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Les gens. La découverte. L'innovation.



Natural Sciences and Engineering
Research Council of Canada

Conseil de recherches en sciences
naturelles et en génie du Canada

Canada

2019 Competition

Report from the SAPES Co-Chair to the Community

Presented by: **Brigitte Vachon, McGill University**

Congress of the Canadian Association of Physicists
June 3 - 7, 2019 – Burnaby, BC



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Outline

- Subatomic Physics Evaluation Section (SAPES)
- Pre-competition Activities
- Large Project Day and Competition Week
- Rounds 1, 2, and 3
- Competition Financial Report
- Evolution of Awards
- Policy Matters
- NSERC News

Subatomic Physics Evaluation Section

2019 Competition

Name	Institution	Term	Expertise
Alex Buchel	The University of Western Ontario	2017-2020	Theoretical HEP
Alfredo Galindo-Uribarri	Oak Ridge National Laboratory & University of Tennessee - Knoxville	2016-2019	Experimental NP
Thomas Gregoire	Carleton University	2018-2021	Th. HEP
David Hornidge	Mount Allison University	2018-2022	Exp. IEP & NP
Charles Horowitz	Indiana University	2018-2021	Th. NP
Hans Kraus (Co-Chair)	University of Oxford	2016-2019	Experimental Particle Astrophysics, Dark Matter
Rafael Lang	Purdue University	2018-2021	Exp. HEP, Dark Matter
Tor Raubenheimer	Stanford Linear Accelerator Center / Stanford University	2016-2019	Experimental HEP & Accelerator R&D
Niki Saoulidou	University of Athens	2016-2019	Experimental HEP
Brigitte Vachon (Co-Chair)	McGill University	2016-2019	Experimental HEP
Magnus Wolke	Uppsala University	2017-2020	Experimental IEP & NP



The Subatomic Physics Evaluation Section

Support to Operations

- Group Chair
 - Kari Dalnoki-Veress, McMaster University
 - Monitors consistency of deliberations for Physics in general; provides advice on procedures and policies as needed; Not a member; does not participate in reviews/votes; did not attend SAP Competition week in 2019.
- NSERC Staff
 - Shashini Jayaratne & Kaitlyn Pomykala, Program Assistants
 - Philip Bale & Kenneth Moats, Program Officers
 - Emily Diepenveen & Stacey Lee-Jenkins, Team Leaders
 - Elizabeth Boston, Director

Many thanks
from SAPEs!!



The Subatomic Physics Evaluation Section

- Funded through an **independent envelope, with its suite of programs -- unique mechanism at NSERC**
- Evaluates applications to various Subatomic Physics programs
 - Individual and Project Discovery Grants
 - Research Tools and Instruments (RTI - Category 1, 2 or 3) Grants
 - Major Resources Support (MRS) Grants
- This comprehensive approach is essential
 - Complexity and inter-dependency of many proposals
 - Country-wide collaborations among individuals, groups, universities, and national research organizations
 - Long-term and large-scale international projects and commitments
 - Possibility to exchange funds between the various programs as a function of the priorities of the community and the pressures it faces

Pre-Competition Activities

- By **August 1st**, applicants submit:
 - Notification of Intent to Apply (NOI) for a Subatomic Physics (Project or Individual) Discovery Grant through the Research Portal
 - Notification of Intent to Apply (NOI) for a SAP Major Resources Support Grant through the Research Portal
 - Notification of Intent to Apply (NOI) for a SAP Research Tools and Instruments - Cat. 2/3 Grant through the Research Portal
- NSERC and SAPES Co-Chairs identify proposals for Expert Reviews
- By **late September**:
 - Members provide their comfort level to review each application
 - NSERC and Co-Chairs select members to be 1st, 2nd and 3rd (where required) internal reviewers

Pre-Competition Activities

- Applicants submit full applications to NSERC:
 - October 1:** RTI applications for equipment over \$150k (Cat 2 & 3), MRS applications, and Project Discovery applications requesting more than an average of \$500k per year
 - October 25:** RTI applications for equipment up to \$150k (Cat 1)
 - November 1:** Individual and Project Discovery applications requesting less than an average of \$500k per year
- **November 27:** SAPES 2018 Orientation & Policy meeting – held by teleconference
- Fall assessment of NOI's crossing the boundaries within Physics, and other Evaluation Groups
- **Mid-December:** All applications are sent to SAPES members

Pre-Competition Activities

- Reviews by *ad hoc* or standing Committees
 - ATLAS-Canada Nov. 14; Dec. 10, Teleconference
 - IPP Nov. 18 – 19, Ottawa
 - SNO+ Nov. 30 – Dec. 1, Ottawa
 - DEAP-3600 Dec. 2 – 3, Ottawa
 - T2K Dec 14-15, Vancouver

Large Project Day

LPD 2019 was held February 24, 2019 in Ottawa:

- Participants received SAPES questions in advance
- This year's LPD invited participants were (by collaboration in alpha order):
 - Belle II
 - DEAP-3600
 - IPP
 - PICO
 - SNO+
 - SuperCDMS
 - T2K
 - Ultracold Neutrons at TRIUMF
- Meetings with institutional representatives:
CFI, CINP, Perimeter, SNOLAB, and TRIUMF.

Competition Week

- Competition week: **February 25 – March 1, 2019** in Ottawa
- Assessment of applications done in 2 rounds
 - Round 1: determine Merit Criteria ratings & recommend efficient budget for supported research activities
 - Round 2: reconsider funding recommendations to fit into available budget following consistent and fair re-assessment of *all* the applications

Deliberations followed NSERC's policies and guidelines throughout all rounds of competition.

NSERC's VP Danika Goosney, Director Elizabeth Boston, and Deputy Director Andrea Benoit were present for some deliberations.

