



# ANNUAL REPORT 2021

# UNEXPECTED MOMENTS

"Unprecedented" has been a word commonly used to describe the 2021 year, worldwide. In our corner of the world, the H.R. MacMillan Space Centre Society and our wider community have too, seen a year filled with new challenges and unexpected plot twists. As we looked back at the 2021 timeline to gather stories for this report, between every time stamp marking pandemic-response phases, social crises, and global changes in 2021, bright moments of innovation shine through.

People are at the heart of all we do, and our strength as a science centre and resource is in responding to the calls of our community—their needs, their ideas, their hopes. *Emerging from an unprecedented year, are unprecedented moments of progress.* We feel great pride in sharing (a small portion of) these 2021 "call and response" stories with you through this report.



## OUR PURPOSE

### Inspiring Exploration

We use the universal appeal and science of space as a cultural bridge, bringing people together to activate curiosity, creativity, and community.

## OUR MISSION

### Learning Without Frontiers

We create an accessible environment where people are encouraged to explore and take risks.

## OUR VISION

### Creating Experiences of Wonder

We dream of a world filled with inquisitive, open-minded individuals who embrace their differences, connected through discovery and united through a deeper sense of shared humanity.

## OUR VALUES

### Courageous

We are always willing to say yes to new things and fail – in our pursuit of wonder!

### Creative

Inclusive, resourceful, curious and bold.  
We are imagination explorers!

### WOW

Our experiences external and internal are mind blowing and leave you saying AH-HA!

## A MESSAGE FROM OUR BOARD CHAIR AND EXECUTIVE DIRECTOR

In times of isolation and instability as we have experienced over the past year, we all seek something comforting; something stable and certain. We have done a lot of thinking this past year (haven't we all?), about the creativity and care that we should foster and nurture in ourselves and give to others. Over these past months, it has been a comfort to see the creativity and care shine through the work of our Space Centre staff, volunteers, and board as they cared for the community and one another.

The passion for community and innovation shown by our staff, volunteers, and board members—from front-line staff like our guest services and interpretive teams and our program planners, to behind the-scenes board members who were actively involved in decision making and oversight, to employees in departments like Reservation and Learning Services, Marketing, Operations, and Finance—have shaped the Space Centre's response to our community's need this past year. We credit our team members' shared creativity and care for the many ways the Space Centre has responded to the vulnerability our community faced due to COVID-19. **Through it all, the Space Centre was guided by compassion, resiliency, and adaptability.**

As our staff, volunteers, and board grappled with their own personal and family needs, they also saw the community's immediate needs clearly and found ways to step up with solutions. More digital offerings? Done.

More inclusion and diversity in our programming? Done. Explore traditional, cultural and social literacy, share and amplify our community voices, question and spark a passion for space - no problem!

**The Space Centre staff, volunteers, and board are the foundation from which all the amazing stories emerge and make the Space Centre so special.** You often hear the positive headlines about the Space Centre, but may not always get to know the individual forces behind these expressions of care. We share some of these stories with you through this report. And as you read, know that there are more stories where these came from, and many more to come.

We extend a tremendous "thank you" to all staff, volunteers and board members for sprinting towards solutions through demanding and challenging times. The response has been inspiring, but not at all surprising—it is a testament to your commitment to community.



Jonathan Burke  
*Chair, Board of Directors*



Raylene M. Marchand  
*Executive Director*

## OUR BOARD

What word best describes the H.R. MacMillan Space Centre Society in 2021?



