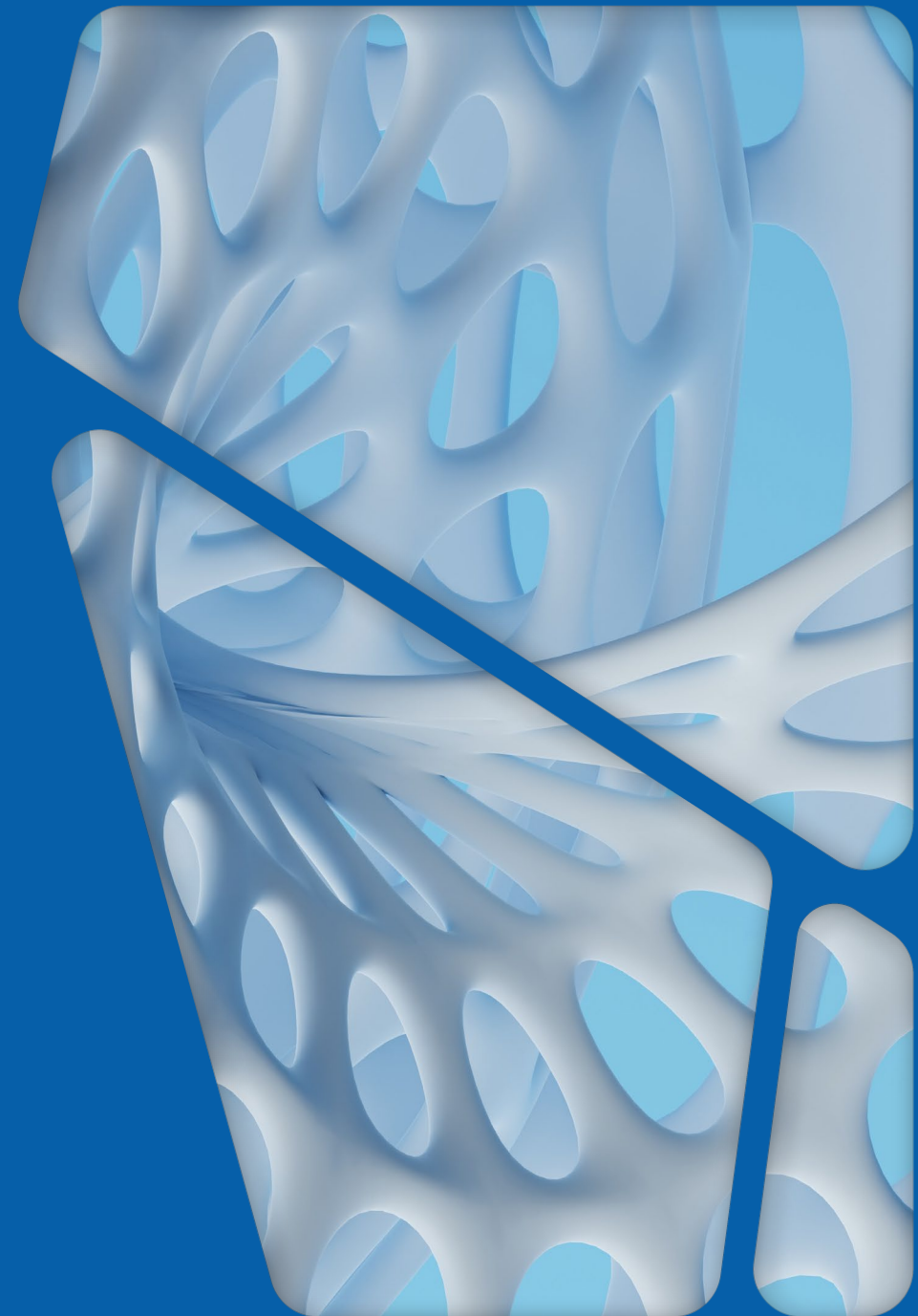




Supporting Quantum Research & Innovation in Canada

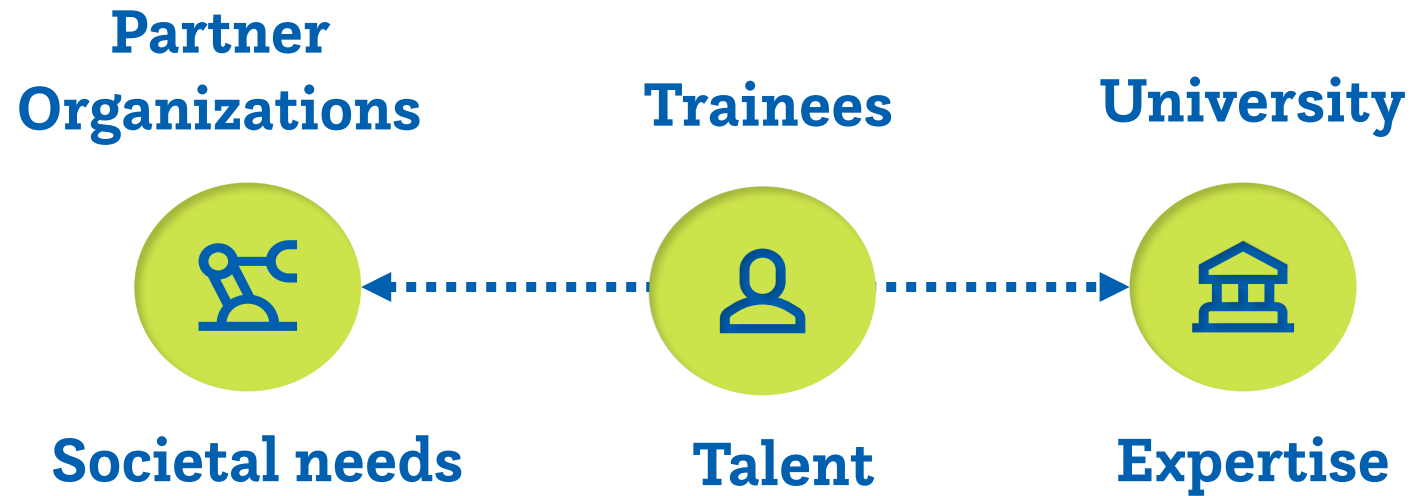
Amanda Green, PhD.
Senior Advisor, Business Development
Mitacs