Competition Details

- 59 applications
- Total requested: \$15.1M
- Available funds: \$9.7M
- Projected average funding rate was 64%

Compare to:

2010	2011	2012	2013	2014	2015	2016	2017	2018
57%	61%	69%	53%	52%	64%	56%	74%	69%

Competition Budget

SUBATOMIC PHYSICS ENVELOPE
MULTI-YEAR COMMITMENTS BY CATEGORY
Beginning of Competition 2019

	2018	2019	2020	2021	2022	2023
RTI - COMMITTED	\$301,716	\$0	\$0	\$0	\$0	\$0
RTI - 2019 Competition						
RTI - TOTAL	\$301,716	\$0	\$0	\$0	\$0	\$0
THEORY - COMMITTED	\$3,147,800	\$2,650,600	\$1,599,000	\$999,000	\$449,000	\$0
THEORY - 2019 Competition						
THEORY - TOTAL	\$3,147,800	\$2,650,600	\$1,599,000	\$999,000	\$449,000	\$0
EXP OPS** - COMMITTED	\$19,093,470	\$12,415,957	\$10,435,000	\$2,096,000	\$229,000	\$0
EXP OPS - 2019 Competition						
EXP OPS - TOTAL	\$19,093,470	\$12,415,957	\$10,435,000	\$2,096,000	\$229,000	\$0
MRS - COMMITTED	\$2,390,471	\$994,455	\$740,817	\$0	\$0	\$0
MRS - 2019 Competition						
MRS - TOTAL	\$2,390,471	\$994,455	\$740,817	\$0	\$0	\$0
TOTAL - COMMITTED	\$24,933,457	\$16,061,012	\$12,774,817	\$3,095,000	\$678,000	\$0
TOTAL - 2019 Competition		\$0	\$0	\$0	\$0	\$0
GRAND TOTAL	\$24,933,457	\$16,061,012	\$12,774,817	\$3,095,000	\$678,000	\$0
TOTAL ENVELOPE	\$24,933,457	\$25,762,655	\$26,133,575	\$26,109,975	\$25,383,651	\$25,383,651
REIMBURSEMENT from past FY	\$0	\$0	\$0	\$0	\$0	\$0
AVAILABLE	\$0	\$9,701,643	\$13,358,758	\$23,014,975	\$24,705,651	\$25,383,651

Round 1

- Members in conflict of interest leave the room
- Presentation by the **first internal reviewer**
- Any new or different comments by the **second internal reviewer**
- Budget related comments by the **third internal reviewer** (only for applications requesting >\$500k per year)
- Discussion by the **entire Section** (or sub-Section)
- Secret electronic voting – both on Merit Criteria and Recommended Budget

Any member or NSERC staff may “flag” an application.

Members are asked not to tally results to avoid biases.

Round 1

- Full Section deliberations
 - Project applications
 - Major RTI applications (Category 2 & 3)
 - Major MRS applications (> \$500k/yr)
- Sub-Section deliberations (in parallel)
 - Individual (Experimental and Theory) applications
 - Quota of one (1) Discovery Accelerator Supplement (DAS) for the SAPES in 2019.
 - RTI-Category 1 & MRS applications
- Conclusion of Round 1
 - Re-discussed any flagged applications
 - NSERC personnel tally & present the budget

Budget Balancing – by Round

- Available Funds: \$9.701M
- Requested: \$15.083M

	Recommendations	Balance
Round 1	\$10.627M	-\$0.926M
Round 2	\$10.133M	-\$0.432M
Round 3	\$9.696M	\$5.6K

Quota of one (1) Discovery Accelerator Supplement (DAS) for the SAPES in 2019.

Multiyear Commitments at End of Competition

SUBATOMIC PHYSICS ENVELOPE MULTI-YEAR COMMITMENTS BY CATEGORY Competition 2019 - End of Round 3					
	2019	2020	2021	2022	2023
RTI - COMMITTED	\$0	\$0	\$0	\$0	\$0
RTI - 2019 Competition	\$645,000	\$138,357	\$0	\$0	\$0
RTI - TOTAL	\$645,000	\$138,357	\$0	\$0	\$0
THEORY - COMMITTED	\$2,650,600	\$1,599,000	\$999,000	\$449,000	\$0
THEORY - 2019 Competition	\$697,000	\$707,000	\$707,000	\$707,000	\$707,000
THEORY - TOTAL	\$3,347,600	\$2,306,000	\$1,706,000	\$1,156,000	\$707,000
EXP OPS** - COMMITTED	\$12,415,957	\$10,435,000	\$2,096,000	\$229,000	\$0
EXP OPS - 2019 Competition	\$6,738,000	\$6,580,500	\$6,410,000	\$311,000	\$271,000
EXP OPS - TOTAL	\$19,153,957	\$17,015,500	\$8,506,000	\$540,000	\$271,000
MRS - COMMITTED	\$994,455	\$740,817	\$0	\$0	\$0
MRS - 2019 Competition	\$1,616,000	\$1,766,800	\$1,773,645	\$1,400,000	\$1,400,000
MRS - TOTAL	\$2,610,455	\$2,507,617	\$1,773,645	\$1,400,000	\$1,400,000
TOTAL - COMMITTED	\$16,061,012	\$12,774,817	\$3,095,000	\$678,000	\$0
TOTAL - 2019 Competition	\$9,696,000	\$9,192,657	\$8,890,645	\$2,418,000	\$2,378,000
GRAND TOTAL	\$25,757,012	\$21,967,474	\$11,985,645	\$3,096,000	\$2,378,000
TOTAL ENVELOPE	\$25,762,655	\$26,133,575	\$26,109,975	\$25,383,651	\$25,383,651
REIMBURSEMENT from past FY	\$0	\$0	\$0	\$0	\$0
AVAILABLE	\$5,643	\$4,166,101	\$14,124,330	\$22,287,651	\$23,005,651