Keith Acton  
**INVENTIVE**



Matthew Anthony  
*Past Chair*  
**RESILIENT**



Dr. Aaron Boley  
**CREATIVE**



Jonathan Burke  
*Chair*  
**NIMBLE**



George Hemeon  
**PERSEVERANCE**



Derek Lew  
**LIMITLESS**



Larkin Mackenzie-Ast  
*Vice Chair*  
**RESPONSIVE**



Paul Moore  
*Treasurer*  
**ADAPTIVE**



Greg Stanway  
*Secretary*  
**COURAGEOUS**



Roger Watts  
**IMAGINATIVE**



Dr. Sara Weinstein  
**STEADFAST**



# PARTNERS & SPONSORS

## GOVERNMENT PARTNERS

Government of Canada

Young Canada Works

Canadian Museum Association

Canadian Council of Archives

CEWS Program

CEBA Program

Province of British Columbia

BC Tourism Anchor Attractions Program

Direct Access Gaming Program

City of Vancouver

Cultural Services Grant Program

## CORPORATE PARTNERS

Telus Optik

Live It Earth

## PROGRAM PARTNERS

Dr. Aaron Rosengren, University of San Diego

Dr. Alannah Hallas, UBC

Amir Siraj, Harvard

Dr. Brian Weeden, Secure World Foundation

Dr. Brittany Carr, UBC

Corey Gray, LIGO Observatory

Edzy Edzed

Dr. Eldon Yellowhorn, SFU

Dr. Emanuele Michielin, UBC

Dr. Erika Nesvold, JustSpace Alliance

Dr. Jeremy Heyl, UBC

Dr. Jesse Rogerson, York University

Julie Claveau, CSA

Dr. Jess McIver, UBC

Dr. Mark Jellinek, UBC

Dr. Ludovic van Waerbeke, UBC

Nicole Galaz, ILM



Dr. Pierre Leichner

Dr. Richard Ghail, ESA

Dr. Sara Seager, MIT

Dr. Stuart J. Bartlett, Caltech

Tanner Scott, ILM

Dr. Tanya Harrison, Planet Labs

Taryn Tomlinson, CSA

Vanessa Vakharia, The Math Guru

## ORGANIZATIONS/GROUPS

Ars Scientia, UBC

Beaty Biodiversity Museum

Canadian Association of Science Centres

Canadian Museums Association

Canadian Space Agency

Department of Earth, Ocean and Atmospheric Sciences, UBC

Department of Indigenous Studies, SFU

Department of Physics and Astronomy, UBC

Joyful Learners

North Vancouver Library

Stewart Blusson Quantum Matter Institute, UBC

Simbi Foundation

## DONORS

Keith Acton

Jonathan Burke

Raylene Marchand

Lisa McIntosh

Paul Moore

Greg Stanway

Patrick Ramsey

Roger Watts

Glenn and Annetta Agnew

Memorial Fund (Vancouver Foundation)

Anonymous (68)

Dedicate a Star (75)

## MEDIA SPONSORS

Destination Travel Network

Google

LAMAR



# BUILDING SOMETHING NEW

The pandemic has presented opportunities for problem-solving and innovation worldwide. In many ways, it has pushed humanity to face longstanding gaps and issues head-on, and take the bold steps required for solutions sooner than we have felt 'ready' to do so. The Space Centre is no different. **We have seen innovation emerge in interesting and exciting ways, and it has created change for the better.**



**ENGAGING  
YOUNG MINDS**  
**10,962**  
program attendees



**LITERACY ON  
THE MOVE**  
**9,040**  
Telus Optik TV  
viewers and  
*Library Summer  
Reading Club* program  
participants



SpaceX Crew Dragon Endeavour as it approached the International Space Station  
Credit: NASA



## MERGING ART & SCIENCE

Our online special events during the pandemic developed a community of science enthusiasts from all over North America. One of their requests, *don't stop online programming when things return to normal*. This fall we tackled the challenge of developing an in-person event in the Star Theatre that we could also stream to our online audience.

For our first in-person special event since March 2020 we celebrated *Dark Matter Day* and had an in-person and online audience. Partnering with Ars Scientia, a research initiative from the Stewart

Blusson Quantum Matter Institute, the Morris and Helen Belkin Art Gallery, and The University of British Columbia's Department of Physics and Astronomy. We worked with leading researchers from UBC Physics and Astronomy to represent their research into this mysterious phenomenon through merging artistic practice and scientific research.

