 4-8 From the publisher: "Seven inch fangs made sabertooth cats a formidable ice age animal. Awesome illustrations accompany carefully leveled text about food, habitat, life cycle, and extinction, bringing sabertooth cats to life like never before."
	**Les géants de l'âge de glace**, by Jack Tite; Eric Marson (trans.) Published by Éditeur Saltimbanque, 2019 Ages 7-10 From the publisher: "Dans ce documentaire, l'auteur-illustrateur Jack Tite nous fait voyager à travers les continents de l'ère glaciaire, à la découverte des premiers humains et de créatures gigantesques comme le mammouth et le tigre à dents de sabre, mais aussi le moins connu megatherium, un paresseux de six mètres, ou encore un varan qui en fait sept."
	**Dire Wolves (Part of the Ice Age Mega Beasts series)** by Sara Gilbert. Published by Creative Company, 2017 Ages 8-12 From the publisher: "Long ago, massive animals roamed the earth. During the last Ice Age, even as glaciers encroached on their homes, some of the beasts survived. Examining fossil remains for clues, scientists have learned how these Ice Age Mega Beasts lived in the harsh climate."
	**What Was the Ice Age?** by Nico Medina & Who HQ & David Groff (ill.) Published by Penguin Workshop, 2017 Ages 8-12 From the publisher: "A mesmerizing overview of the world as it was when glaciers covered the earth and long-extinct creatures like the woolly mammoths and saber-toothed cats battled to survive. Go back 20,000 years ago to a time of much colder global temperatures when glaciers and extensive sheets of ice covered much of our planet."
	**The Last Lost World: Ice Ages, Human Origins, and the Invention of the Pleistocene,** by Lydia V. Pyne & Stephen J. Pyne Published by Penguin Books, 2012 Ages General readers From the publisher: "The Pleistocene is the epoch of geologic time closest to our own. *The Last Lost World* is an inquiry into the conditions that made it, the themes that define it, and the creature that emerged dominant from it."

QUEEN'S UNIVERSITY LIBRARY

Science Rendezvous Reading on Climate Change

	**Nibi Emosaawdang / The Water Walker**, by Joanne Robertson; trans. by Shirley Williams & Isadore Toulouse. Dual language edition: Anishinaabemowin and English Published by Second Story Press, 2019 Ages 5-7 From the publisher: "The story of a determined Ojibwe Grandmother (Nokomis) Josephine-ba Mandamin and her great love for Nibi (water). Nokomis walks to raise awareness of our need to protect Nibi for future generations, and for all life on the planet."
	**Pika Country: Climate Change at the Top of the World,** by Dorothy Hinshaw Patent, Marlo Garnsworthy & Dan Hartman (ill.) Published by Web of Life Children's Books, 2020 Ages 5-9 From the author: "Pikas are fascinating animals that can only survive where it never gets very warm, and our planet is warming up very fast. They provide an example to young people about the dangers to the natural world from Climate Change. The book also points out simple changes people can make in their lives that can help make a difference in the world."
	**How to Change Everything**, by Naomi Klein; adapted by Rebecca Stefoff Published by Atheneum Books for Young Readers, 2021 Ages 9-12 From the publisher: "Young readers will find stories and information that they can use on their journeys to create a better future. A global movement is already underway to combat not only the environmental effects of climate change but also to fight for *climate justice* and make a fair and livable future possible for everyone."
	**Nous sommes tous Greta – Des idées pour changer le monde (agir pour le climat),** by Valentina Giannella Published by Éditions Nathan, 2020 Ages 9-12 From the publisher: "Dans les pas de greta, ce livre explique les causes du réchauffement climatique et donne des idées sur ce qu'on peut faire pour sauver notre planète."
	**Old Enough to Save the Planet,** by Loll Kirby & Adelina Lirius (ill.) Published by Abrams / Magic Cat, 2021 Ages 9-12 From the publisher: "The world is facing a climate crisis like we've never seen before & kids around the world are stepping up to raise awareness and try to save the planet. Meet 12 young activists from around the world who are speaking out & taking action against climate change."

QUEEN'S UNIVERSITY LIBRARY

Webinars

The goal of *Science Rendezvous Kingston* is to highlight the leading-edge STEM research that is being done at Queen's and by other scientists in all domains. By doing so, we aim to encourage young students to see themselves as future researchers and scientists who are on a quest to discover solutions to problems that face our world.