**EXP OPS = Experimental Operations – Includes Project grants and experimental Individual grants

Share of Envelope at End of Competition

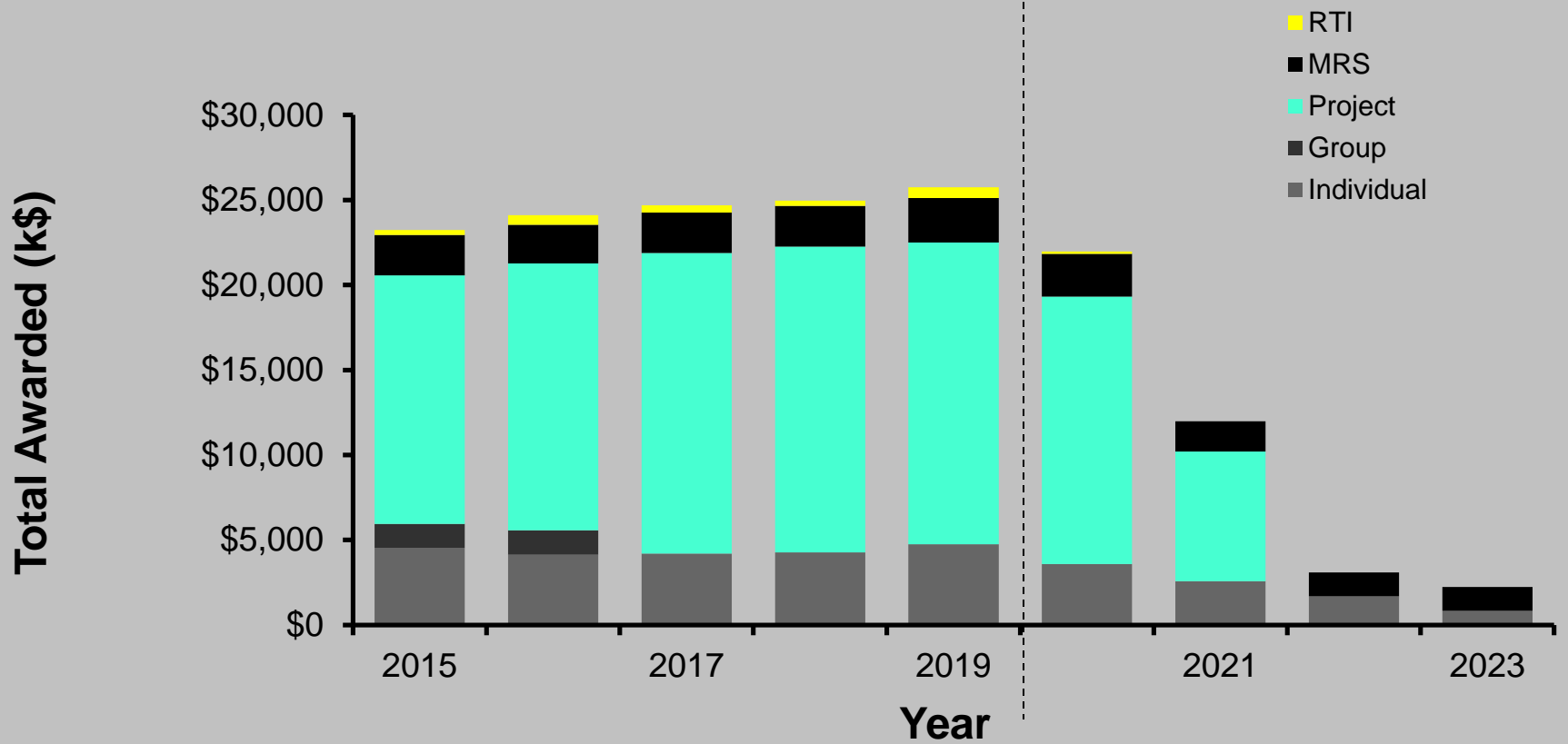
Comparison to Past Years

Subatomic Physics Evaluation Section Evolution of Envelope's Shares

	2019	2018	2017	2016	2015	2014	2013	2012	2011
Theory	13.00%	12.62%	13.23%	14.01%	15%	14%	14%	14%	14%
RTI	3%	1.21%	1.72%	2.34%	1%	5%	3%	3%	6%
Total Research Ops	84.50%	86.17%	85.05%	83.65%	84%	81%	83%	83%	80%
Exp. Ops	74.36%	76.58%	75.42%	74.22%	74%	71%	73%	72%	68%
MRS	10.13%	9.59%	9.63%	9.43%	10%	10%	10%	11%	13%