# COMMUNITY CARES

As Vancouver 'locked arms' in the battle against COVID-19, so did our Space Centre community. The work of the Space Centre is the work of many unsung, everyday heroes: our community partners, our volunteers, our social media supporters, our donors, our lifelong space enthusiasts. Thank you to all those who have supported the Space Centre in countless ways this year. **Whether you helped us deliver programs, retweeted an important call to action, or offered staff a friendly smile from behind your mask, we as a Space Centre community are making it through because of you!**



### SOCIAL MEDIA ENGAGEMENT

**1,358,000**  
Facebook reach

**136,000**  
Twitter impressions

**61,800**  
YouTube impressions



### VOLUNTEER HOURS

**1,012**



## MISSION TO MARS

One of the most exciting events this year was the three missions to Mars in February. The arrival of these new Martian explorers coincided with an increase in onsite programming. This provided a great opportunity for us to talk about the science and engineering of Mars exploration, the challenges of sending probes to Mars, and the involvement of

other countries in Mars exploration including China and the United Arab Emirates. Our programming included special hands-on family programming focused on robotics and activities related to the engineering challenges of flying a helicopter in the thin Martian atmosphere.



# HEADLINES FROM SPACE

## JUNO MISSION EXTENDED TO 2025

In orbit since 2016, we've been receiving stunning images of Jupiter and its moons from Juno. With its mission extended, Juno will continue its work to unlock some of the mysteries of this gas giant.

Image Credit: NASA/JPL-Caltech/SwRI/MSSS/Kevin M. Gill



JANUARY 13

## MARS EXPLORATION IS INTERNATIONAL

With three successful missions arriving on Mars in 2021 we saw the United Arab Emirates (UAE) first foray into Mars exploration. The UAE's Hope orbiter will study Martian weather. China's Tianwen-1 mission to Mars includes an orbiter, lander and rover. NASA's mission includes the rover Perseverance, and the first ever helicopter to fly on another planet, Ingenuity.

Image Credit: NASA/JPL-Caltech/MSSS

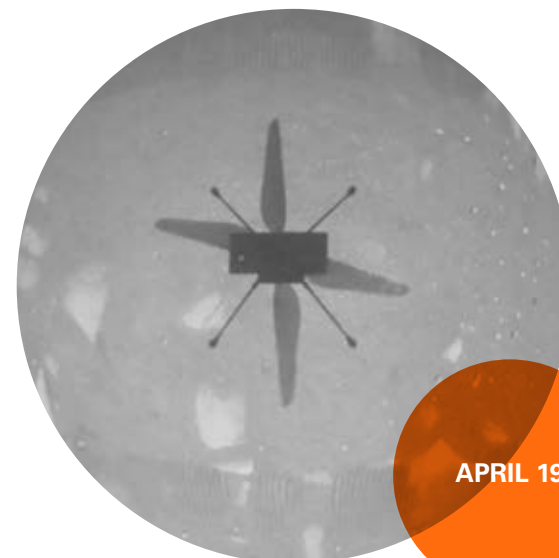


FEBRUARY 9, 10, 18

## INGENUITY MARS HELICOPTER MAKES ITS FIRST FLIGHT

Ingenuity Mars Helicopter became the first aircraft in history to make a powered, controlled flight on another planet. By the end of the year, Ingenuity had flown 18 times on the Red Planet and proves its usefulness in exploration.

Image Credit: NASA/JPL-Caltech



APRIL 19

## FIRST LIGHT FROM BEHIND A BLACK HOLE

Using ESA's XMM-Newton and NASA's NuSTAR space telescopes astronomers have observed extremely bright flares of X-ray light coming from around a black hole. Seen as echoes of the flares bounding off the gas behind the black hole, astronomers can study the processes on its far side.