Bringing innovation into reach
for more people in more places through
access to top researchers, flexible
project plans, and
co-investment in talent.



What do we do?



Mitacs supports collaborative Research and Innovation projects, taps into Canadian Universities' vast talent and resources, matching needs with expertise to create ambitious solutions to real-world challenges.

We fund the entire innovation spectrum



RESEARCH

Accelerate & Elevate

- ✓ National & International Collaborations
- ✓ Projects involving academic and non-academic organizations
- ✓ Entrepreneurial arm
- ✓ All sectors/disciplines



INNOVATION & DEVELOPMENT

Business Strategy Internship

- ✓ National collaborations
- ✓ Projects involving academic and non-academic organizations
- ✓ All sectors/disciplines



INTERNATIONAL IMPACT

Globalink

- ✓ International research collaborations with academia
- ✓ Bi-mobility of students/HQP
- ✓ All sectors/disciplines

Mitacs in the Quantum Ecosystem

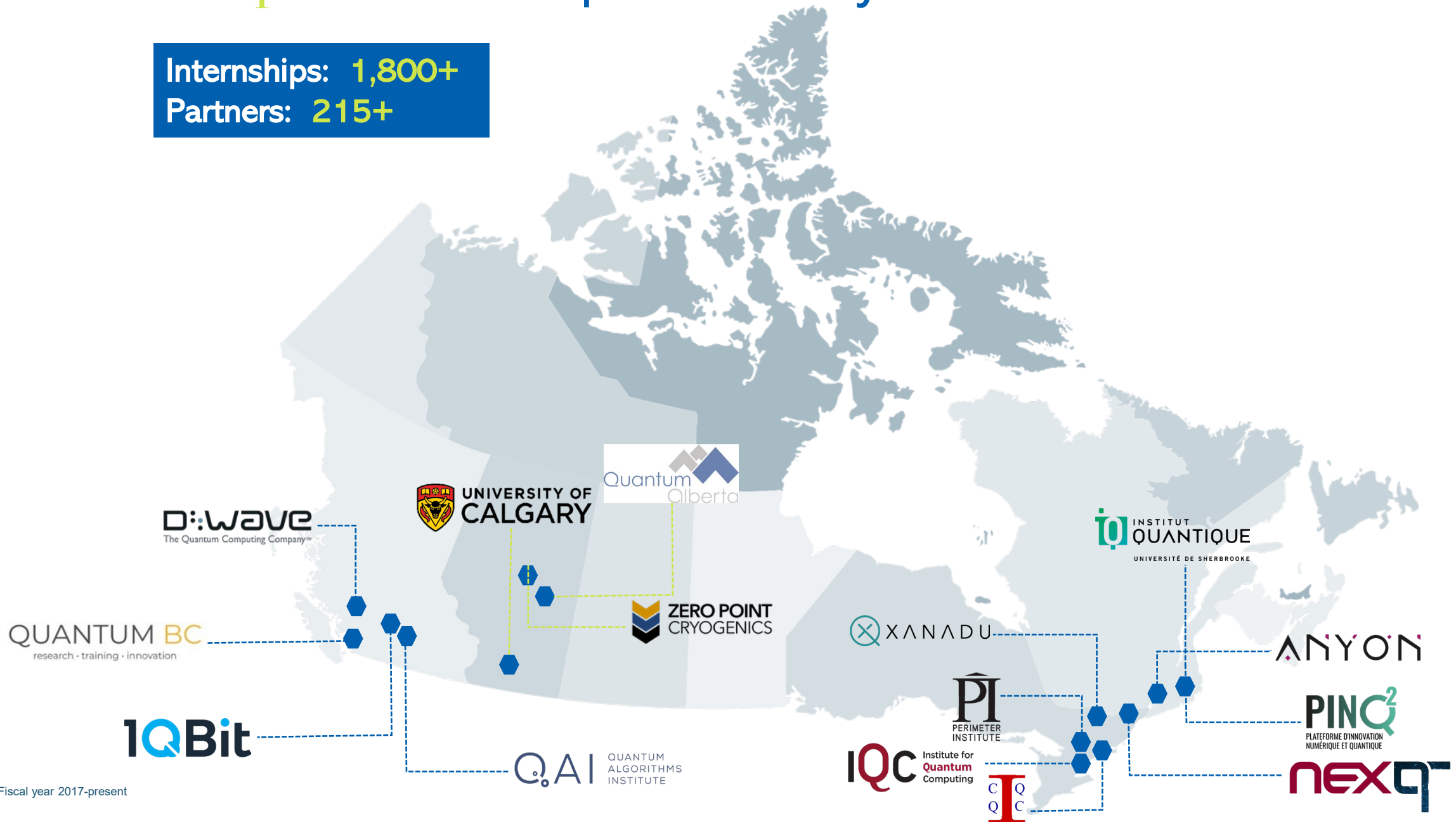


\$29M+ In Project Funding

Source: Mitacs Project Data over the last 5 years

impact: Canada's quantum ecosystem

