

Manitoba Schools Science Symposium



April 20-23, 2023

University of Manitoba

Max Bell Centre

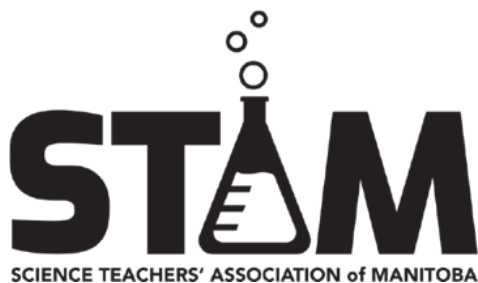
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MSSS 2023

April 20-23, 2023
University of Manitoba
Max Bell Centre

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Use the hashtag: **#MSSS2023**



Manitoba Schools Science Symposium



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2023

Schedule of events

THURSDAY
APRIL 20

4:00 pm - 8:00 pm Registration, Project Set-up, & Safety Check

FRIDAY
APRIL 21

9:15 am - 9:45 am Opening Ceremonies

10:00 am - 12:00 pm Science Activities & Presentations for all students participating in the Symposium

ELEMENTARY (GRADES 4-6)
Sponsored by Richardson Foundation

Students will remain in Max Bell Centre, where they will participate in various science activities

SECONDARY (GRADES 7-12)

Students will remain in Max Bell Centre, where they will participate in various science activities

12:00 pm - 1:00 pm Lunch: Max Bell Centre or University Centre
Bring a lunch, limited facilities available

1:00 pm - 3:00 pm Science Activities & Presentations Continued

ELEMENTARY (GRADES 4-6)

Return to activity location in Max Bell Centre

SECONDARY (GRADES 7-12)

Meet in Max Bell Centre

SATURDAY
APRIL 22

JUDGING

9:00 am - 12:00
pm

Invent an Alien Judging

9:00 am - 12:00
pm

Judging (All Grades)
Medal and Special Awards Judging

12:00 pm - 1:00
pm

Lunch
*Bring a lunch, limited facilities available
(Elementary students will be dismissed at noon.)*

1:00 pm - 4:00 pm

Judging (Junior, Intermediate and
Senior)

3:00 pm - 4:00 pm

Invent an Alien Awards (meet at 2:45pm at Max Bell)
Invent an Alien project take down after 4pm

SUNDAY
APRIL 23

AWARDS

9:00 am - 11:00 am

Public viewing of projects
Max Bell Centre

11:00 am -
12:00 pm

Elementary Awards (Grades 4 - 6)
Junior Awards (Grades 7-8)
Intermediate & Senior Awards (Grades 9-12)

1:00 pm - 2:00 pm

Major Awards and Closing Ceremonies

2:00 p.m.
3:00 p.m.

Take down and Project Removal

FRIDAY ACTIVITIES

ELEMENTARY: GRADES 4 - 6

Interactive Science Activities

Participate in two science challenges - Students are requested to bring their own pencils and scissors.

SECONDARY: GRADES 7 - 12

MSSS Science Activities

Participate in presentations and activities at the Max Bell Centre



SCHOOL TOURS!

New Next Year! 2024! Young Innovators Science Program:

Schools are invited to sign up for an engaging experience for their Grades 3-8 students, starting next year! .Tours will take place on the Friday morning of the fair dates at Max Bell Centre. Space is limited to 2 schools per year. A complete teacher package is included with self guided follow-up activities for classes after the visit. Please email msss.sc.projects@gmail.com to register. (First sign-up, first come basis) **Deadline: March 22, 2024**



\$5,000 ENTRANCE SCHOLARSHIPS

**FOR GOLD MEDAL WINNERS (SENIOR PROJECTS)
AT CANADA-WIDE SCIENCE FAIR... AND A SUMMER JOB TOO!**

The Office of the Vice-President (Research and International) at the University of Manitoba is offering a total of 20 renewable* entrance scholarships to undergraduate students who:

- have been awarded a Gold Medal for a senior project at Youth Science Canada's Canada-Wide Science Fair within the previous two years
- qualify for admission to University 1 or any direct entry program
- subsequently enrol full-time (minimum 24 credit hours) in University 1 or any direct entry program

Those who accept the University of Manitoba Entrance Scholarships are offered an undergraduate research internship to work with scientists and take part in important scientific discoveries during the summer preceding their first year of studies in an undergraduate program at the University of Manitoba. The recipient will earn approximately \$3,000 as a research assistant to work with one of the world-class professors.

