

2024/07/31

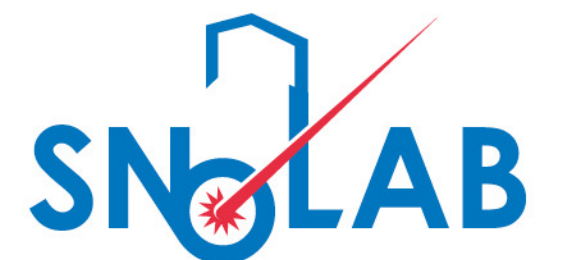
SNOLAB Executive Director's Report

Jodi Cooley

Executive Director | SNOLAB

Professor of Physics | Queen's University

Adjunct Research Professor | SMU



Land Acknowledgement

SNOLAB is located on the traditional territory of the Robinson-Huron Treaty of 1850, shared by the Indigenous people of the surrounding Atikameksheng Anishnawbek

First Nation as part of the larger Anishinabek Nation.

We acknowledge those who came before us and honour those who are the caretakers of the land and the waters.

1

Excellent science

Drive breakthrough discoveries at the frontiers of underground science.

Expected outcomes:

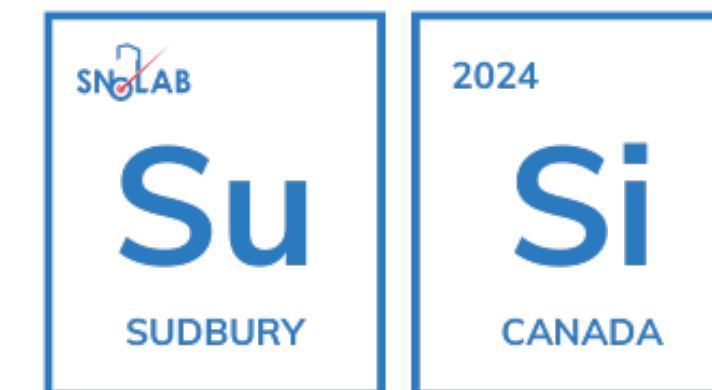
- Cementing of Canada's leadership in deep underground science
- A stronger, more competitive Canada in scientific discovery
- More Canadian researchers positioned as global leaders

Summer at SNOLAB

Become an intellectual hub that fosters collaboration and connection.

- Pilot a program designed around experimentalists at SNOLAB, **June 24 – August 16.**
- Three core thematic lecture periods (aimed at graduate students and postdocs, all invited)
 - The Dark Cosmos
 - Neutrino Science
 - Quantum Technology
- SNOLAB events around the lecture period:
 - User Meeting: June 26-27
 - TRISEP: July 8-19
 - Collaboration meetings: SNO+, SuperCDMS, DEAP, ...
- More information and application details:

<https://indico.snolab.ca/event/3/>



SNOLAB Underground
Science Institute



NSERC CREATE: Training Next-Generation Leaders in Underground Science

What is NSERC CREATE?



- The Collaborative Research and Training Experience (CREATE) program supports the training and mentoring of teams of highly qualified students and postdoctoral fellows from Canada and abroad through the development of innovative training programs that:
 - encourage collaborative and integrative approaches, and address significant scientific challenges associated with Canada's research priorities;
 - facilitate the transition of new researchers from trainees to productive employees in the Canadian workforce.
- SNOLAB through our relationship with Queen's University is leading a proposal to create an underground science training program with SNOLAB as the mobility site.
- This project aligns with our strategic goal to become an intellectual hub fostering collaboration and connection. If successful, it will become another program under the SuSi umbrella that will bring graduate students to site for extended stays.

Who is involved?



We aim to bring together a team with diverse experiences and expertise from University partners and SNOLAB. Team members are (a) faculty who work on experiments hosted by the laboratory partnered with (b) SNOLAB researchers involved in those experiments who serve as local mentors while students are on-site.



Carleton University: Profs. Mark Boulay and Simon Viel

McGill University: Prof. Thomas Brunner



Queen's University: Profs. Jodi Cooley, Ken Clark, Tony Noble**, and Stephen Sekula

University of Toronto: Profs. Miriam Diamond, Ziqing Hong, and Pekka Sinervo



Université de Montréal: Prof. Alan Robinson

SNOLAB: Drs. Erica Caden, Chris Jillings, Christine Krauss, Aleksandra Bialek, Pierre Gorel, Ian Lawson, Szymon Manecki, Andy Kubik, Shaun Hall, Matthew Stukel and Jeter Hall.*