Internships: 1,800+
Partners: 215+



impact: Building a sustainable quantum talent pipeline

1QB Information Technologies (Vancouver, BC)



Mitacs has supported over 55 interns with the quantum computing company 1Qbit.

CEO Andrew Fursman credits Mitacs with helping to build 1Qbit's foundations and leading to its success.



Our flagship programs

Accelerate

National and international research collaborations



Elevate

1 or 2-year postdoc fellowship



Business Strategy Internship

Business innovation across Canada



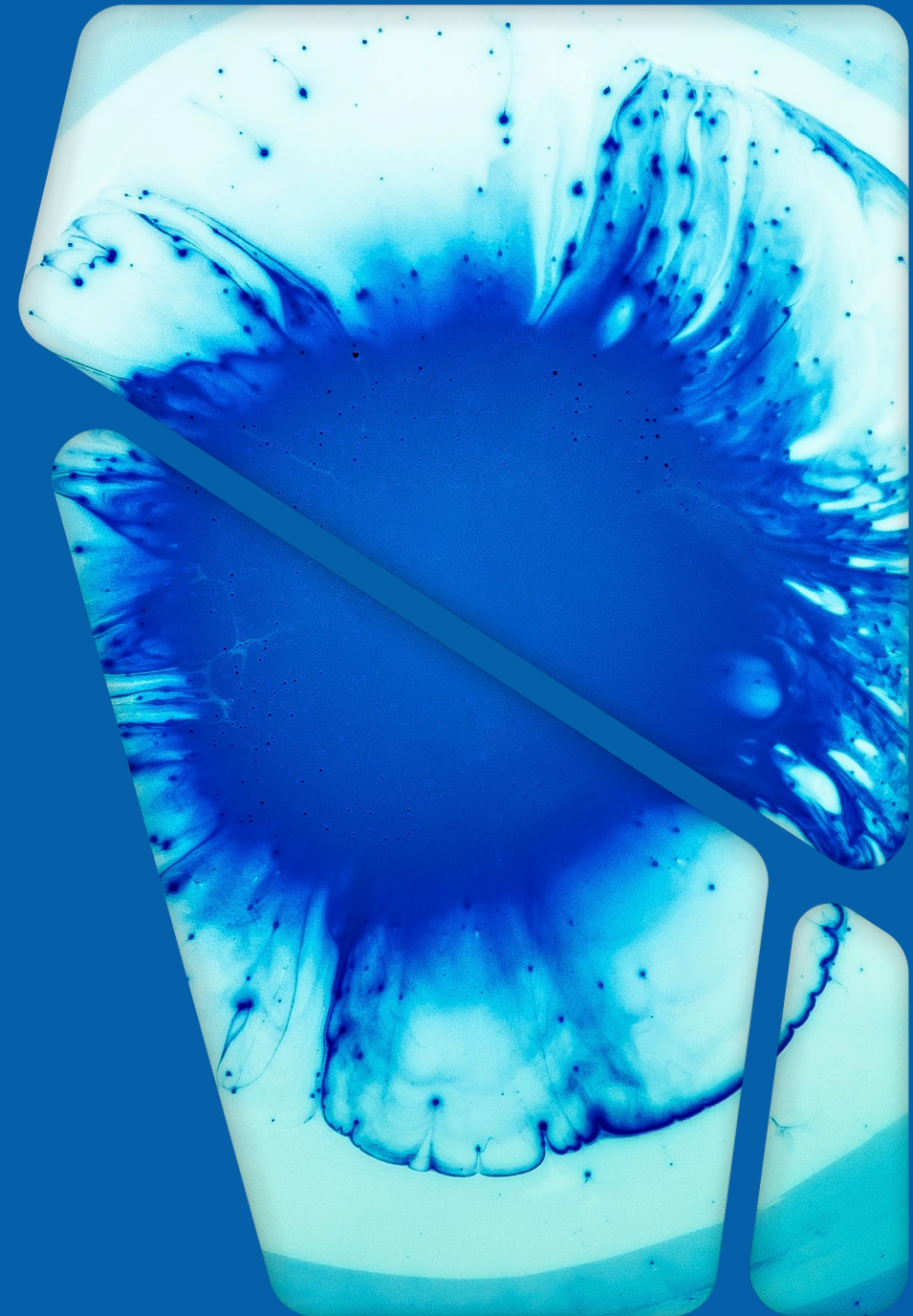
Globalink

International exchange of students to and from Canada



Mitacs Globalink

*International Exchange:
Globalink Research Award & Globalink
Research Internship*




Mitacs – Quantum Travel Initiatives

- Special Initiatives to Encourage Canada's National Quantum Strategy
- Build Canada's Expertise in Technologies using Quantum Mechanics and Principles, such as:
 - Quantum computation (hardware), algorithms, and software,
 - Quantum communication, networks, and cryptography
 - Quantum metrology, sensing, imaging, and materials.