*This entrance scholarship is renewable at the same value in the second year of study if the recipient meets the eligibility criteria.

umanitoba.ca/research



**UNIVERSITY
OF MANITOBA**

Scholarship applications for University of Manitoba
are available through our website.

SCHOLARSHIPS 2023

CURRENT GRADE 12 STUDENTS

The University of Manitoba offers THREE entrance scholarships valued at \$700.00 each (any faculty) and ONE Faculty of Science scholarship valued at \$750.00 to students who have enrolled in their first year of study at the University of Manitoba. Selection is conducted by the MSSS Scholarship Committee and the names of the four winners are forwarded to the Financial Awards Office at the University of Manitoba.

Students in Grade 12 who are interested in applying for these scholarships should go to the Info Booth during MSSS for further details or contact the MSSS Scholarship Committee Chair at:

special_awards@msss.mb.ca

The application form is available on our website at:

www.msss.mb.ca

To Apply for Scholarships:

- Student must have presented an excellent project at the Manitoba Schools Science Symposium in the spring of the year in which you plan to enter a University or Community College of your choice
- Student must include a copy of your acceptance letter to the University or Community College with your application for scholarship
- Student must have graduated from high school with academic standing and must include a copy of your grade 12 final mark as selection is based on final grade 12 standing as well as performance at MSSS.
- Please be certain to include your telephone number or a contact where you can be reached.

DEADLINE for applications is August 31.

20
22

CANADA-WIDE REPRESENTATIVES

Keerthan Kamala Krishnamoorthy

"Using Deep Learning to Identify Harmful Microorganisms in Drinking Water"

Ft Richmond Collegiate

Excellence Award—Senior Gold

Challenge Award—Digital Technology

Marissa Magsino

"Behavioral Modification of Tenebrio Molitor by Toxins to Maximize the Biodegradation of Polystyrene"

St Mary's Academy

Zachary Ireland

"Quantifying The Likelihood of Neuron Absorption Utilizing Radioactive Capture Cross-sections"

Maples Collegiate

Excellence Award—Intermediate Silver

Canadian Society for Clinical Chemistry Award

Armandeep Dhanoa

"Fabrication of Micro-Optic-Ring-Electrodes and Their Application on Biological Samples"

Maples MET School

Excellence Award—Intermediate Bronze

Anantjot Khosa

"Fabrication of Electrodes to Detect Cytochrome C Oxidase Deficiency"

Maples Collegiate

Excellence Award—Intermediate Bronze

Nathaniel Martin

"To Mask or Not Mask? Why is That Even a Question?"

Grant Park High School

Excellence Award—Junior Bronze

Mohammad Pasha Khoshkebari & Jason Yin

"Enhanced Mobility Mechanical Assistance System: Reducing Overexertion Injuries in the Manual Workforce"

Vincent Massey Collegiate and Fort Richmond Collegiate

Liam Driedger

"Grasping at Straws: Do Straws Actually Compost?"

Green Valley School

Aieshini Udumullage

"Bacteriophages: A Possible Solution for Combating Antibiotic-Resistant Bacteria"

Fort Richmond Collegiate

Congratulations to Keerthan Kamala Krishnamoorthy for being selected to Team Canada, ISEF 2023!



OTTAWA, March 19, 2023 – A group of eight high school students will represent Canada at the world's most prestigious youth STEM project competition, the 2023 **Regeneron International Science and Engineering Fair**, from May 14 to 19 in Dallas, Texas. The students were selected by a panel of STEM professionals from across the country based on the level of ingenuity, critical thinking, scientific excellence, and communication skill in developing their STEM project.

"The quality of these projects and the calibre of these students is truly remarkable," says Reni Barlow, executive director of Youth Science Canada, the national charitable organization behind Team Canada-ISEF since 1995. "Team Canada will be competing against the best students from more than 80 countries. I encourage everyone to support these young scientists by learning more about their projects and speaking of the value STEM-based projects have inside and outside of school, to children and teens."