University of Alberta: Prof. Carsten Krauss

*SNOLAB staff who indicated interest during the iLOI stage

** Collaborators from partner universities

Lectureship Program Details



Topics for immersive specialized short courses taught at SNOLAB:

- **Backgrounds** – types, how to estimate and modeling, material assay, etc
- **Machine Learning and AI**
- **Statistical Analysis** – profile likelihood ratios, optimal gaps, how to estimate and treat systematics, potentially add instruction on common tools such as *Roofit* and *Roostats*.
- **Data** – data acquisition, data quality & cleaning, archiving and preserving, sharing data (open data), how to make data accessible, data visualization
- **Operations of Low Temperature Facilities** – low temperature refrigerators, electronics for cryogenic temperatures, operation of low temperature facilities, extreme computing -- quantum computing and qbits

SNOLAB Value Added



- Mentoring and vocation-specific training by SNOLAB Research Scientists that would include the development, installation, commissioning, calibration, and operation of world-leading research detectors at SNOLAB.
- Hands-on training in the measurement of extremely faint signals using gamma-ray spectroscopy, ICP-MS, surface alpha counters, and radon assay techniques. -- Combine with backgrounds immersion course.
- Mentoring in project management and engineering techniques required to deliver large or complex projects.
- Development of skills to effectively communicate with project management, engineering, and trades professionals to plan and execute large and/or complex projects.
- Rigorous and effective ES&H systems in an industrial setting through short courses online and in person.

What is needed from you...



- If you are interested in participating as a collaborator, please send me an email. Please also include a short paragraph of your specific interests (mentoring a student on x or assisting with the teaching of y) and your qualifications (why are you suited for the job).



2

Cutting-edge infrastructure

Continuously improve our research infrastructure to remain state of the art.

Expected outcomes:

- Attraction of the most advanced international experiments to Canada
- Greater global impact and enhanced reputation of Canada's underground science infrastructure

FY25 SNOLAB Experiment and Infrastructure Initiatives



PRIORITY #	STRAT PLAN OBJ	POG PROJECT #		GATEWAY
00-SP4			Imminent Safety Issues and Facility Emergency Repairs	
01-SP4			Facility Operations	
02-SP4			Executive Requirements	
03-SP1			Experiment Operations (HALO, CUTE, DAMIC, FLAME, REPAIR, Xe-Still, SNO+, NEWS-G, SENSEI, PICO-40)	GW-3
04-SP4	P2102		Information Security	GW-1
05-SP2	P2104		MPC Breaker Upgrade	GW-2
06-SP1	P1806		SuperCDMS	GW-2
07-SP1	P2204		SNO+ Te	
08-SP1	P2101		PICO-500	GW-1a
09-SP1	P2006		DEAP Upgrades	GW-2
10-SP1	P2105		SBC	GW-1
11-SP2	P2508		Generator Tie-in and UPS for ICPMS	GW-0
12-SP2	P2503		UG Flooring Pilot	GW-0
13-SP1	P1902		nEXO	GW-0
13-SP1	P1903		LEGEND-1000	GW-0
14-SP1	P2007		CTBT Counter	GW-2
15-SP1	P2206		OSCURA	GW-1
16-SP2	P2511		CUTE Cryogenic Fridge Enhancement	GW-0
17-SP2	P2301		HC Environmental Monitoring Station	GW-2
18-SP2	P2509		GPS Time Server Replacement	GW-0
19-SP2	P2505		UG Monitoring Security	GW-0
20-SP2	P2108		Mobile Etching/Cleaning Cart	GW-0
21-SP2	P2111		UG Compressed Air Upgrades	GW-2
22-SP2	P2504		Electrical Room Wall	GW-0
23-SP2	P2205		Denka Boom	GW-2
24-SP2	P2510		Everbridge Safety Connection	GW-0
25-SP2	P2502		Spherical Proportional Counters as Radon Detector (RnSPC)	GW-0
26-SP2	P2501		Argon Removal from LN2	GW-0
27-SP2	P2011		Surface Cryostat	GW-2
28-SP2	P2506		Underground Monuments	GW-0
29-SP2	P2109		Background Measurement Improvements	GW-2

- 10 experiments operating
- 9 experiments under design or construction.
- 18 initiatives to upgrade instrumentation and infrastructure includes:
 - Piloting solutions for the underground lab flooring
 - Upgrades to the CUTE facility and environmental monitoring capabilities
 - Upgrades and additions to background/assay instrumentation
 - Continuation of a multi-year phased information security project

	Responsive Requirements
	Internal Projects
	Science Programme

3

Skilled people

Foster and develop diverse talent in an inclusive environment.