In 2022, we offered four virtual sessions as part of NSERC's *Science Odyssey* program. We are proud to report that attendees tuned in from across the country and around the globe to all four webinars.

To celebrate the International Day of Astronomy on May 7, 2022, **Connor Stone**, a Queen's Ph.D. candidate led a fascinating adventure through the universe using *Stellarium* software.

Carrying on the traditional of *Science Rendezvous Kingston's* focus on paleontology catalyzed by the 2019 visit of *Dippy* the Diplodocus, Queen's research assistant, Calla Carbone took us on a fascinating fossil journey beginning with prospection, collection, preparation, research, and continuing through to display: called from *Discovery to Display: The Work of a Paleontologist.*

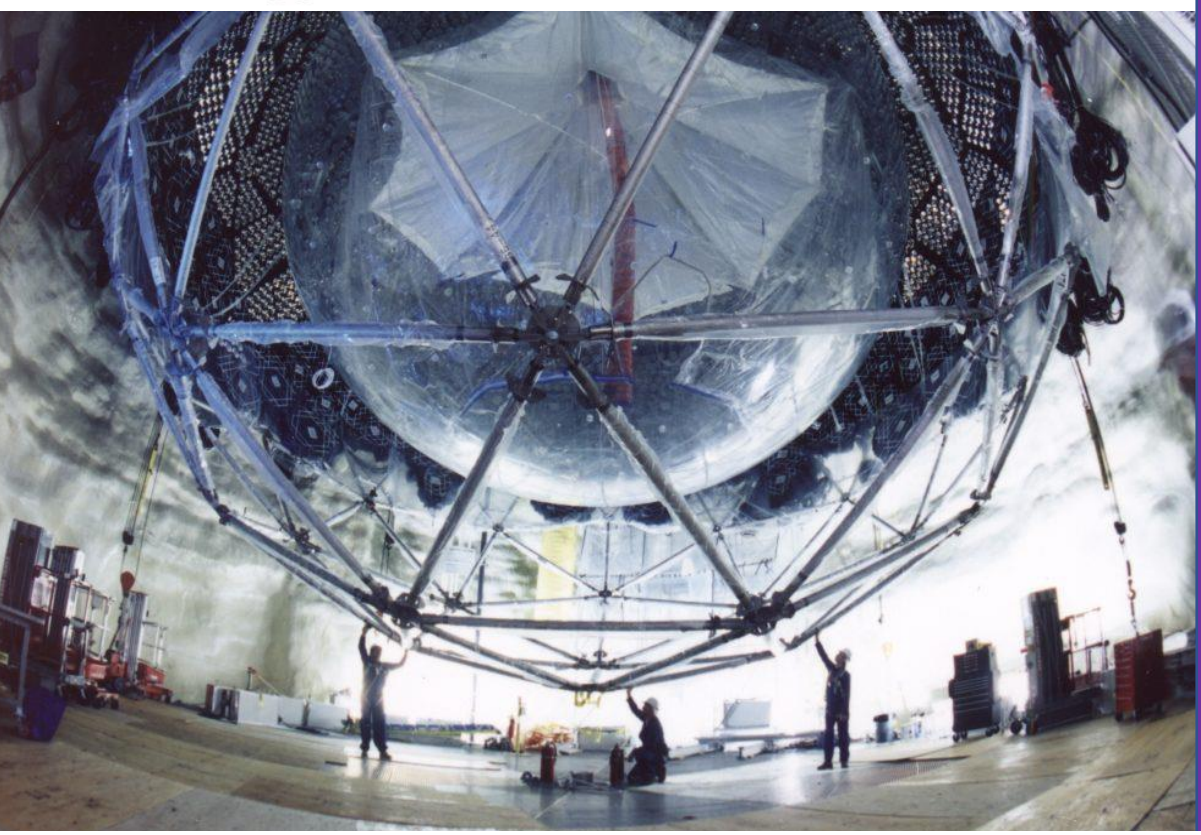
One of our most popular 2022 webinars was *Robotics on the Dairy Farm* by Jason French. Through guided, virtual tours that showcased the role of robots in all aspects of dairy farming, we learned about all the steps that go into making that container of milk or tub of ice cream at your local store. We also saw first-hand how technology is contributing to cow comfort—making cows live longer, happier, healthier lives.