Globalink Research Award (GRA)



Two-way mobility of
trainees 



University - University
collaborations

Home academic
supervisor domestically
+
Host academic
supervisor abroad

\$6K - \$15K*
travel grant

12-to-48-week*
research project
(No industry partner required)

SPECIAL CAMPAIGN: QUANTUM GRA OFFER

International Quantum Research Collaborations and Internships

- All countries are eligible, with a few exceptions
- Two-way travel between Canadian universities and international collaborators
- No co-funding required from Canadian university
- No allocation limits

Longer Project Durations and up to Twice the Funding

1 OR 2 'units' (IUs) per
intern

- Funding per student:
 - **\$6,000** for 12-24 weeks OR **\$12,000** for 24-48 weeks
- International Partners' top-up of **\$3,000** per student:
 - **\$9,000** for 12-24 weeks OR **\$15,000** for 24-28 weeks
- Up to 5 interns on a single application

SPECIAL CAMPAIGN: Mitacs Quantum GRA – Eligibility Details

**\$6,000-
\$15,000***

award per student

- Travelers can be **senior undergrads, graduate students, or postdoctoral fellows**
- Award value depends on **project length** (1 or 2 ‘units’) and **international partner status**
- Up to 25% of the project duration can be done **at the home university**

**Up to
5 travelers
per
project**

- Each student on a proposal can travel at **different times** (within 12 months)
- Travel can be in **both directions** on the same proposal
- All travelers must be **named** to submit a proposal

Quantum GRA –

Participating International partners who provide top-up funds

Brazil: Fundação Araucária Foundation

France: French Embassy in Canada

France: Université Grenoble Alpes

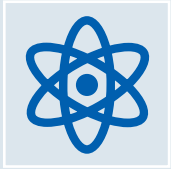
France: Université de Lorraine

Germany: Forschungszentrum Jülich (FZJ Helmholtz Association)

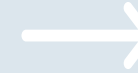
Germany: Karlsruhe Institute of Technology (KIT)

Taiwan: National Science and Technology Council (NSTC) – NARLabs

GRA Quantum Projects - Examples



UWaterloo MSc student travels to Duisburg, Germany to examine quantum materials development



PhD Student from Sister Nivedita University in India visits UWaterloo to investigate quantum dots impact on immune cells



5 students, bi-lateral exchange with National University of Singapore to develop novel quantum algorithms for k-means