Expected outcomes:

- Canadian leadership in advancing EDI in research facilities
- A new generation of HQPs prepared to discover and innovate in a global economy
- Greater access to STEM skills and opportunities in Northern Ontario

Please CLOSE
PW Valve
After Use



Formation of the Standing EDI Committee



- The SNOLAB EDI Committee is established under the authority of the Executive Director to support a vision of an equitable, diverse, and inclusive laboratory.
- The EDI Committee provides guidance to the SNOLAB Executive Director on the development, implementation, and ongoing improvement of SNOLAB's EDI action plan.
- We are looking for volunteers!
 - 2 Members of the SNOLAB Research Group (2)
 - 2 SNOLAB staff
 - One staff member whose primary work site is underground
 - 2 SNOLAB Users
 - SNOLAB-affiliated students
 - One external member (outside of the SNOLAB user and staff community)



See Sam Kuula!

Labour Disruption



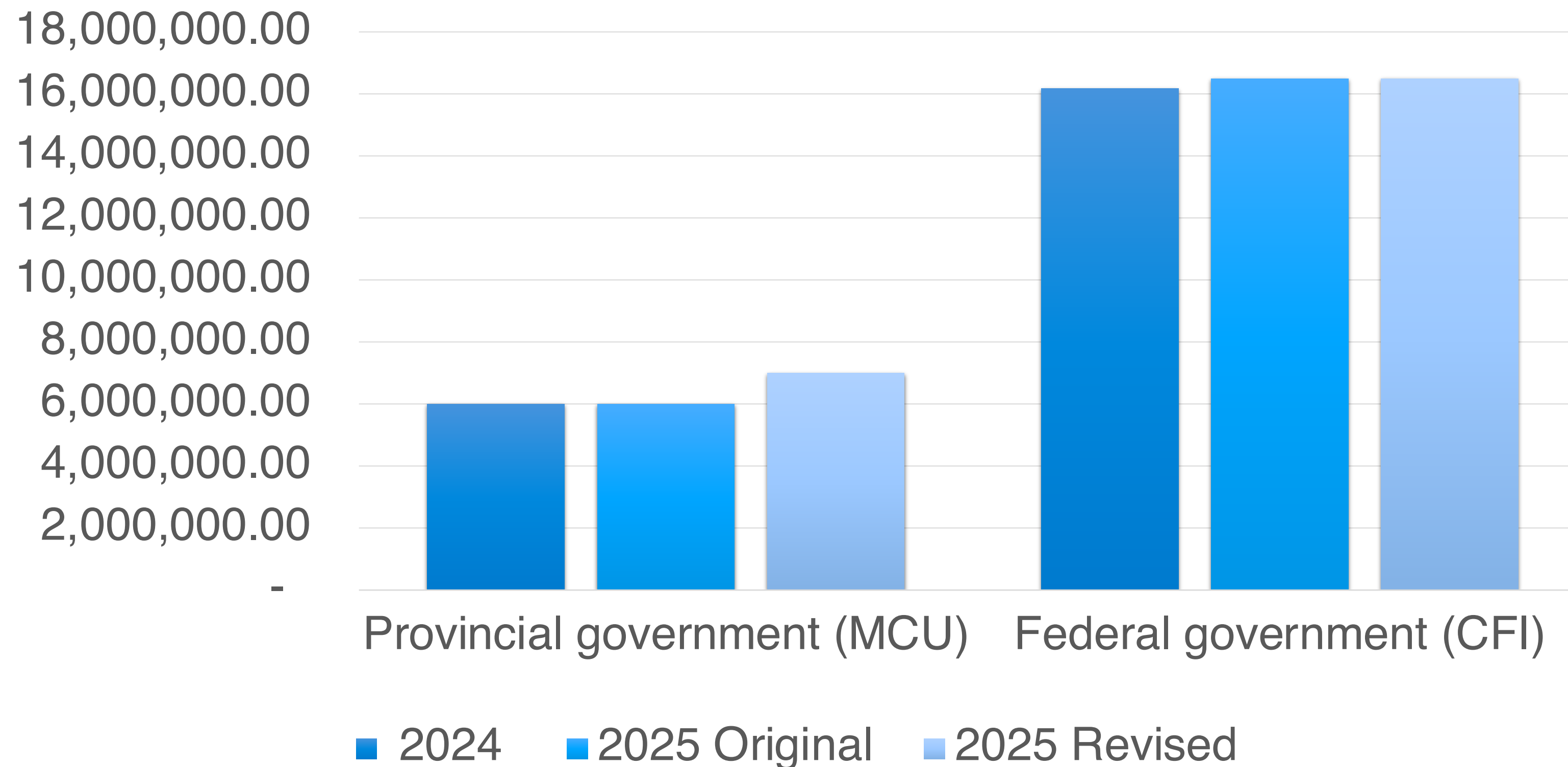
- Thanks to everyone for your patience during the labour disruption that occurred this past May.
- We now have a new 4-year agreement in place.