The 2022 "People's Choice Award" for best webinar is awarded to the team who took us deep underground to **SNOLAB**: Nobel Laureate, **Dr. Arthur B. MacDonald, Dr. Erica Caden, Dr. Pietro Giampa, Blaire Flynn** and **Jenna Saffin.** The audience was rapt as we learned about the lab's carwashes and showers, the staging area, machine shop, cryopit, control room and some of the experiments taking place 2 km underground.

For those who missed the opportunity, the tour is available on https://stemygk2022.expofp.com/?virtual-tour-of-snolab and on the SNOLAB website https://www.snolab.ca/facility/virtual-tour/

SNOLAB

Arthur B. McDonald
Canadian Astroparticle Physics Research Institute



https://stemygk2022.expofp.com/

Science Rendezvous Kingston's easy to navigate virtual platform contains a repository of free content prepared by researchers, scientists, Indigenous Elders and museum curators for educators, parents, professionals, students, and STEM enthusiasts of all ages.

You'll find Science Rendezvous Kingston's virtual Expo content to be rich and varied, educational and accessible. There are things to make, videos to watch, books to read, experiments to try, and an app for two single player, mobile games (*The Exploratorium*) that let you explore the fascinating worlds of and people from engineering and physics.

You can join **Dr. Charlie Hindmarsh** from the Queen's Cardiopulmonary Unit (QCPU) and build a stethoscope at your kitchen table using some funnels and balloons, a piece of tubing and two elastic bands. Or you can learn all about X-Rays from **Dr. Elahe Alizadeh**, who is also from the QCPU Edu-Lab.

Dr. Szymon Manecki from SNOLAB and **Drs. Ashlea Kemp, Nahee Park, Alex Wright**, and **Thomas Weisgarber** as well as M.Sc. student **Rayhaneh Dehghani**—all from the Department of Physics, Engineering Physics and Astronomy—taught us everything from how to make a flying carpet to how to make glasses sing!

Queen's *Let's Talk Science* channeled Alexander Graham Bell in their tetrahedral-kite-building workshop and challenged us to fly these amazing and historic kites over the Fort Henry Hill.

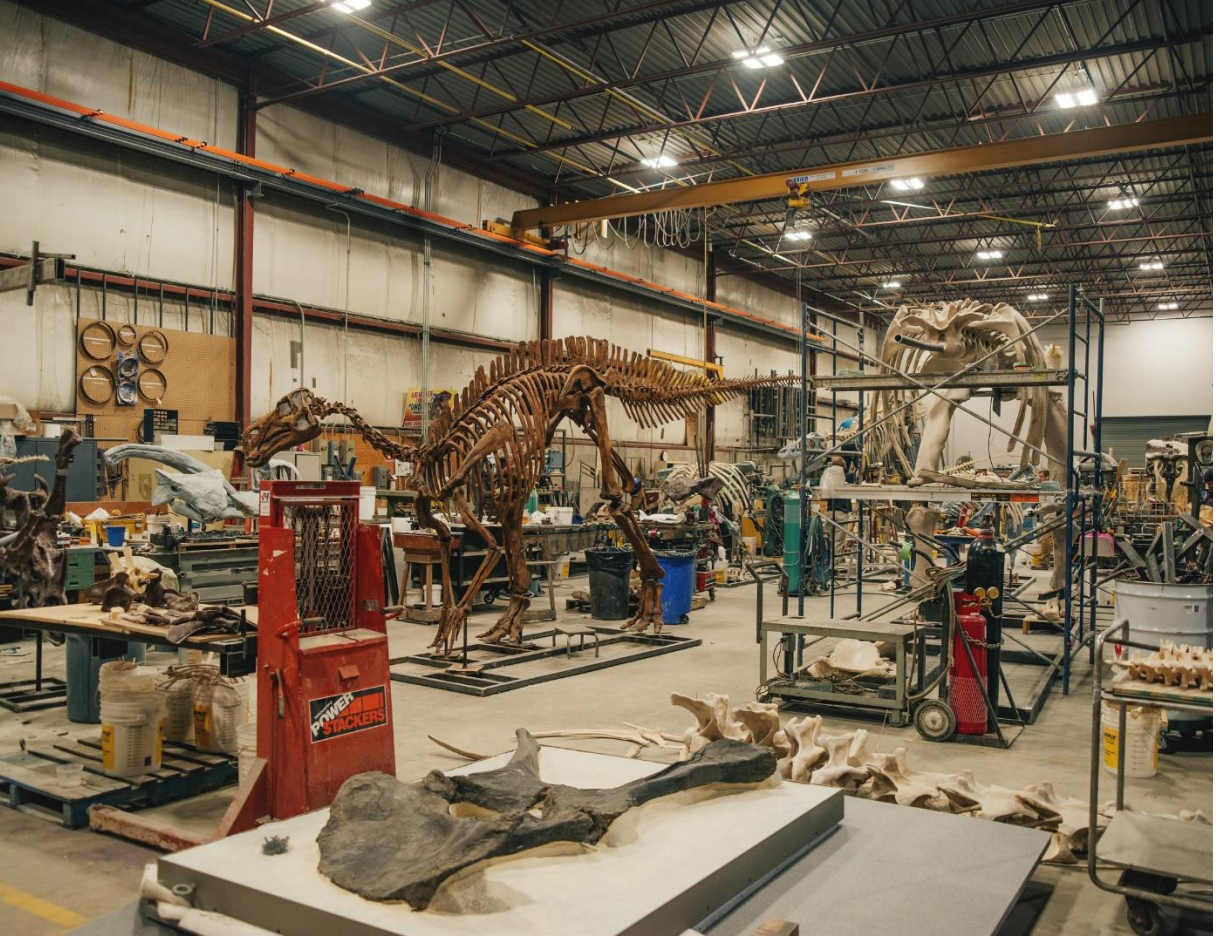
While we know junk food is bad for us, what we didn't know is that the packaging from junk food—like empty soda cans and juice cartons are the "guts" for the working model of a digestive system built from recycled materials. Thanks **Queen's ESU**.