Our flagship programs

Accelerate

National and international research collaborations



Elevate

1 or 2-year postdoc fellowship



Business Strategy Internship

Business innovation across Canada



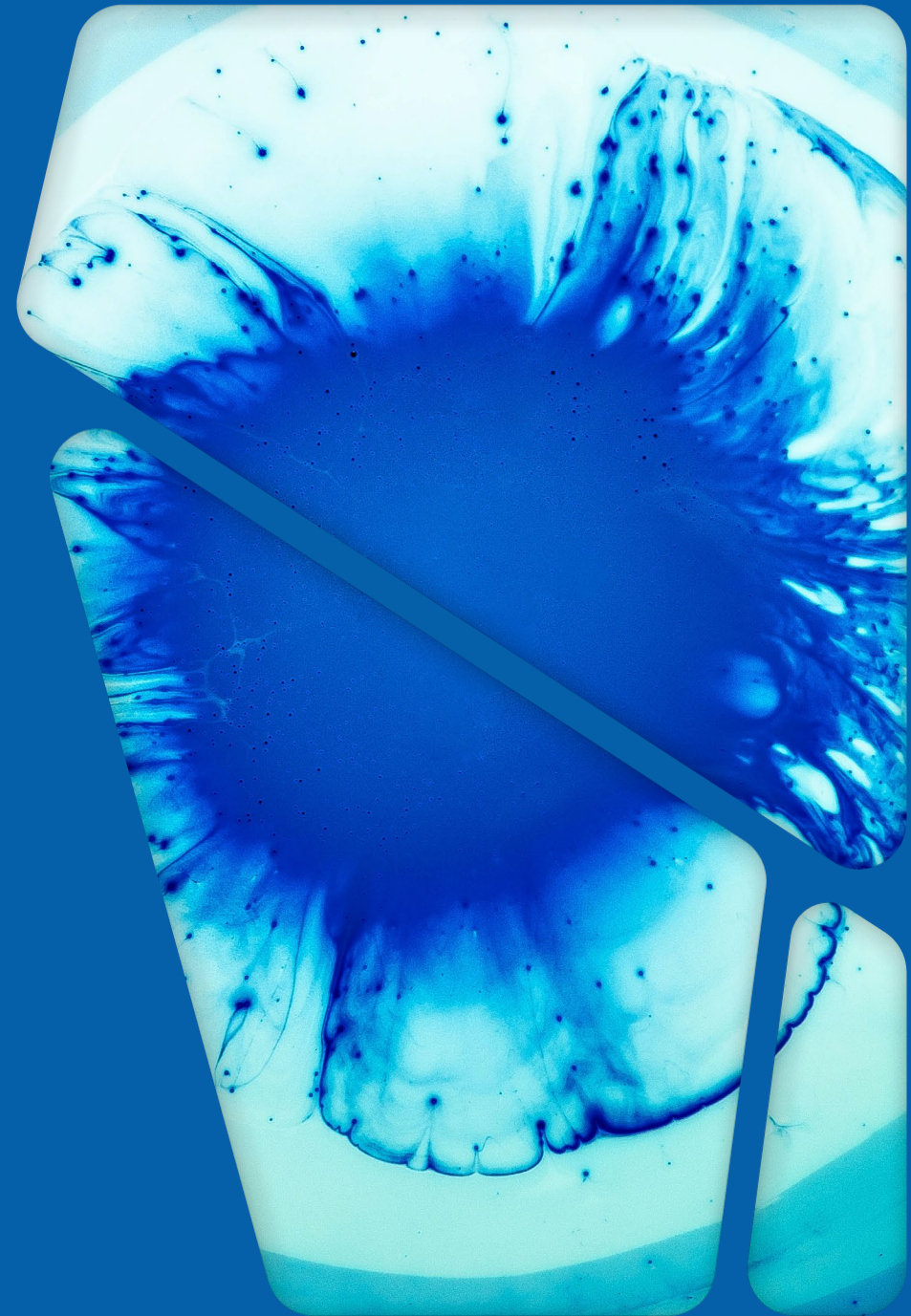
Globalink

International exchange of students to and from Canada



Collaborating with a partner organization

*Accelerate, Elevate & Business
Strategy Internship*



Eligible Partner Organizations



Businesses



Non-Profits*



Municipalities



Hospitals

Eligible Trainees



Undergraduates



Master's



PhD

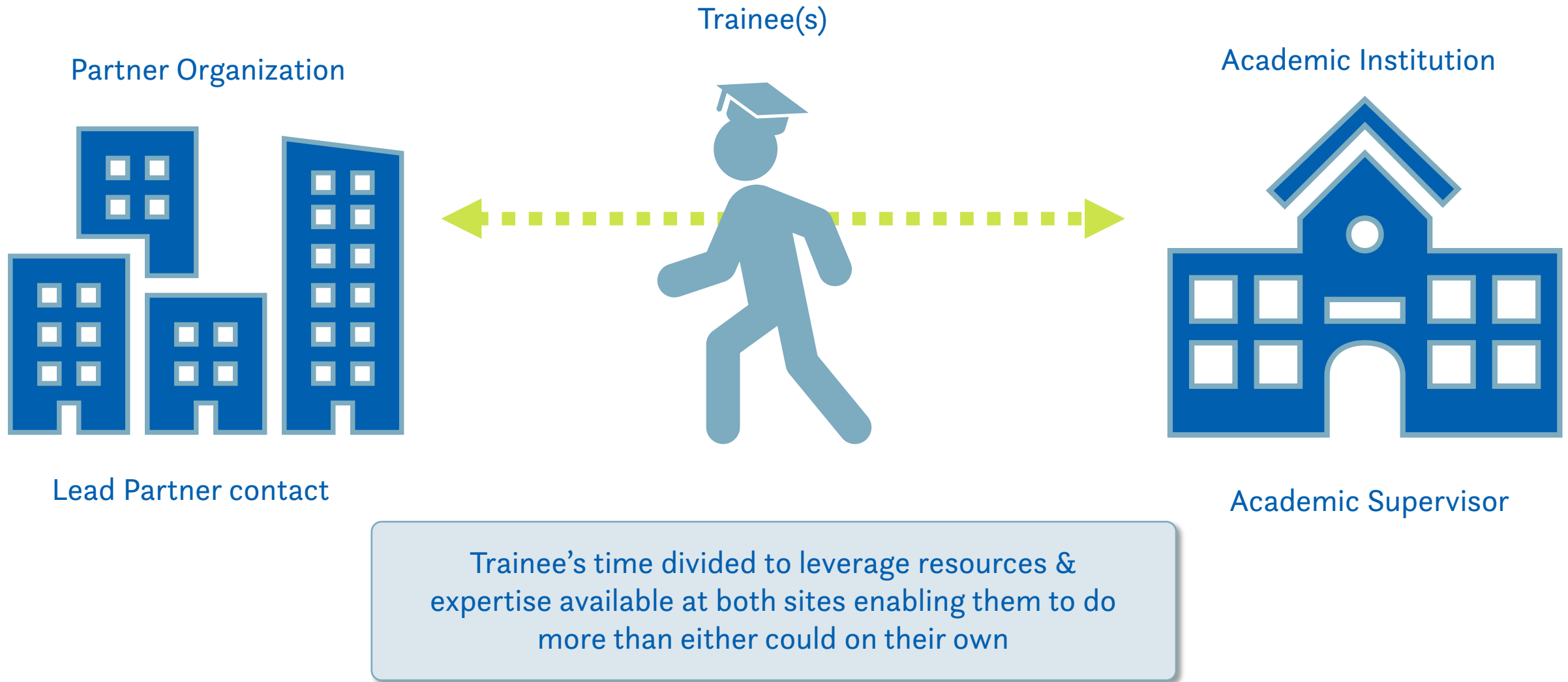


Post-Doctoral Fellow

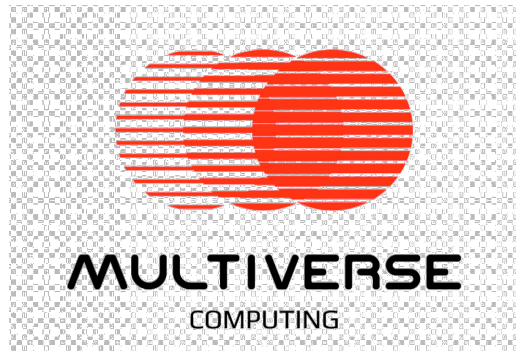


Recent Graduate

Collaboration: *how does it work?*



Mitacs Key Quantum Partners



~ 50 quantum companies in our network

Mitacs Accelerate - RESEARCH



Not a competition:
applications are accepted at
any time



Decision communicated
between
10 -12 weeks



High success rate