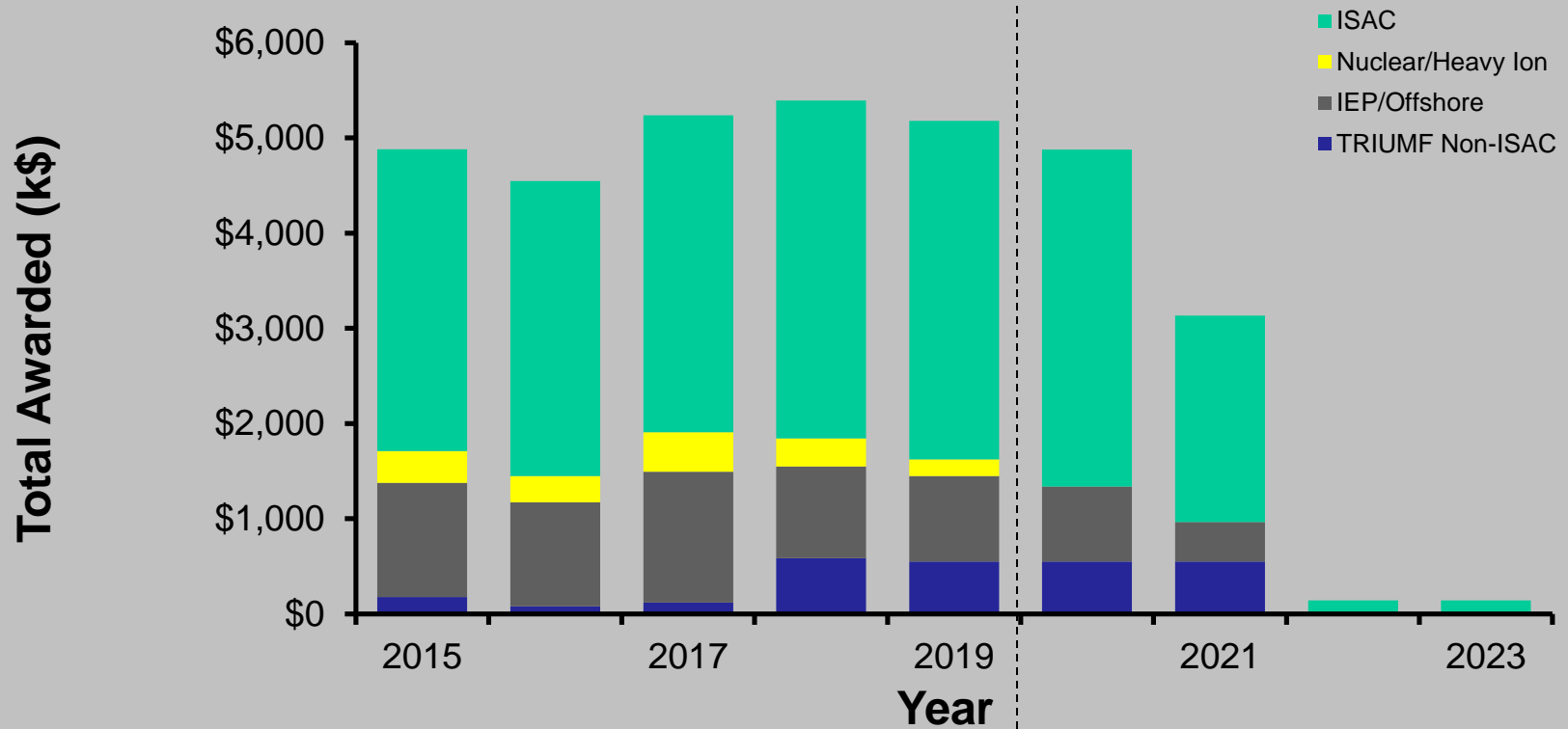
Evolution of SAPES Awards

Grant Type



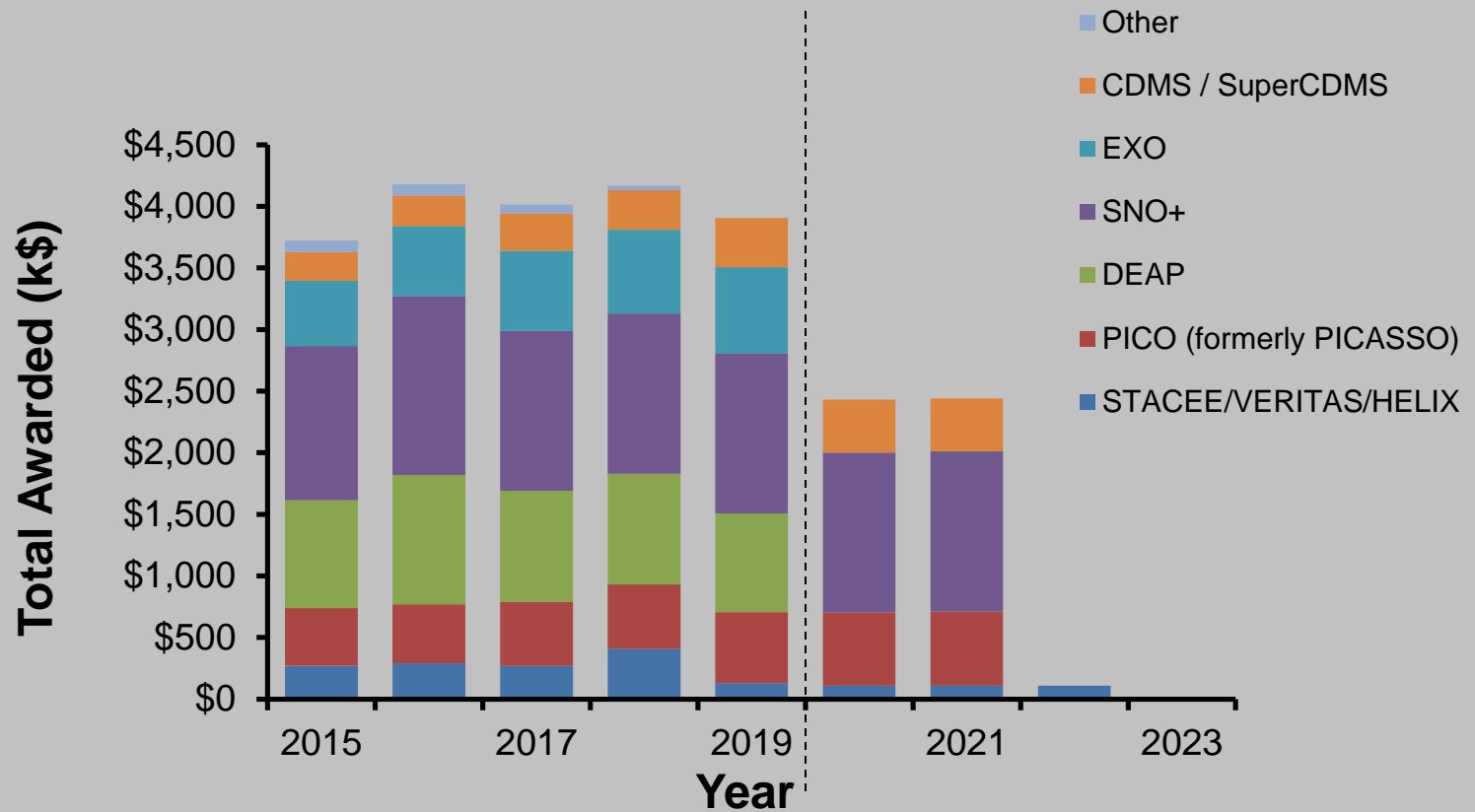
Evolution of SAPES Awards

IEP / Nuclear

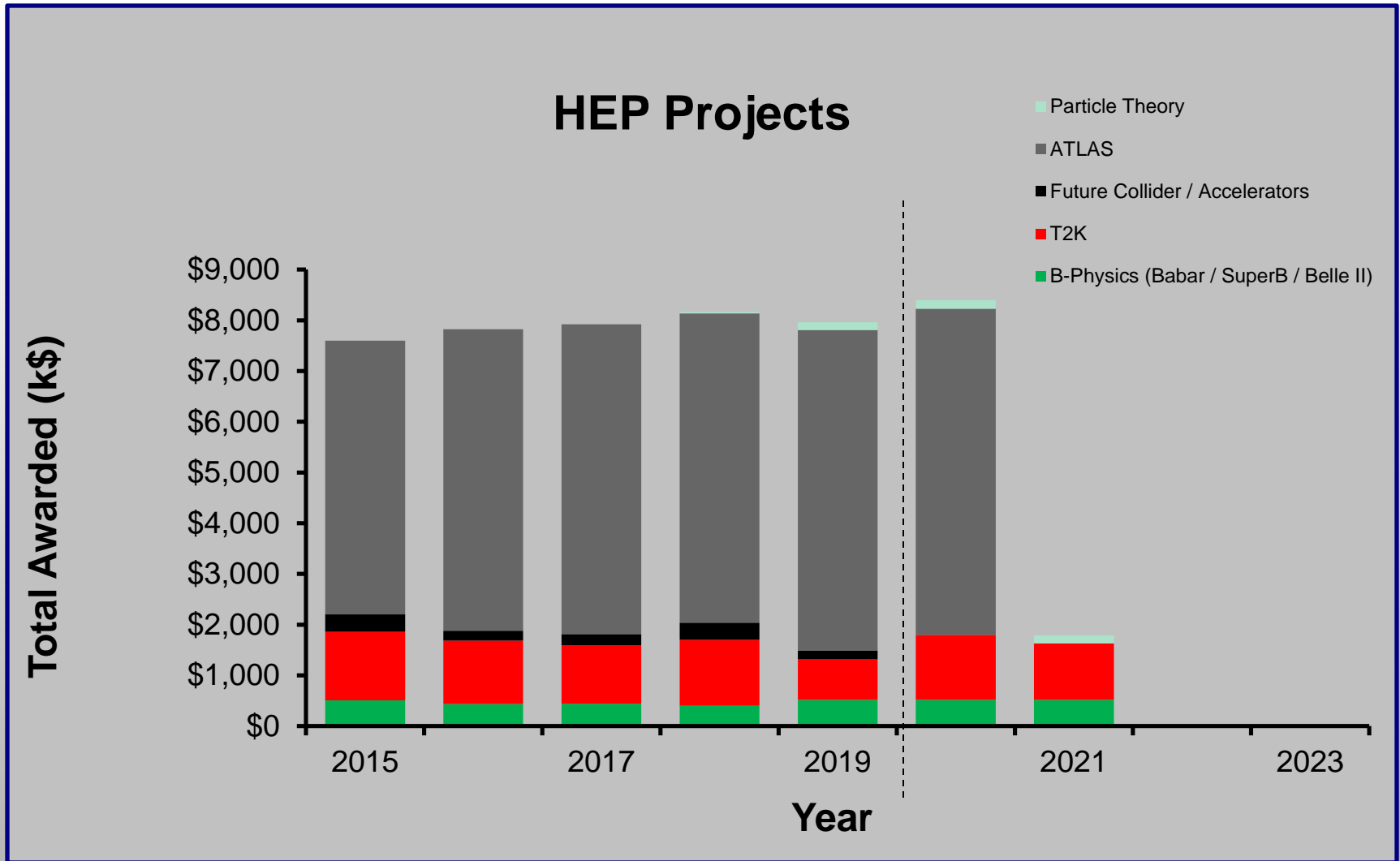


Evolution of SAPES Awards

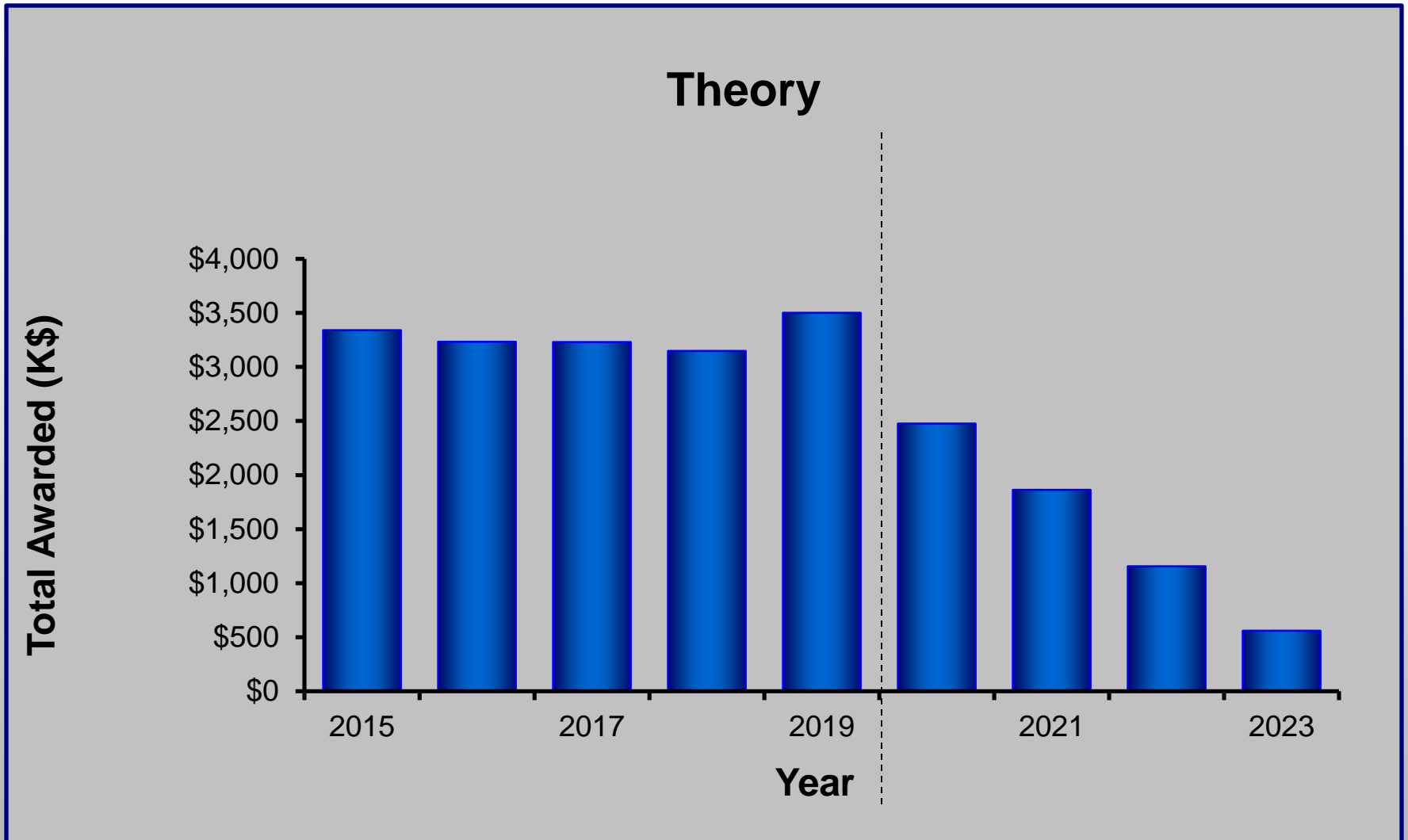
Particle Astrophysics/SNOLAB



Evolution of SAPES Awards



Evolution of SAPES Awards