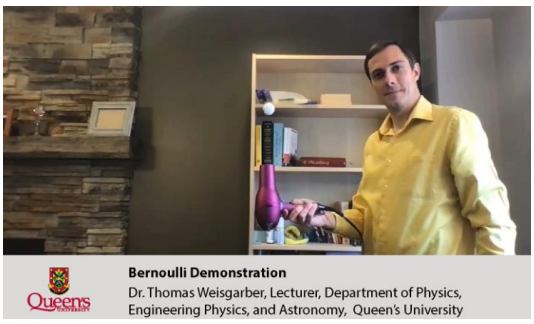
From Indigenous Elders and community members, we learn how to make a medicine bag, a birchbark bracelet and an *Ajagaaq* (a traditional Inuit Game). We also learn about two-eyed seeing and Haudenosaunee Sky Stories.

We can see Spot, the **Ingenuity Lab** robot, run, sit, and stay while the Franka Emika Panda Robotic Arm is hard at work.

Thanks to the **APGO Education Foundation** we can go on a scavenger hunt or take a virtual field trip and outsmart the dragon who has taken over the refuge station.

The Association of Ontario Land Surveyors shares information about the who's, why's, what's, where's and how's of land surveying and the important work done by professionals in this specialized field.





Queen's University PRESENTS SCIENCE RENDEZVOUS KINGSTON

STEM ON DEMAND

Thanks to the numerous individuals, clubs, labs, and organizations/associations that created digital content for *SCIENCE RENDEZVOUS KINGSTON 2022*.

In addition to those featured in the written descriptions, we also acknowledge the contributions of:

PUMPHOUSE HISTORY *in* MOTION

ROYAL ASTRONOMICAL SOCIETY OF CANADA KINGSTON CENTRE

MUSEUM OF HEALTH CARE AT KINGSTON

MacLachlan WOODWORKING MUSEUM

CHILD and ADOLESCENT DEVELOPMENT Queen's University

35 RESEARCH CASTING INTERNATIONAL 1987-2022

QUEEN'S UNIVERSITY BIOLOGICAL STATION

BONIER LAB


KINGSTON

PROCLAMATION

Rediscover Science Rendezvous Kingston Day

May 7, 2022

Whereas *Science Rendezvous Kingston* is back in town! *Science Rendezvous Kingston* is excited once again to bring Queen's researchers and STEM professionals/enthusiasts and community members together in-person to share in science-based fun; and

Whereas *Science Rendezvous Kingston* is also on the world wide web—with webinars and "on-demand" activities available to anyone, anywhere on the globe through the power of technology; and

Whereas *Science Rendezvous Kingston* highlights the leading-edge STEM research that is being done at Queen's, The Royal Military College of Canada and by citizen scientists in all domains; encouraging young students to see themselves as future researchers and scientists who are on a quest to discover solutions to problems that face our world; and

Whereas *Science Rendezvous Kingston* sparks student interest in STEM, provides opportunities to broaden and deepen students' engagement, reinforces scientific concepts and practices introduced during the school day, and promotes an appreciation for and interest in the pursuit of science in school and daily life;

Therefore, I, Mayor Bryan Paterson, on behalf of Kingston City Council, hereby proclaim May 7th, 2022 as "Science Rendezvous Kingston Day" in the City of Kingston.