Team Canada-ISEF 2023 comprises (left to right and top to bottom in photo):

Cindy Cheng – Waterloo, Ontario *Detecting hypoxia through the non-invasive monitoring of sweat lactate and tissue oxygenation*

Aditya Dewan – Mississauga, Ontario *SPRKD: Effective Knowledge Distillation for Deep Neural Networks via Saddle Region Approximation*

Max Du – Calgary, Alberta *A Novel Pre-Hospital Indoor Rescue Drone*

Keerthan Kamala Krishnamoorthy – Winnipeg, Manitoba *Detection of Harmful Microorganisms in Drinking Water using Deep Learning*

Krish Modi – Sarnia, Ontario *Pee Xylophone: A Novel Non-Invasive System to Measure Bladder Pressure*

Annabelle Rayson – Sarnia, Ontario *Plankton Wars: An Innovative Analysis of Daphnia Genotype Biomanipulation for Algae Bloom Prevention*

Thomas Yang – Toronto, Ontario *Seeing Cells without a Lens: Compact 3D Digital Lensless Holographic Microscopy for Wide-field Imaging*

Tara Zhan – Vancouver, British Columbia *Hemistride: Design of a Low-Cost and Backdrivable Lower-Limb Exoskeleton for Hemiplegic Patients*

[YSC reveals Team Canada-ISEF 2023 - Youth Science Canada | Youth Science Canada](#)

MAJOR AWARDS

AT A GLANCE

TOP BIOLOGICAL AND PHYSICAL PROJECTS				
	Senior Grades 11 & 12	Intermediate Grades 9 & 10	Junior Grades 7 & 8	Elementary Grades 4 - 6
BEST OVERALL	Cash & Plaque	Cash & Plaque	Cash & Plaque	Cash & Plaque
	<i>Sponsored by</i> DOCTORS MANITOBA			
BEST PHYSICAL	Cash & Plaque	Cash & Plaque	Cash & Plaque	Cash & Plaque
	<i>Sponsored by</i> MULTI-MATERIAL STEWARDSHIP MANITOBA			
BEST BIOLOGICAL	Cash & Plaque	Cash & Plaque	Cash & Plaque	Cash & Plaque
	<i>Sponsored by</i> UNIVERSITY OF MANITOBA			

**Some might see a
young scientist.**

**We see a future
physician.**

Doctors Manitoba congratulates
this year's MSSS participants. Your
passion for inquiry and discovery is
inspiring. There are countless career
opportunities for aspiring young
scientists. Medicine is a great choice!

**Doctors
Manitoba**

**Supporting physicians
and medical learners,
every step of the way.**

SPECIAL AWARDS

FOOD AND BEVERAGE MANITOBA
LEVEL: All levels

ADHIR BAGCHI MEMORIAL AWARD FOR EXCELLENCE IN HEALTH SCIENCES
LEVEL: Intermediate

CANADIAN INSTITUTE OF FOOD SCIENCE & TECHNOLOGY AWARD
LEVELS: Junior, Intermediate & Senior