Collaboration between **researchers**
and partner organizations (*domestic & international opportunities*)

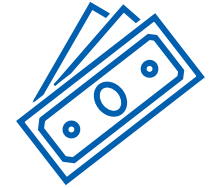
Trainees of all levels: from **undergrads**
to **postdocs** and even **recent grads**

Addresses a **question** relevant to the
partner & broader research community

All sectors & disciplines
Small or large **multidisciplinary projects**

Project funded **50%** by the partner & **50%** by Mitacs.
No funds from professor required

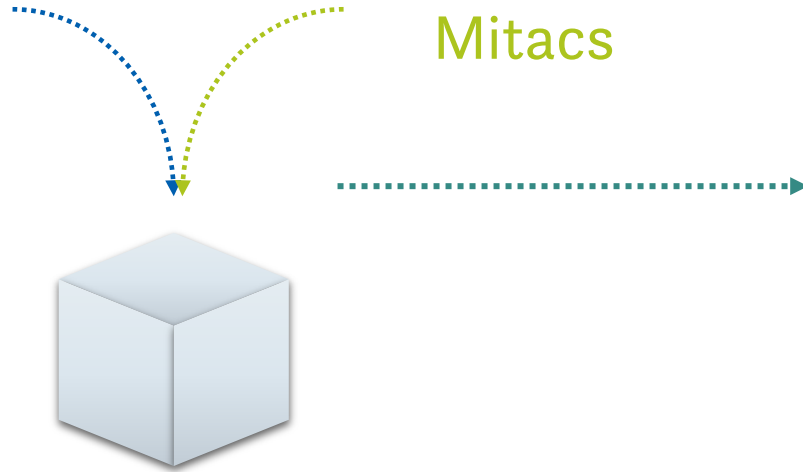
Accelerate + BSI funding model



10K or 15K per block working budget

50% investment from partner

50% from Mitacs



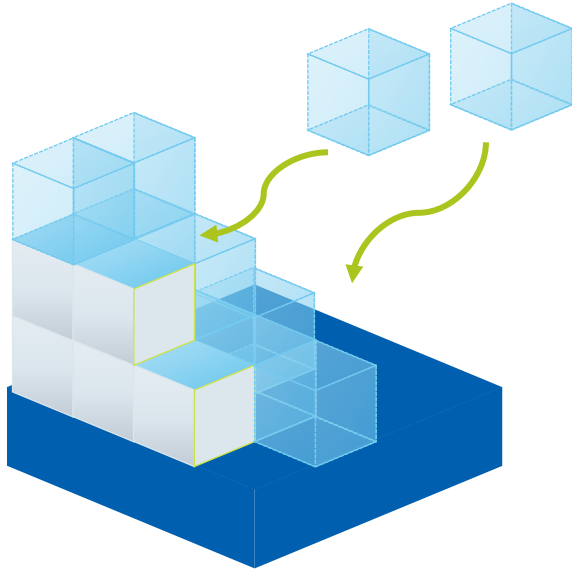
4-6 months per block

2/3
Stipend
\$

1/3
Flex funds
\$

No flex-funds for 10K modules

Accelerate is flexible & scalable



- As many blocks as needed
- Blocks can occur concurrently, sequentially, or a mix
- Can have 'TBD' trainees to allow for recruitment