Budget

Budget – Grant Revenue



Budgeted Grant Revenue

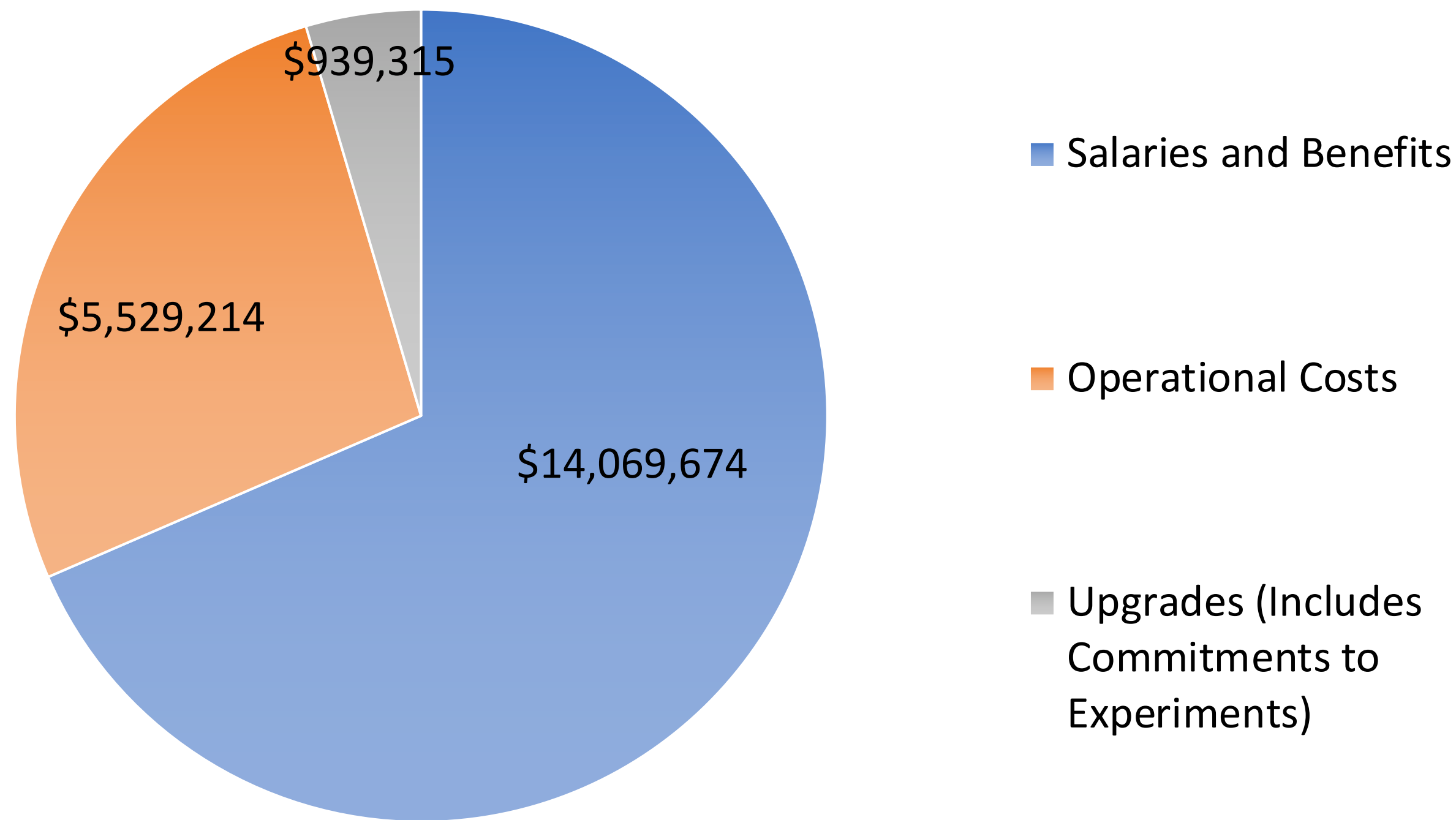


- Additional \$1,000,000 in Provincial funding in 2025 will allow us to maintain the current staffing levels.
- We will receive an additional \$1,000,000 over the original budget in fiscal 2026 as well.