KINGSTON

Government of Canada | Gouvernement du Canada

Canada

VOLUNTEERS

THANK YOU TO KINGSTON MAYOR BRIAN PATERSON, MP MARK GERRETSEN AND TOWN CRIER, CHRIS WHYMAN FOR ACKNOWLEDGING THE IMPORTANT WORK OF OUR VOLUNTEERS AND WELCOMING OUR VISITORS. YOUR SUPPORT IS GREATLY APPRECIATED.

ALL OF THE LIVE DEMOS AND INTERACTIVE EVENTS ON TRAGICALLY HIP WAY AND AT LEON'S CENTRE AS PART OF *SCIENCE RENDEZVOUS KINGSTON 2022* WERE MADE POSSIBLE BY OVER 200 VOLUNTEERS REPRESENTING STEM DEPARTMENTS AT QUEEN'S UNIVERSITY, PROFESSIONAL AND COMMUNITY ORGANIZATIONS AND LOCAL ELEMENTARY AND SECONDARY SCHOOLS. FROM QUEEN'S RESEARCH CHAIRS AND DEPARTMENT HEADS TO KGH PHYSICIANS, BEEKEEPERS, PALEONTOLOGISTS, GEOLOGISTS, MUSEUM CURATORS, ENGINEERS AND UNDERGRADUATE AS WELL AS GRADUATE STUDENTS, APPROXIMATELY 2200 VISITORS WERE TREATED TO DEMONSTRATIONS, DISPLAYS, HANDS-ON EXPERIMENTS AND EDUCATIONAL SWAG TO TAKE HOME—ALL WITH FUN AND LEARNING IN MIND.

ON BEHALF OF ALL OF US…

THANK YOU FOR INSPIRING, TEACHING, AND MENTORING SO GENEROUSLY AND ENTHUSIASTICALLY!

Queen's University PRESENTS

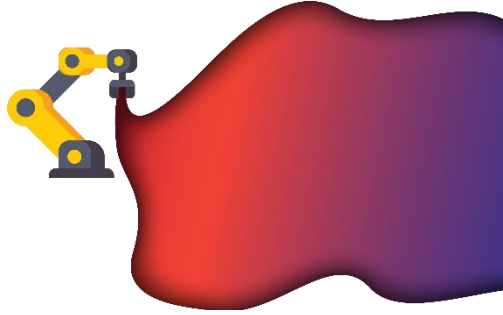
SCIENCE RENDEZVOUS KINGSTON

Live at Leon's Centre and on Tragically Hip Way

Saturday May 7, 2022

10am – 3 pm

Melinda Knox Kayla Dettinger Catarina Chagas	The Art of Research Office of the VP (Research) Office of the VP (University Relations)	
Kaytlin Andrews Cameron Gowthorpe Jack Rossi	Baja SAE Design Team Faculty of Engineering and Applied Science	
Michaela Bertram Liam Carey Jane Ford Hilary Fotheringham Mel Kehoe Hunter Millsap Jane Wood	Queen's University Biological Station Faculty of Arts and Science	QUEEN'S UNIVERSITY BIOLOGICAL STATION
Brooke Ring-Snetsinger Ruaa Al-Qazazi Charlie Hindmarsh Pati Lima Curtis Noordhof Oliver Jones	Cardiopulmonary Unit (QCPU) Queen's School of Medicine	QCPU Queen's CardioPulmonary Unit



Live at Leon's Centre and on Tragically Hip Way

Kiera Liblik Georgia Kersche Braeden Hill Amer Johri Nazaum Johri Salwa Nihal Yvette Chirinian Sonu Varghese Sara Pollanen	Cardiovascular Imaging Network (CINQ) Queen's School of Medicine	Cardiovascular Imaging Network Queen's
Jess Deng Hannah Ramsay Amir Bunyat-Zada Haidy Metwally Marie Boddington Rebecca Chen Mark Aloisio Kristen Harrington Aaron Erlich Neil Grenade Daniel Whalen Giovanni Leite Alireza Tehrani	Chemistry Faculty of Arts and Science Faculty of Engineering and Applied Science	Queen's Graduate Chemistry Society Queen's Chemistry BWRC Queen's Chemical Engineering Engineering Chemistry Club THE HOWE LAB
Robert Colautti Damian Bourne Maria Gomez Quijano Logan Wisteard	Colautti Lab Queen's Department of Biology	myLyme