Trainees can hold multiple blocks

Two-year Master's thesis

Four-year PhD thesis

Undergraduate Assistantship

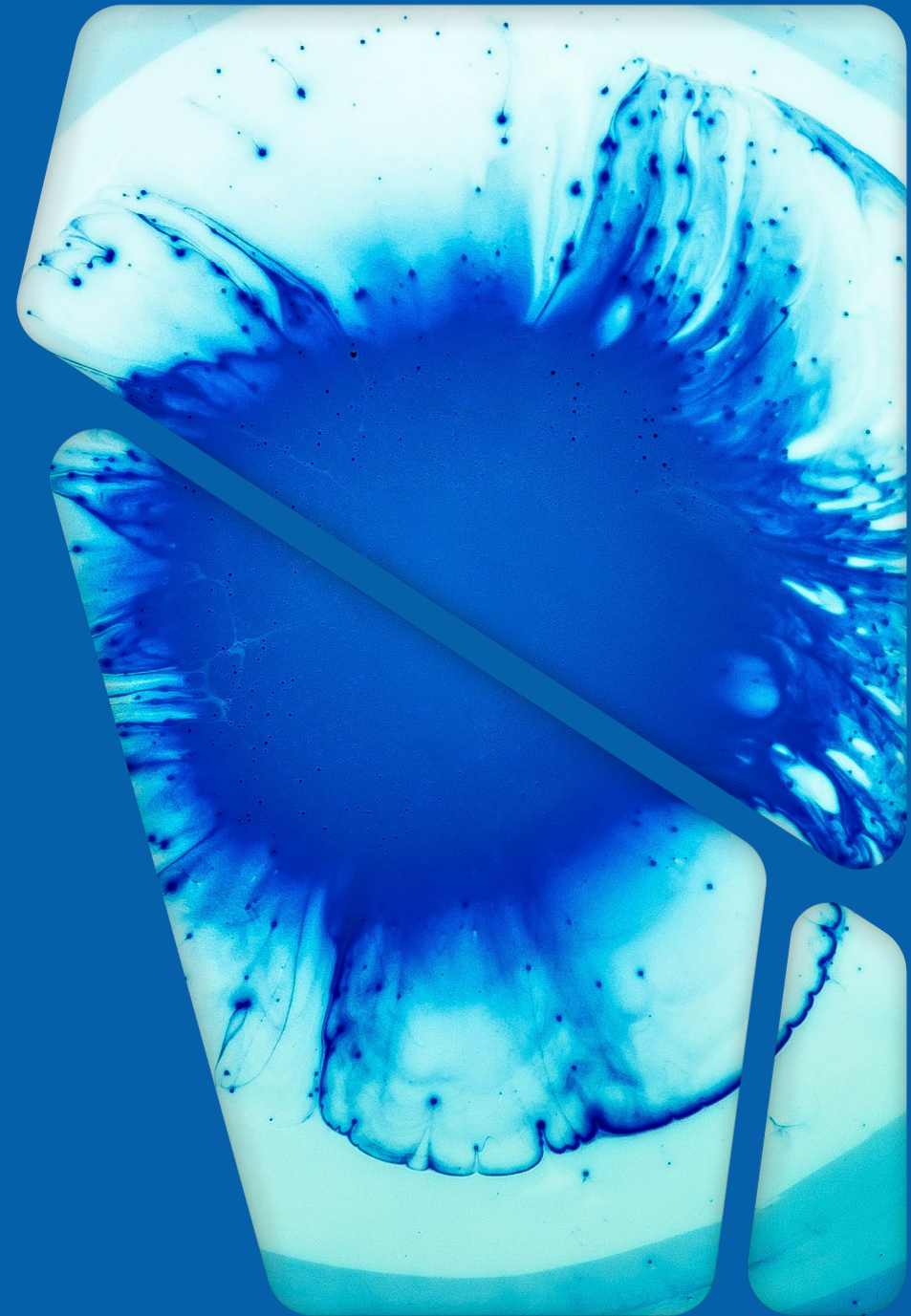
Three-year postdoctoral fellowship

Recent Graduates (up to 1 year)*

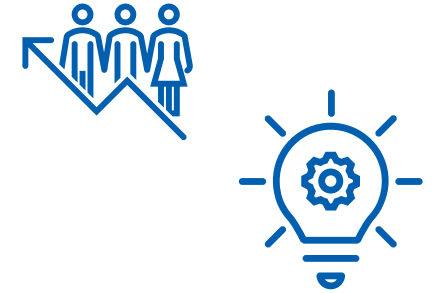
*Excludes persons that have completed a post doctoral fellowship

Special Offerings for Accelerate

*Entrepreneur, International, Umbrella
and Joint Program Options*



Accelerate Entrepreneur



Supports trainee founders to do research **for their own start-up**

✓ Trainee want to create a start-up based on their academic research

✓ Trainee wants to commercialize their research

✓ Trainee is a founder/co-founder of a company advancing research in their field

Bottom line: Trainee gets paid to focus on their company

A clear path from lab to market



Internship



mitacs



to



Entrepreneurship



JANUARY 9, 2023

Making a technological leap in air transportation

Umbrella Program – *Fast Tracking Quantum Innovation*

- **Step 1.** Overall Project Proposal (scope/methods) is submitted to Mitacs for scientific review and approval to build large, strategic collaboration plans.
- **Step 2.** Submit a short proposal outlining the scope of trainee activities/methods/timelines for funded projects, once specifics are known (Streamlined applications + Rapid review (<1 month))

Current Quantum Umbrellas Available for Projects:

University of Toronto – Quantum Computing - 90 internship blocks; \$675K in matching funds

DistriQ Quantum Innovation Zone/Sherbrooke –75 internships; \$562,500 in matching funding

Quantum City and Ucalgary - 90 internship blocks; up to \$675K in matching funding

Perimeter Institute: 100 internships, \$750K in matching funds for UG/ MSc/ PhD/ PDF interns

Supervisors: Roger Melko, Timothy Hsieh, David Gosset, Christine Muschik, Rob Spekkens, Elie Wolfe (*others can be added*)

Project Themes: Quantum computing hardware, quantum materials, tools at intersection of quantum physics and ML

Project Goals: Connect HQP with internships to offer training opportunities outside academia, and tackle problems relevant to developing quantum computing hardware, quantum materials, and tools at the intersection of quantum physics and machine learning.