JULY 28

## JAMEST. KIRK MAKES IT TO SPACE

William Shatner spent years in 'space' as an actor as captain of the Starship Enterprise. This year he almost made it to the edge of space with his trip onboard a Blue Origin New Shepard rocket that took him to an altitude of 107 kilometers, just passing the Kármán line. In 2021, 20 space tourists left Earth on three New Shepard flights (Blue Origin), one Crew Dragon flight (SpaceX), and one Soyuz flight (Space Adventure). Virgin Galactic's SpaceShipTwo took four passengers close to the edge of space (86 km altitude).

Image Credit: Blue Origin



OCTOBER 18

## JAMES WEBB SPACE TELESCOPE LAUNCHES – FINALLY!

After years of delay, the newest space telescope finally launched. The James Webb Space Telescope (JWST) is the largest space telescope ever built, with a 6.5m diameter gold-plated mirror. Using infrared light JWST will be able to look farther back in time than previous telescopes. Its first six months in space will be spent testing systems and becoming operationally ready for years of observing.

Image Credit: NASA



DECEMBER 25

# CREATED WITH YOU

This past year, we had to get creative when it came to connecting with Space Centre visitors. Whether it was communicating through social media, phone calls or the power of word of mouth, our team made sure the Space Centre supported community members, no matter what that looked like...meeting people where they are looks different each day..

★★★★  
★★★★  
**EVENT  
PARTICIPANTS  
22,628**



## FROM THE DESK OF MICHAEL UNGER, PROGRAM COORDINATOR

Over the past couple of years, we've partnered with Industrial Light and Magic (ILM) for our *May the 4th Be With You* Star Wars events. ILM may be best known as the creative force behind the visual effects in the Star Wars franchise, but they also have a mandate to work with the community and encourage kids in STEAM careers. We've taken advantage of their studio in Vancouver and many of their staff living and working locally, to invite some of their staff to our events to talk about their journey blending their curiosity about science and passion for Star Wars, to a career with one of the pre-eminent visual effects studios.

In 2021 Mike Jutan, R&D Engineer and Technical Director, Mihai Cioroba, shared how they collaborate and use their various backgrounds to create stunning visual effects. As well, engineers Nicole Galaz, and Tanner Scott shared how their childhood experiences and how their curiosity with building and destroying things, and in Tanner's case, blowing things up, contributed to their careers.

We look forward to this continuing partnership with the possibility of doing a hands-on animation workshop next year!






# CRAVING CONNECTION

In the span of a typical year, we welcome over 145,000 visitors through the doors, and host over 9,000 in-person programs. Facing an anything-but-typical-year, our staff jumped into action on social media, behind cameras and keyboards, on Zoom, and in the great outdoors to share their friendly faces and personal talents with our community in new ways. We took the Space Centre to new levels of experience and engagement.

 **SPACE CENTRE VISITORS**  
**81,998**

 **BEYOND OUR WALLS**  
**6,784**  
community event participants

 **DIGITAL DELIVERY**  
**51**  
online programs including *Ask an Astronomer*, *Home Learners webinars*, *Astronomy 101* and *Cosmic Nights*

## HOME LEARNERS

Moving into the second year of the pandemic the home learning community changed as students started to head back to the classroom. With this shift a core community of learners emerged as participants in our regular home learners programming. Children ages 8-11 years old join our astronomer Marley Leacock for each event, excited about the topic, eager to learn, and ready with questions. The experience is more like

a space science club, with children given the option to turn on their cameras, unmute and ask questions and build off each other's knowledge. The hour-long sessions are interactive with lots of discussion, opportunities for participants to test their knowledge with a regular trivia game, and to build connections with our community of learners.