Live at Leon's Centre and on Tragically Hip Way

Queen's University

Scott Compeau Helen Parfitt Cressana Williams-Massey Grace Anderson David Chase Audrey Frappier Sydney Gardner Caroline Pundsack Michael Reynolds Andrea Stachow Lauren Windover	Connections Engineering Outreach Faculty of Engineering and Applied Science	Connections QUEEN'S ENGINEERING EXPERIENCE PROGRAM
Elise Laende Vajra Keller Rbert Kanko Jeremy Outerleys Anastasija Mihic Kayla Lee	Human Mobility Research Lab Queen's Health Sciences	Human Mobility Research Centre
Ramzi Asfour Joshua Marshall Kate Cowperthwaite Keyvan Hastrudi-Zaad Amy Wu Matt Pan	Ingenuity Labs Research Institute Faculty of Engineering and Applied Science	Ingenuity Labs
Catherine Wu Colton Barr Laura Connolly Dilakshan Srikanthan Aleysha Syeda	Laboratory for Percutaneous Surgery Queen's School of Computing	perk
Yilda Boukhtuchen Amanda Rigg	*Let's Talk Science (Queen's)*	let's talk science
Gordon Bardell Calla Carbone Danielle Fitzgerald Linda Tsuji	Miller Museum of Geology Faculty of Engineering and Applied Science	Geological Sciences and Geological Engineering Miller Museum of Geology

Live at Leon's Centre and on Tragically Hip Way

Connor Stone Nikhil Arora Mayukh Bagchi Akanksha Bij Lawrence Faria Angelo Hollett Jonathan Hucker Raj Patel Sarah Sadavoy Karanpreet Singh Felix Thiel Jennifer Low Benjamin Tam Nahee Park Alex Wright Rob Knoebel Mark Richardson CJ Woodford Ashlea Kemp Emma Ellingwood Szymon Manecki Julianna Manecka Brian Krar Jamie Grov Serena Riccetto Sabrina Cheng Rayhaneh Dehghani	Department of Physics, Physics Engineering and Astronomy MacDonald Institute Queen's Observatory SNOLAB	SNOLAB INSTITUTE OF PARTICLE PHYSICS Queen's University Department of Physics, Engineering Physics & Astronomy
Camden Delagran Makayla Dewit Jazmin Eadie Brooke Hilton Valeria Khudiakova Michele Morningstar Blake Noyes Mark Payumo	Department of Psychology Queen's Faculty of Arts and Science	CHILD and ADOLESCENT DEVELOPMENT Queen's University
Emily Lind Zach Elliz	Faculty of Engineering and Applied Science	SCIENCE Quest

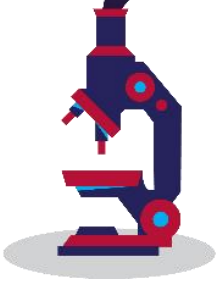
Live at Leon's Centre and on Tragically Hip Way

Michael Rainbow Erin Lee Anja Behling Quinn Yetman Annabel Vrba Kaito Lee Hannah Gamelin	Skeletal Observation Laboratory Department of Mechanical and Materials Engineering Faculty of Engineering and Applied Science	
	Queen's Space Engineering Team (QSET) Faculty of Engineering and Applied Science	

Thank you!

Professional Associations and Organizations, School Groups & Special Interest Clubs

Citizen Scientists

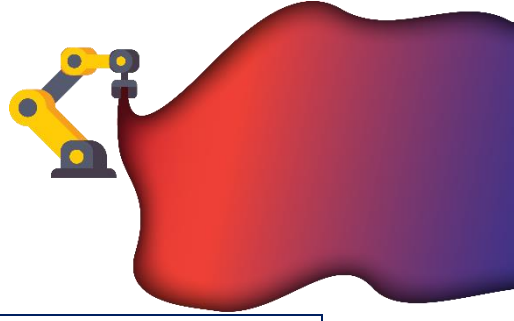


Thank you!