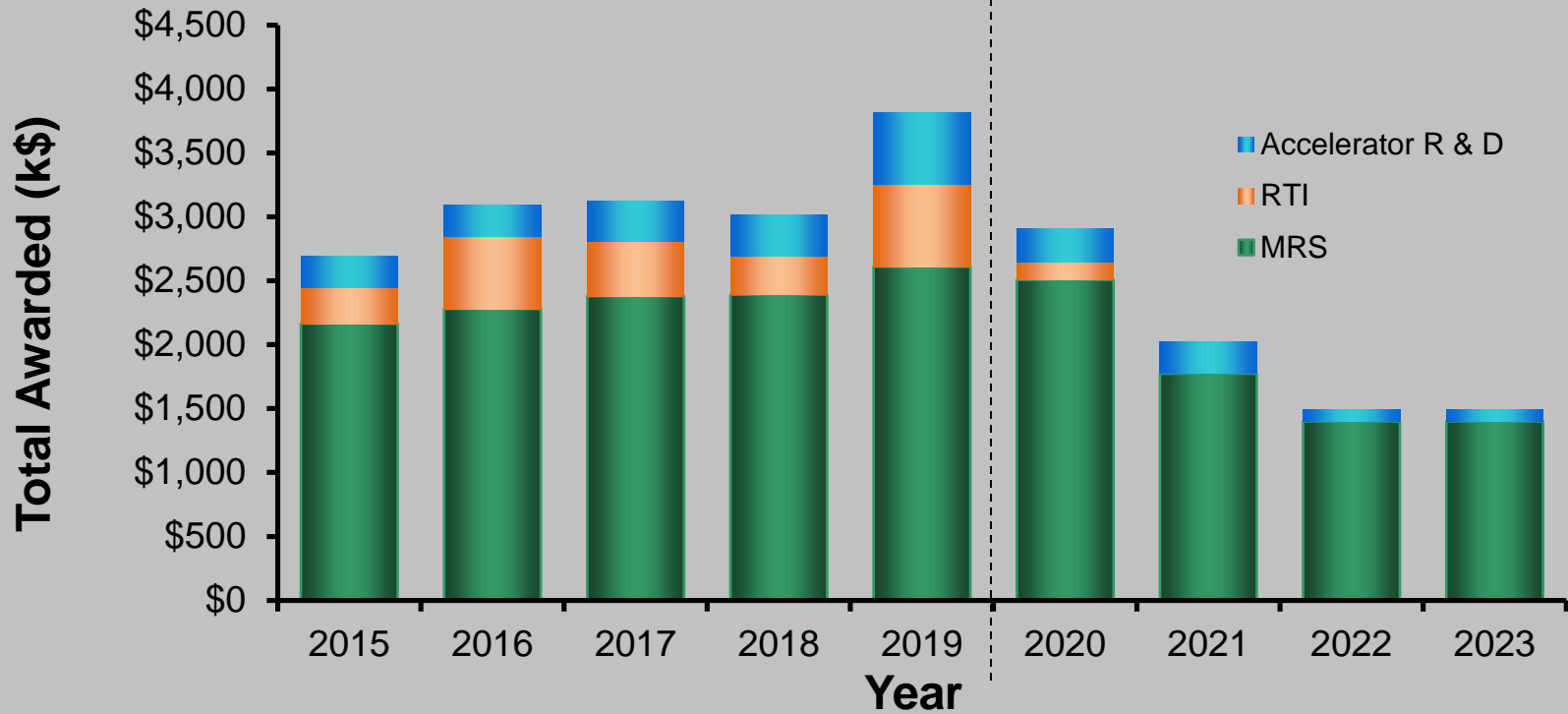


LRP 2016 Categories

- Infrastructure:
 - Accelerator R&D
 - RTI
 - MRS
- Fundamental Subatomic Physics:
 - Direct Dark Matter
 - Energy Frontier
 - Neutrino Properties
 - Nuclear and Particle Astrophysics
 - Precision Frontier
 - Strongly Interacting Matter
- Theory

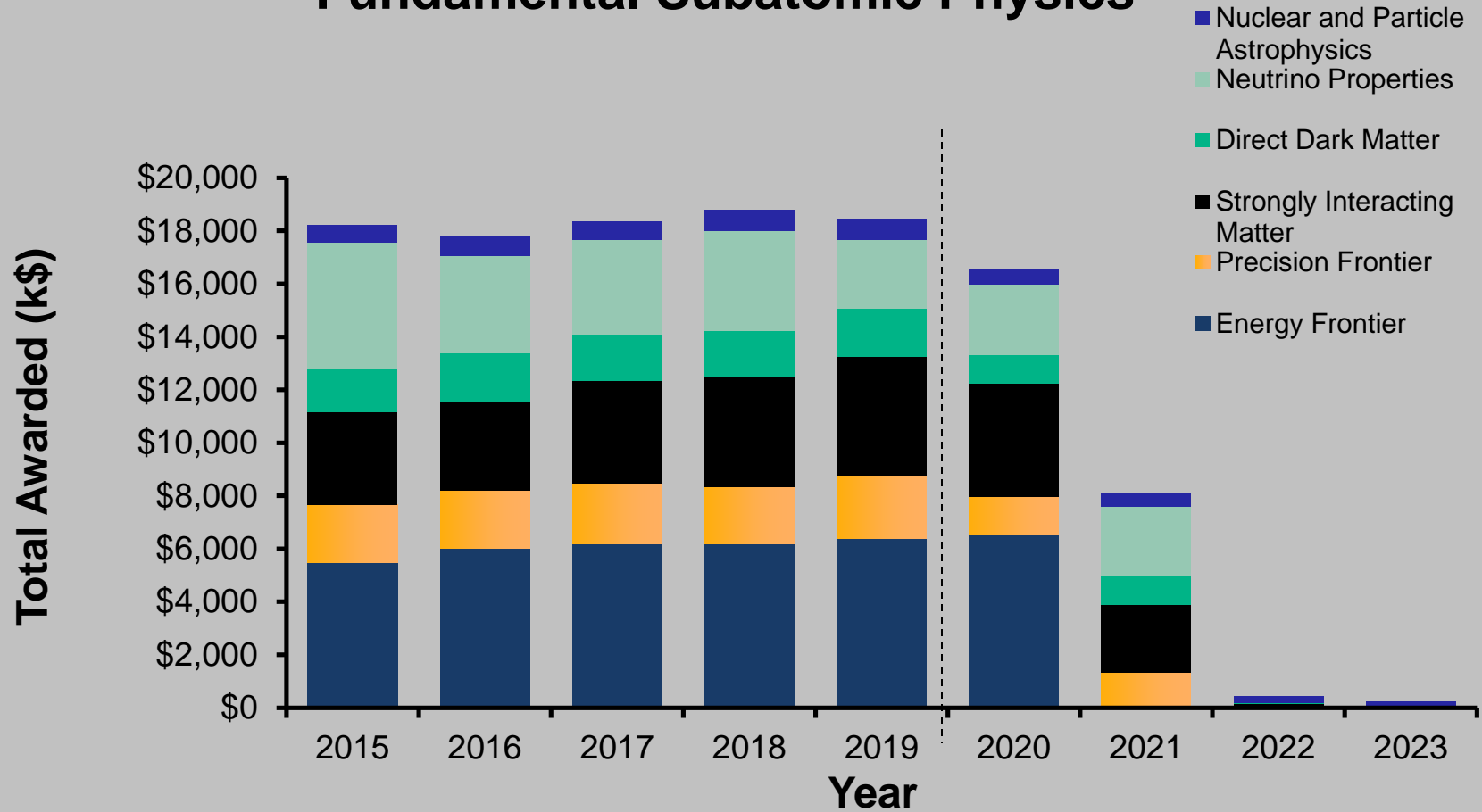
Evolution of SAPES Awards

Infrastructure and R&D for SAP



Evolution of SAPES Awards

Fundamental Subatomic Physics



Theory Data

	2014	2015	2016	2017	2018	2019
Number of Theory applications received	13	19	13	13	12	14
Theory success rate	69.23%	94.74%	100.00%	100.00%	75.00%	78.57%
% of applications submitted that were Theory	23.64%	32.20%	22.41%	25.49%	30.77%	23.73%
% of amount requested from Theory	9.08%	9.98%	8.17%	7.18%	6.99%	7.28%
% of amount awarded to Theory	9.05%	8.88%	8.29%	6.87%	4.83%	7.19%
Theory funding rate	51.96%	57.56%	56.95%	55.64%	51.30%	63.51%
Funding rate overall for that CY	52.16%	64.66%	56.06%	58.13%	74.17%	64.28%
Theory Envelope Share (includes ongoing commitments)	14.02%	14.92%	14.01%	13.23%	12.62%	13.00%