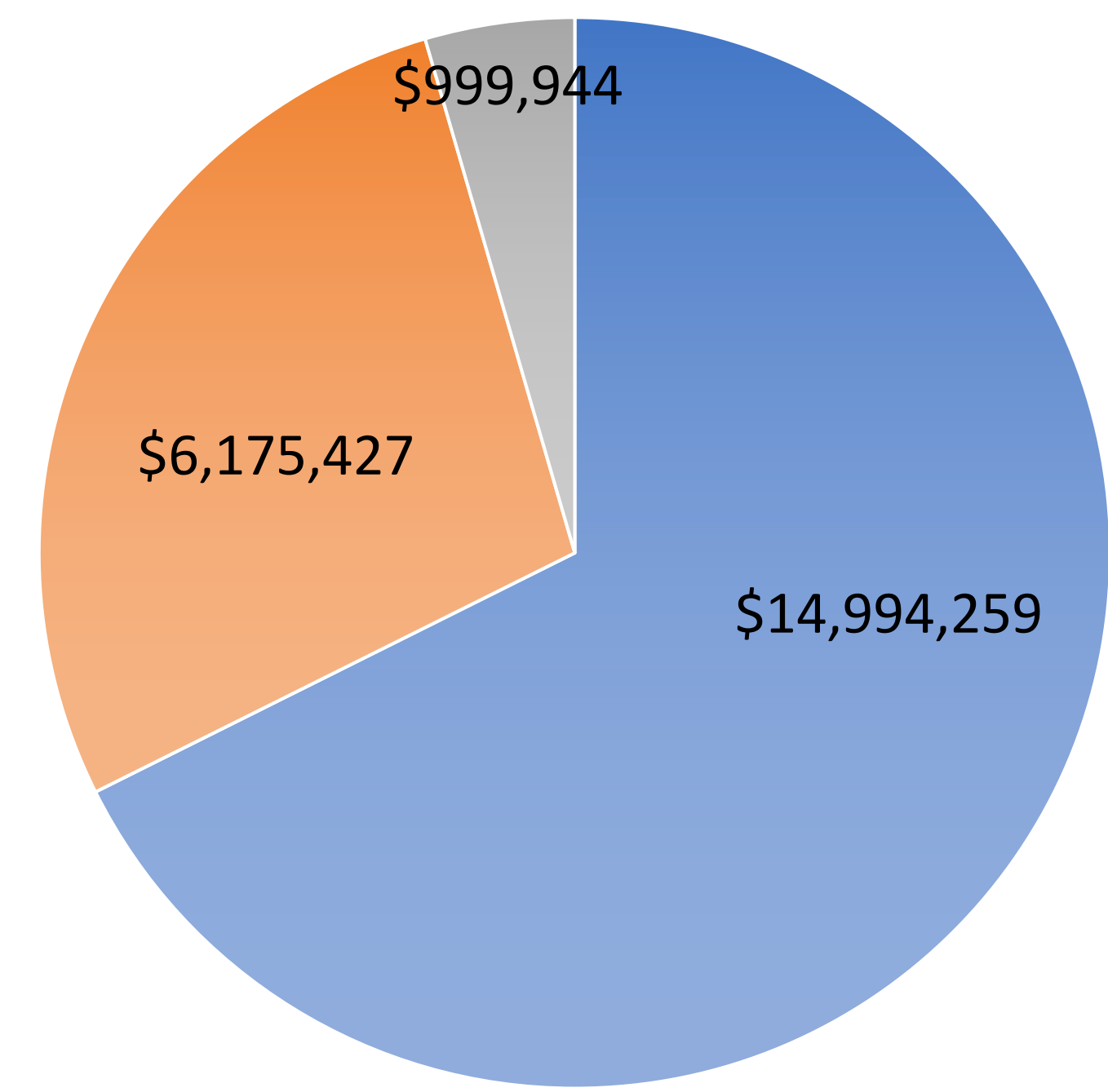
Budget and Expenditures



FY24 Expenditure: \$21,796,660



FY25 Budget: \$23,493,023



Reduction of staff between FY24 and FY25 required to fit into the new MSI budget

SNOLAB Staffing



Group	Sept 2022	April 2024
EDO/Directorate	8	5
Administrative Support	5	4
Corporate Service Division	23	21
Finance	-	3
Engineering	14	12
Scientific Support	10	11
Project Management	15	15
Research Scientist	15	12
Technical Services	15	15
Operations	30	27
Coop Students	4	12

Notes:

- Reductions were made in staffing across many departments to fit our new fiscal reality.
- EDO and administrative support have been reduced.
- Increased number of IT (one) and EHS techs (one) to meet needs of the community regarding safety and IT.
- Finance broken out into its own departments.



**Thank you!
Questions?**