Deana Schwarz Lesley Hymers Veronica Klassen	Association of Professional Geoscientists of Ontario	APGO
Keely Maddock Alex McLean Abbey Bechard Elise Zhou Lesley Hymers Veronica Klassen	City of Kingston Cultural Services KINGSTON	PUMPHOUSE HISTORY in MOTION MacLachlan WOODWORKING MUSEUM
Walt Sepic	Firefly Outdoor and Environmental Education	Firefly ADVENTURES

Professional Associations and Organizations, School Groups & Special Interest Clubs

Citizen Scientists



Tom Ellison Heather Turley Joshua Dickie Roxanne Garwood Theresa Jones Angie Murphy Elena Baker Riley MacKinnon Katie Teepell	Kingstown School	KING'S TOWN SCHOOL
Dana Salsbury Quang Bui Cheryl Anderson Erika Lamon-Nolet Caylee Ortiz	Kingston Frontenac Public Library	Information inspiring imagination KINGSTON FRONTENAC PUBLIC LIBRARY YOUR PUBLIC LIBRARY
Vanessa Gerasimow Bryan McMillan Clem Nesanayagam Carla Steacy Ashley Jackson Kate Vanderlaan Maddy Goedman Ramses Morales	Kingston Police	SERVING OUR COMMUNITY KINGSTON POLICE
Alexandra Pedersen Andy Bryson Bill Lake Suzanne Angle Jasper Lyon Wicke Abi Lyon Wicke Brendan Goff Nancy Cole Jutta Daverne Ryan Benvenuti Quang Bui Cheryl Anderson Erika Lamon-Nolet Caylee Ortiz	Limestone Beekeepers Guild	LIMESTONE BEEKEEPERS' GUILD
Christina Klein Brian Surgenor Alex Reydman Sharma Siddhartha	Professional Engineers of Ontario (Kingston Branch)	Professional Engineers Ontario Kingston Chapter

Professional Associations and Organizations, School Groups & Special Interest Clubs

Citizen Scientists

Peter May Deanna Way Amber Favreau Brian Ross	Research Casting International	35 RESEARCH CASTING INTERNATIONAL 1987-2022
Hank Bartlett Laurie Graham Devin Graham-Ancsin Kim Hay Kevin Kell Rick Wagner Quang Bui Erika Lamon-Nolet Caylee Ortiz	Royal Astronomical Society Kingston Centre	ROYAL ASTRONOMICAL SOCIETY OF CANADA · KINGSTON CENTRE · CVO DVCIT VRANIA

STEMygk BY THE NUMBERS

~ **2200** attendees in Leon's Centre and on Tragically Hip Way

~ **200** volunteers (Faculty, Grad/Undergrad/Secondary School students)

~ **120 000** Twitter Impressions May 1 – 20, 2022

~ **3 000** people reached daily on Facebook May 1 – 20, 2022

~ **3 400** visitors to ExpoFP virtual repository

~ **297** Eventbrite Webinar registrations (~ 77% were educators representing ~ **6000** students)

#1 subscribed webinar was **Tour of SNOLAB**

***Ice Age Workshops* for children FULLY REGISTERED**

Virtual attendees from every province in the country plus international participants from Australia, India, Ireland, Sweden, USA and United Kingdom.

Most popular STEM ON DEMAND resources (May 6-20): *Association of Ontario Land Surveyors; Queen's Child and Adolescent Research Group; Queen's Ingenuity Labs; Queen's Education Library;* and *Queen's Department of Physics, Physics Engineering and Astronomy.*

MUSEUM IN THE CLASSROOM: WORKSHOP FOR EDUCATORS

May 12 | 3:30 - 5:00 PM

LINDSEY CARMICHAEL, Ph.D.
Scientist, Children's Author, Speaker

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NSERC CRSNG PromoScience

Queen's University FACULTY OF EDUCATION

35 RESEARCH CASTING INTERNATIONAL 1987-2022

Queen's University FACULTY OF ENGINEERING AND APPLIED SCIENCE
Geological Sciences and Geological Engineering
Miller Museum of Geology

Carleton UNIVERSITY

LEARNING WITH DINOSAURS: A GATEWAY TO MULTIDISCIPLINARY STEM LEARNING

After some delays due to the global pandemic, the first installment of Dr. Colgan's NSERC PromoScience project—multidisciplinary teaching kits for elementary and secondary students, was launched at *Science Rendezvous Kingston* in two ways—as a virtual workshop for educators and as a hand-on display at Leon's Centre.