Policy Matters

- Requested clarification about the situation of having bridging grants requiring 2nd person (spokes) to be listed, but then having these applications reviewed according to SAPIN merit criteria → needs clarification both internally and externally (to community)
- Discussed how to provide continuity within SAPES in knowledge of large projects. One suggestion was to provide the past “Message to Applicant” to SAPES members.
- Flagged and discussed the fact that administrative responsibilities are not accounted for in evaluating the rating for each selection criteria (research output, HQP training, etc.); as a result, a period of lower level of research activities can have a negatively long lasting impact on the level of funding awarded to a grantee.
- In-person LPD presentations were reported as more effective than virtual presentations. SAPES also discussed the possibility of giving a role to a second person attending the LPD (e.g. young scientists presenting physics, PI presenting project planning/budget).
- Merit indicator grid adapted for the evaluation of project grants was used for the first time this year. SAPES agreed that this was a valuable tool.
- Several modifications to the formatting/presentation of the applications were put forward, modifications that would greatly facilitate the reviewing process.
- Calibration session found to be very useful, recommended holding this session 3-4 weeks prior to competition week.

NSERC News



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Change in NSERC Leadership

Dr. Danika Goosney

- **Joined NSERC in February 2019 as new Vice-President of Research Grants and Scholarships.**
- **Formerly the Associate Vice-President, Tri-agency Institutional Programs Secretariat, at the Social Sciences and Humanities Research Council.**
- **Also held director general positions within the Research, Knowledge Translation and Ethics Portfolio at the Canadian Institutes of Health Research.**
- **Danika is taking over from Dr. Pierre Charest, who retired in January 2019 after a long career in the public service including seven years at NSERC.**



NSERC News

Federal Budget 2019 Investing in the Middle Class

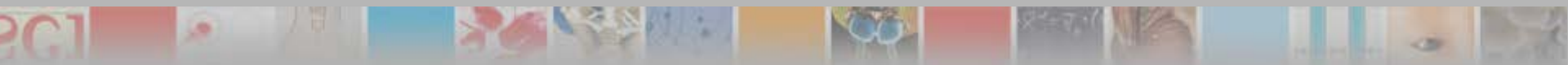
\$151.4 million over five years, starting in 2019/20, to the agencies

Agency	Programs	Over five years	Ongoing/year
NSERC/CIHR/SSHRC	Canada Graduate Scholarship (CGS) Master's (CGS-M) and Doctoral (CGS-D)	\$114 million	\$26.5 million
NSERC/CIHR/SSHRC	Paid parental leave for student researchers	\$37.4 million	\$8.6 million

- ~500 additional CGS-M and ~170 additional CGS-D across the agencies
- double parental leave coverage from 6 months to 12 months for HQP

Federal Budgets – Impact on Subatomic Physics Envelope

- Funds announced in Federal Budgets 2014, 2016 and 2018 have led to increases to the envelope.
- In 2014 and 2016, the funds allocated to the envelope were based on SAP's share of funds within the Discovery Grants program.
 - In 2014, this share represented \$157,920 ramped up over 5 years (2018 onwards a \$789,600 ongoing commitment).
 - In 2016, this share represented \$390,720 ramped up over 5 years (2021 onwards a \$1,874,400 ongoing commitment).
- In 2018, a different approach was taken.



Federal Budget – Impact on Subatomic Physics Envelope – Budget 2018

- Ongoing efforts across the Discovery Grants program to better align funding (bin levels) across the various communities we serve.
- No funds were allocated to CY2018 from the 2018 Federal Budget.
- For CY2019, SAP Funding Opportunities were reviewed by NSERC management in Winter 2019 and compared with similar programs within Discovery outside of SAP
 - **SAP Projects** was identified as the program with the most budgetary pressure.
 - **SAP Institutes** was also included in the share calculation given that institutes outside the envelope received an increase.
- Using the share of SAP Projects+Institutes compared to overall Discovery Grants program, \$726,324 was allocated to the envelope in 2018-19, 2019-20, 2020-2021. No new funds allocated for SAPIN, non-institute MRS, SAP-RTI.
- Use of the additional funds was not restricted to any particular program.
- Additional allocations to the SAP Envelope for CY 2020 and beyond are still to be determined.

Federal Budgets – Impact on Subatomic Physics Envelope

	2016	2017	2018	2019	2020	2021	2022	2023
2014 Budget increase	\$632K	\$790K	\$790K	\$790K	\$790K	\$790K	\$790K	\$790K
2016 Budget increase	\$391K	\$762K	\$1133K	\$1503K	\$1874K	\$1874K	\$1874K	\$1874K
2016 Budget increase add.*	\$773K	\$159K	\$192K	\$24K	\$24K			
2018 Budget				\$726K	\$726K	\$726K		
Total Increase	\$1.80M	\$1.71M	\$2.11M	\$3.04M	\$3.41M	\$3.39M	\$2.66M	\$2.66M
Total Envelope	\$24.63M	\$24.43M	\$24.83M	\$25.76M	\$26.13M	\$26.11M	\$25.38M	\$25.38M
DG Expenditures**	\$354M	\$367M	\$386M	\$407M	N/A	N/A	N/A	N/A

*additional non-ongoing funds were secured from the Budget 2016 funds.

**Includes SAPIN, SAPPJ

Over to you...

- Questions?
- Comments?
- Advice?