MANITOBA ASSOCIATION OF HOME ECONOMISTS (MAHE) SCIENCE AWARD
LEVELS: All levels

ENGINEERS & GEOSCIENTISTS OF MANITOBA
LEVELS: All levels

EXCELDOR COOPERATIVE
LEVELS: All levels

WISE KID-NETIC ENERGY AWARD
Level: All levels

ASPIRE BAKERIES AWARD
LEVELS: All Levels

FORT WHYTE ALIVE AWARD
LEVELS: All levels

WOMEN'S HEALTH RESEARCH FOUNDATION OF CANADA AWARDS
LEVELS: All levels

MID CANADA AOAC AWARD
LEVELS: Intermediate & Senior

ROYAL ASTRONOMICAL SOCIETY OF CANADA (RASC) - WINNIPEG CHAPTER
LEVELS: All levels

MAPLE LEAF CONSTRUCTION AWARD
LEVELS: Elementary & Junior

DISCLAIMER: ALL AWARDS ARE AT THE DISCRETION OF THE SPONSOR

SPECIAL AWARDS ARE PROVIDED AND JUDGED BY ORGANIZATIONS WHO GIVE AWARDS FOR
PROJECTS RELATED TO THEIR UNIQUE INTERESTS

UNIVERSITY OF WINNIPEG MATHEMATICS AND STATISTICS AWARD

Level: All levels

UNIVERSITY OF MANITOBA FOOD AND NUTRITIONAL SCIENCES AWARD

LEVEL: Senior

U OF MANITOBA DEPARTMENT OF FOOD AND NUTRITIONAL SCIENCES AWARD

Levels: All levels

LABELS UNLIMITED AWARD

LEVELS: All Levels

PEAK OF THE MARKET AWARD

LEVELS: All levels

CANADIAN METEOROLOGICAL AND OCEANOGRAPHIC SOCIETY AWARD

LEVELS: All levels

MANITOBA ASSOCIATION FOR MEDICAL LABORATORY SCIENCES AWARD

LEVELS: All levels

CANADA COMPOUND WESTERN LIMITED AWARD

LEVELS: All levels

FOOD DEVELOPMENT CENTRE AWARD

LEVELS: All levels

SANI—MARC AWARD

LEVELS: All levels

FOOD AND BEVERAGE MANITOBA SPECIAL AWARD

LEVELS: All levels

DISCLAIMER: ALL AWARDS ARE AT THE DISCRETION OF THE SPONSOR

SPECIAL AWARDS

FRESHWATER FISH MARKETING CORPORATION (FFMC)

LEVELS: All levels

SMITH'S QUALITY MEATS AWARD

LEVELS: All levels

RICHARDSON CENTRE FOR FUNCTIONAL FOODS AND NUTRACEUTICALS AWARD

LEVELS: All levels

RICHARDSON MILLING AWARD

LEVELS: All levels

LAKE WINIPEG RESEARCH CONSORTIUM WATER AWARD

LEVELS: Junior, Intermediate & Senior

INNOVATION AWARD FOR TECHNOLOGY ADVANCEMENT sponsored by IEEE

Levels: Intermediate

WINNIPEG SECTION

AQUA I LASER SPECIAL AWARD sponsored by AQUA I LASER

Levels: All levels

DISCLAIMER: ALL AWARDS ARE AT THE DISCRETION OF THE SPONSOR



COMPETITION GUIDELINES

PROJECT TYPE:

There are three kinds of projects

1. Research/Descriptions—are descriptive only but involve scientific discipline in the collection and presentation of phenomena.
2. Experiments—hypothesis, collection of data, analysis and conclusions.
3. Innovation—goes a step further and leads to new discoveries and even new products.

JUDGING PROCESS:

The judging process is similar for all three project types. The following is a list of basic elements judges will look for:

- Originality of the Project
- Scientific Thought
- Clarity of Presentation
- Thoroughness of Research
- Project Summary - Each entry from Grades 7-12 is required to submit a Project Board , which is the online presentation of a project using ProjectBoard*.
*This is a requirement for eligibility to CWSF.
- Students will be interviewed by three or more judges and should be prepared to make a brief presentation and answer questions about their projects.

ORAL PRESENTATION:

- The most important thing you should know is that you have approximately seven to ten minutes to explain the entire project. Some students don't expect this and end up forgetting to explain the major details. This can be consequential to your judging.
- Another significant point is to know your topic. The judge will be determining how much you know. It is beneficial to prepare answers to questions you think the judge might ask. This way, you won't be confronted with questions you can't answer.
- Once you have prepared your speech, it is worthwhile to practice in front of a mirror, your family, or a friend. This rehearsal helps to relieve nervousness when you are actually being judged. If you have had practice, you will be more comfortable with your speech and you will make fewer, if any, mistakes.
- Since you have put a lot of time and effort into your project, it is important to take some time for preparations. It will help considerably because no matter how good your project is, the judging is a critical part of the competition.

FURTHER INFORMATION:

Copies of judging forms can be found on our website:

[Judging | Manitoba Schools Science Symposium \(msss.mb.ca\)](http://msss.mb.ca)



Frequently Asked Questions

Where can I park?

Never park in a loading zone, reserved spots, or anywhere there is a no parking sign.

Weekdays: Pay to park until 4:30 pm

Evenings and Weekends: Parking is free

Where can I eat?

Most University businesses will be closed, so it is crucial you bring a lunch to MSSS. We ask that your lunch be as allergy friendly as possible (ie. no nuts). Students are expected to remain in the Max Bell Centre unless they are leaving for lunch with a parent or guardian.

When can I leave on Judging day?

Elementary students (grades 4—6) can leave at noon after the morning judging is completed (please wait for a formal announcement before leaving). All other students must be prepared to stay until 4:00pm. Students will be dismissed throughout the afternoon as categories are completed.

How often will I be judged?

You will be judged at least twice on Saturday by a project judge. You may also be judged by special award judges. If you have not been judged by 11 AM, please go to the info booth for assistance.

*If you need anything during MSSS
the Info Booth is the place to go!*

BOARD OF DIRECTORS

The Board of Directors of MSSS Incorporated sets policy for MSSS events

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Lucy Rocha
St Lawrence

Directors

Rudy Subedar


John Jack
Past President

Katherine Li

John Kozelko Tina Hellmuth Alexandra Kuzyk




The Manitoba Government is proud to support the Manitoba Schools Science Symposium. Thank you to the Board, staff, teachers and parents for your work in bringing out the best in our young scientific minds.