The focus of the first two kits was on the Canadian giants who walked the Earth during the Pleistocene Era—beavers the size of bears and sloths the size of giraffes, to mammoths and mastodons and saber-toothed cats—creatures far larger — and stranger — than any living here today. To the people who lived alongside them, the Pleistocene megafauna represented danger and survival all in one hairy package. But then something happened: the Ice Age ended, and 38 different types of mega-mammals went extinct. What happened is clear—why has been hotly debated by scientists and the media alike!

Through the Pleistocene Teaching Kits, written by Dr. Lindsey Carmichael in consultation with paleontologists, Drs. Linda Tsuji (Queen's) and Michael Ryan (Carleton), and supplemented by fossil casts and 3D scans by Peter May, President of Research Casting International, the teaching kits introduce the fascinating extinct creatures of the Ice Age, explore the latest thinking on why they disappeared, and apply these lessons to urgent conservation issues facing the natural world today.

The physical kits are packed in large penguin cases that contain all the specimens, comprehensive lesson plans and ancillary resources (posters, magnifying glasses, books, blackline masters) required by educators to teach the units in their classrooms. They are available for loan at no cost through the Education Library Teacher Resource Centre or The Miller Museum of Geology at Queen's.

The museum-quality kits are also available digitally and feature interactive 3D scans of skulls, mandibles, teeth, and feet. **THE PLEISTOCENE:** USING ICE AGE MAMMALS TO EXPLORE CLIMATE, HABITAT, AND EXTINCTION ***(Best for Grades 4-7)*** can be accessed using this link: **https://bit.ly/3NLnzZU** The teaching package for Grades 8-12, **CONSERVATION PALAEONTOLOGY:** USING ICE AGE MAMMALS TO EXPLORE CLIMATE CHANGE AND EXTINCTION is available using this link: **https://bit.ly/3wXPEYd**

Haudenosaunee Sky Stories

Connor Stone, Ph.D. Candidate, Astronomy, Queen's
Lindsay ((Kawennenhá:wi) Brant, Educational Developer, Indigenous Pedagogies and Ways of Knowing
Liv (Kanyen'kehá:ka) Rondeau, LDSB Elementary Indigenous Student Support & Engagement Teacher
Jackson Pind, Post-Doctoral Fellow, Faculty of Education, Queen's

In 2021, Queen's Ph.D. Astronomy Candidate, **Connor Stone** presented a "standing room only" webinar about *Stellarium*, a free, open-source software tool that transforms a computer monitor into a personal planetarium. Connor set the sky to that around the Kingston, Ontario area and pointed out familiar Greek and Roman constellations such as Orion, The Big Dipper and Ursa Minor (the Little Dipper).

Then Connor changed the sky view to that over the south Pacific Ocean—the same one seen by ancient Polynesians and explained how Indigenous Hawaiian sailors used clues about position, direction, and distance from the stars, sun, and moon to navigate. Connor told participants about three stars that comprise the Navigator's Triangle: *Deneb*, in Cygnus the Swan; *Altair*, in Aquilla the Eagle and *Vega*, in Lyra.

Connor spoke of the ways in which various cultures used their own regional legends based on local plants, animals and environments to find patterns and project shapes onto the stars. For example, the *Big Dipper* is known by some groups as the wagon or plough, while Pleiades is known to some as "The Seven Sisters."

Participant interest in global variations about how cultures have named visible constellations, led to Connor taking the lead in building a collection of local ***Haudenosaunee Star Stories*** with the assistance of Lindsay, Liv and Jackson. With special ***Science Odyssey*** funding from an **NSERC PromoScience supplement**, *Science Rendezvous Kingston* was able to include an extensive interview with Jackson about *two-eyed seeing*, defined by Mi'kmaw Elder Albert Marshall as "learning to see from one eye with the strengths of Indigenous knowledges and ways of knowing, and from the other eye with the strengths of mainstream knowledges and ways of knowing, and to use both these eyes together, for the benefit of all." Liv and Lindsay, through collaboration with Kanyen'kehá:ka Elders and community members in the Tyendinaga area, shared stories including the Mohawk legend about the origin of the *Big Dipper* constellation.

See *Haudenosaunee Star Stories* at https://stemygk2022.expofp.com/

DISCOVER

SCIENCE RENDEZVOUS KINGSTON

MAY 4 – 22, 2022

Queen's University PRESENTS Science Rendezvous Kingston

Thank you!