## FACES OF THE H.R. MACMILLAN SPACE CENTRE SOCIETY

### MANAGEMENT

Raylene M. Marchand  
Executive Director

Samaneh Badiei  
Director of Finance

Lisa McIntosh  
Director of Learning

Annika Penner / Lindsay Jang  
Director of Human Resources and  
Operations

Skyler Thompson  
Director of Fund Development

### ADMINISTRATION

Bethany Andriulaitis  
Archives Intern

Rachel Carlson  
Archivist

Ella Guzman  
Accounting and Finance Clerk

Virginia Fawkes  
Marketing Intern

Justin Low  
Marketing Intern

Jennifer MacDonald  
Marketing and Communications  
Coordinator

Cheryl Sweeney  
Bookings and Administration Assistant

### GUEST AND RENTAL SERVICES

Jasmine Coble  
Guest and Rental Services Supervisor

Therese Edwards  
Guest and Rental Services Supervisor

Patrick Fergusson  
Guest Services Supervisor

Crystal Lai  
Guest Services Supervisor

Grant Malo  
Guest Services Supervisor

Dicle Kolukisa  
Guest Services Supervisor

Claire Ou  
Guest Services Supervisor

### GUEST SERVICES STAFF

Yaashna Chewla  
Mackenzie Fong

Jonathan Fung  
Shelley Preston

Gemma Raines  
Allan Soone

Terry Soone  
Daniel Vera

### LEARNING SERVICES

Matthew Cimone  
Head Interpreter

Christine Henderson  
Head Interpreter

Mike Koziniak  
Digital Media Producer

Mily Mumford  
Multi-Media Producer

Trish Pattison  
Programs Coordinator

Jonathan Teague  
Head Interpreter

Rachel Wang / Marley Leacock  
Astronomer

Michael Unger  
Programs Coordinator

Jasmine Zhang  
Programming Intern

### INTERPRETIVE STAFF

Simran Badial  
Matthew Beaudoin

Stephane Bernard  
Colleen Bignell

Pablo Finkel  
Mackenzie Fleming

Shannon Gilchrist  
Erin Green

Raphael Kepinski  
Kenneth Lui

Casey Mok  
Mark Moraes

Hikari Rachmat  
John Reid

Jawad Sakarchi  
Michelle Sz

### TECHNICAL SERVICES

Neil Chung  
Blake Kriedmann  
Gallery Technicians

Jason McRae  
Chief Technician

Jordon Randall  
IT Consultant

Dave Sale  
IT Consultant

### VOLUNTEERS

Emma Harris  
Rob Lo  
Nicole-Ann Poitras  
Simon Tumalak

# BEHIND THE SCENES

## FROM THE DESK OF MARLEY LEACOCK, ASTRONOMER

Each month we explore a new theme in our programming and as part of that I write a monthly blog post. These monthly posts let me expand on an idea and we've explored concepts from fundamental ideas like propulsion and the standard model of particle physics, to a deep dive into the history and science of the James Webb Space Telescope. Each blog post includes activities for people of all ages to help them

deepen their understanding of the theme and even contribute to science through citizen science projects. Science – especially space science – can feel so far away. Citizen science projects make science tangible, and the other activities are meant to break down larger concepts into their base components, making advanced concepts into something everybody can understand and have fun with.