**Keep Your
Ion the
Prize**

The Richardson Foundation is a proud sponsor of the 2023 Manitoba Schools Science Symposium as part of our mandate to support education and youth initiatives in our community.

 **RICHARDSON
FOUNDATION**

together.
Creating the future, one connection at a time.

ON BEHALF OF:
JAMES RICHARDSON & SONS, LIMITED
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PLANNING COMMITTEE

Planning Committee of MSSS 2023 implements policy for MSSS events

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ASSISTANT TO THE CHAIR

Katherine Li

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Alastair Komus

MEETING ROOM FACILITIES
Rudy Subedar

INVENT AN ALIEN
Tina Hellmuth

MAIN AWARDS

John Kozelko
Iqra Tariq

SPECIAL AWARDS/
SCHOLARSHIPS
Tooba Razi
Chelsea Zhu

DISPLAYS AND
EXHIBITS
Kamran Zahid
Guneet Uppal

FRIDAY ACTIVITIES (ELEM)

John Kozelko
Vanessa Shulz

FRIDAY ACTIVITIES (GR 7-12)

Vanessa Shulz
Andrika Tittenberger

SAFETY AND ETHICS
Rohan Sethi

SOCIAL MEDIA
Iqra Tariq

AWARDS CEREMONIES

Chelsea Zhu
Tooba Razi
Rohan Sethi
Katherine Li

MSSS PROGRAM and SCHOOL
TOURS
Lucy Rocha St Lawrence

ACKNOWLEDGEMENTS

The ongoing support of the major and special awards sponsors is greatly appreciated by the Board of Directors of MSSS. In addition, we would like to express thanks to the following organizations or individuals for their contributions to the success of MSSS:

- **Dr. B. Mario Pinto, University of Manitoba's Vice President (Research and International)**
- **University of Manitoba for the use of their facilities**
- **Volunteer Judges from Manitoba Universities and Colleges and from the local science community, businesses, and industry**
- **All of the VOLUNTEERS who make this event possible**
- **The Winnipeg Free Press for coverage of MSSS**
- **All of this year's Sponsors who helped make MSSS 2023 a Great Success! Your support is important to us!**

website hosting courtesy of



MAJOR AWARDS AND CANADA WIDE SCIENCE FAIR SPONSORS:



Deep Thoughts

Reflecting on My Overall Experience at This Year's Manitoba Schools Science Symposium

As you were working on your project this year, what did you learn about yourself as a researcher?

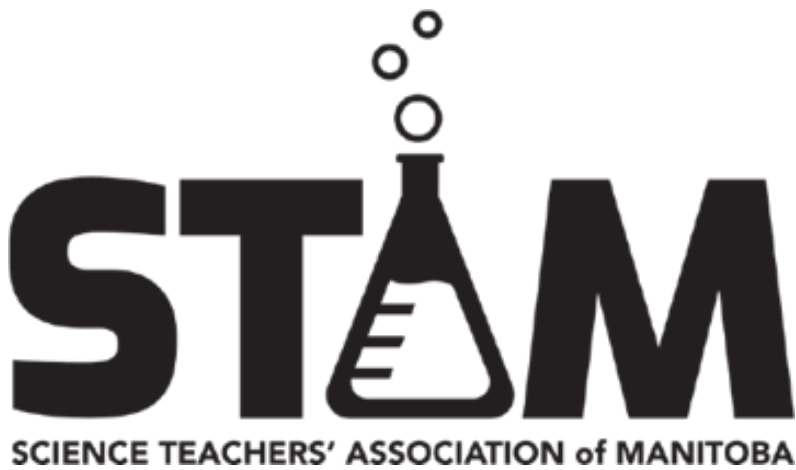
What skills did you develop from your work? List them below.

What part of your research was fun for you?

If you had to do this project all over again, which parts would you change? Which parts would you leave the same?

You spent some time looking at other MSSS projects around you. By now, you should have some ideas you want to pursue in the next Manitoba Schools Science Symposium, 2024. It is really important for you to write down some of these ideas so you will remember when you decide to do something with them. Use the space below to list some of the thoughts that came to you while you were looking through some of this year's projects.

NOTES



**Max Bell Centre
University of Manitoba**

April 20-23, 2023