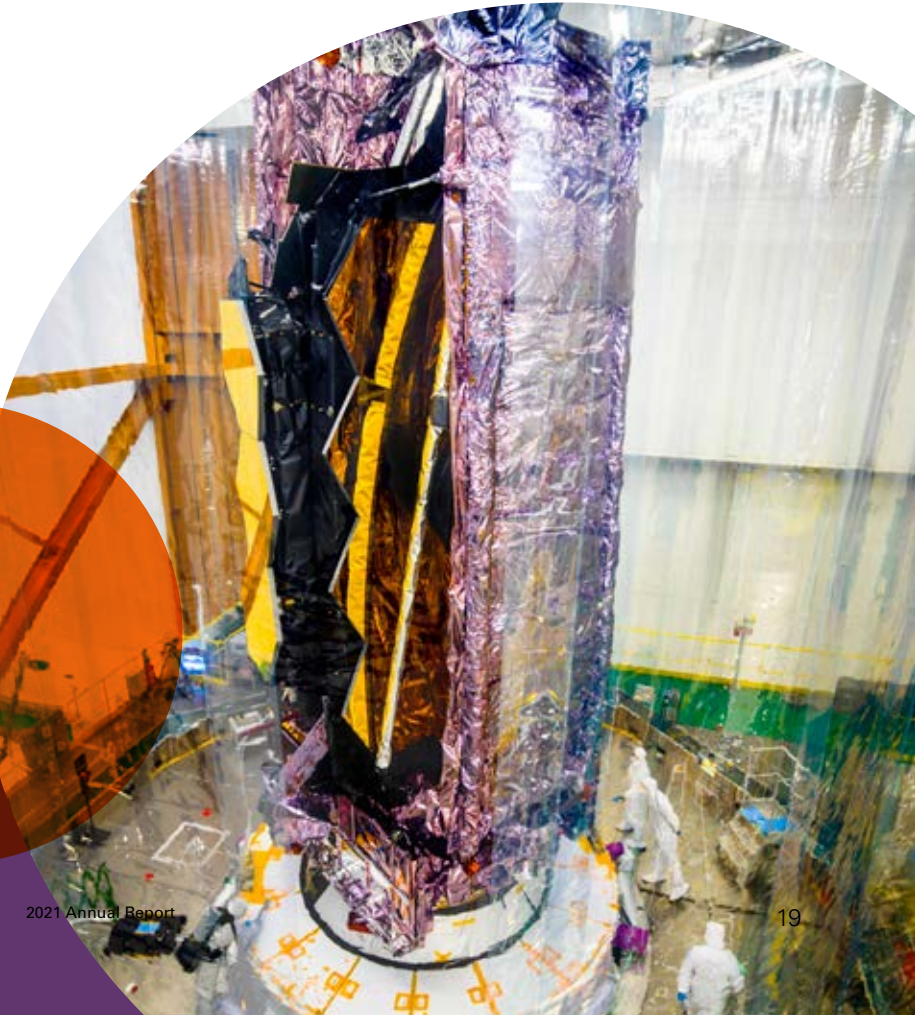


### TECH FOR GOOD

49

activities shared  
as part of our  
monthly blogs

The James Webb Space Telescope (JWST) atop its launch vehicle  
Image Credit: NASA  
Image Source: www.nasa.gov





FINANCIAL SUMMARY

The Finance Committee of the Space Centre Board oversees the financials to ensure the Space Centre is aligning its spending to the values identified in the strategic plan in a concrete way.

The H.R. MacMillan Space Centre Society receives the majority of its funding from Vancouver Municipality and the Province of British Columbia. In 2021 we also received additional COVID related funding from the provincial government under the BC Anchor Attractions Program and from the federal government under CEWS and CEBA Programs.

We are also incredibly grateful for the support of community members. 100% of donations support our programs and services – and they help the Space Centre to do extraordinary things. **The financial statements are more than just a balance sheet; they tell an important story about how the Space Centre demonstrates its values through day to day operations.**

Every year one of the most significant stories that the financial statements tell is that people are the most important thing at the Space Centre; both those who design and deliver our programs and services and the individuals and communities who use them. This year, the financial statements also tell another important story about our COVID-19 response. Management and the Space Centre Board monitored the financials throughout the year and reallocated funds as areas of need emerged during the pandemic.

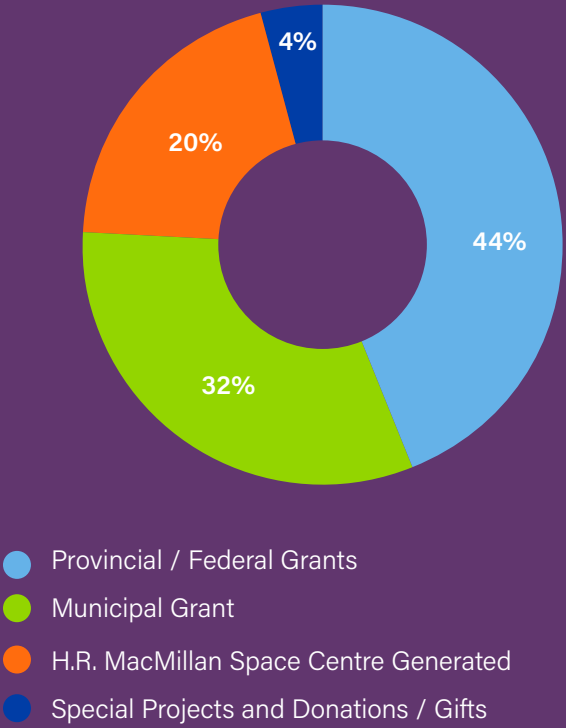
For example, the 2021 budget priorities included responding to increased community need for digital materials. Information technology equipment was also purchased to help keep us more connected to one another – at a time when practically all interactions moved online. **These stories are told in terms of income and expenses, but they are about how the Space Centre lives its ethos of reaching further, pushing boundaries, and being brave.**



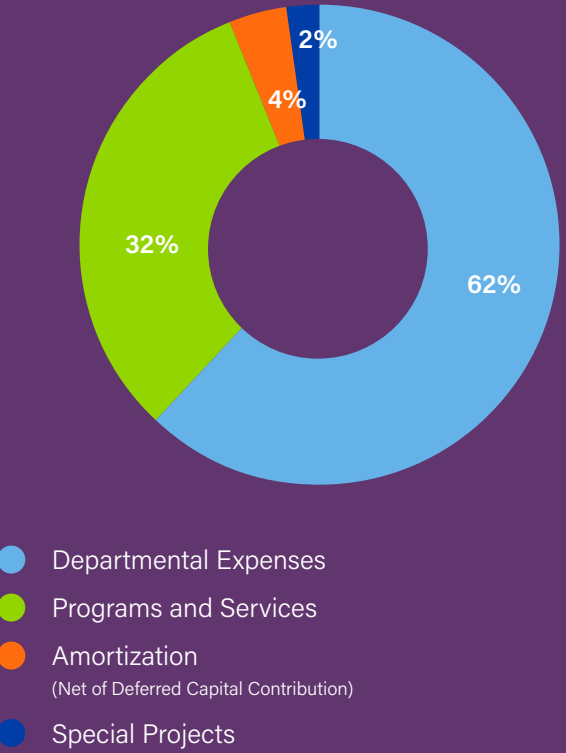
REVENUES	\$
Provincial / Federal Grants	\$705,154
Municipal Grant	\$519,400
H.R. MacMillan Space Centre Generated	\$ 319,200
Special Projects and Donations/Gifts	\$61,078
TOTAL	\$1,604,634

EXPENDITURES	\$
Departmental Expenses	\$849,821
Programs and Services	\$435,100
Amortization (Net of Deferred Capital Contribution)	\$57,331
Special Projects	\$30,578
TOTAL	\$1,372,830
SURPLUS	\$231,804

Revenues



Expenditures



# OUR JOURNEY CONTINUES...

We at the Space Centre are dedicated to leveling the playing field and bringing community together. We are committed to providing access for everyone to diverse events, vibrant spaces, and engaging programs.

Whether big or small, donations help make this possible.

You can find more information and make an online donation by visiting [spacecentre.ca/donations](https://spacecentre.ca/donations).

## FOUNDER

H.R. MacMillan

## PATRON

Mrs. G.T. (Jean) Southam, C.M.

## ENDOWMENT FUND

Vancouver Foundation







604.783. STAR (7827)  
1100 Chestnut Street,  
Vancouver, British Columbia

spacecentre.ca  
@SpaceCentreYVR     
MacMillanSpaceCentre 