Mitacs Accelerate – Strategic Partnerships

Mitacs Accelerate can be used in conjunction with certain other partnership programs



NSERC
CRSNG

SSHRC  CRSH



GenomeCanada

S  S C I P

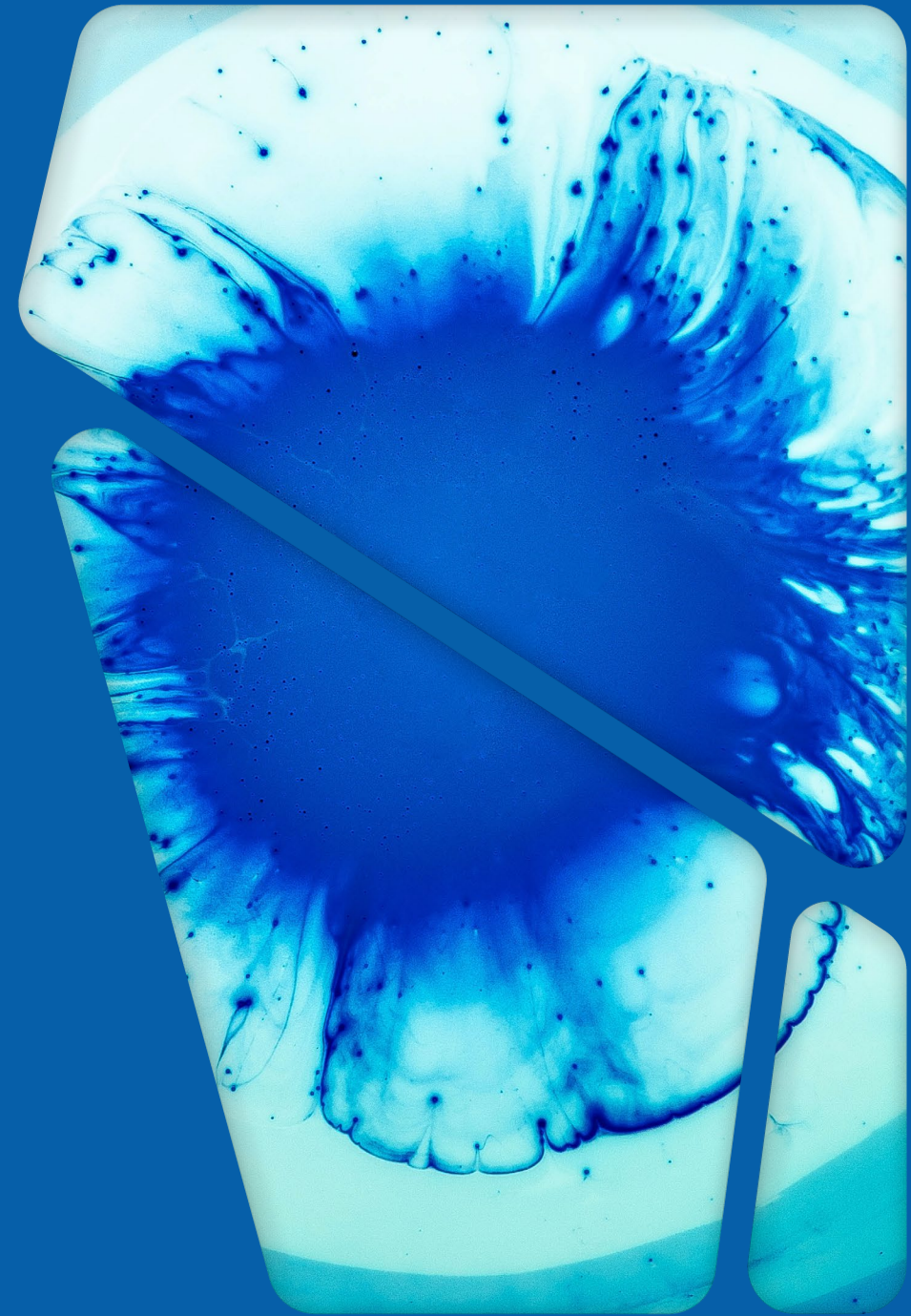
SMART COMPUTING FOR INNOVATION



CIHR IRSC

Collaborating with an organization

*Elevate & Business Strategy
Internship (BSI)*



Mitacs BSI

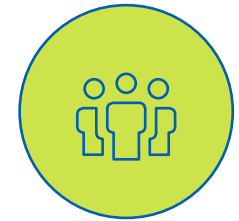
Enhance operations, Improve Processes and Solve Challenges



Partner pays only **50%** of the project cost



Projects that require **INNOVATION**, rather than fundamental research



Same student eligibilities, plug-and-play framework as Accelerate

Projects must improve the function, capability, capacity, or potential of partners

Develop Technologies and Strategies, Optimize Processes, Modernize Practices, Market research, IP, EDI, etc.

Business Strategy Internship - INNOVATION



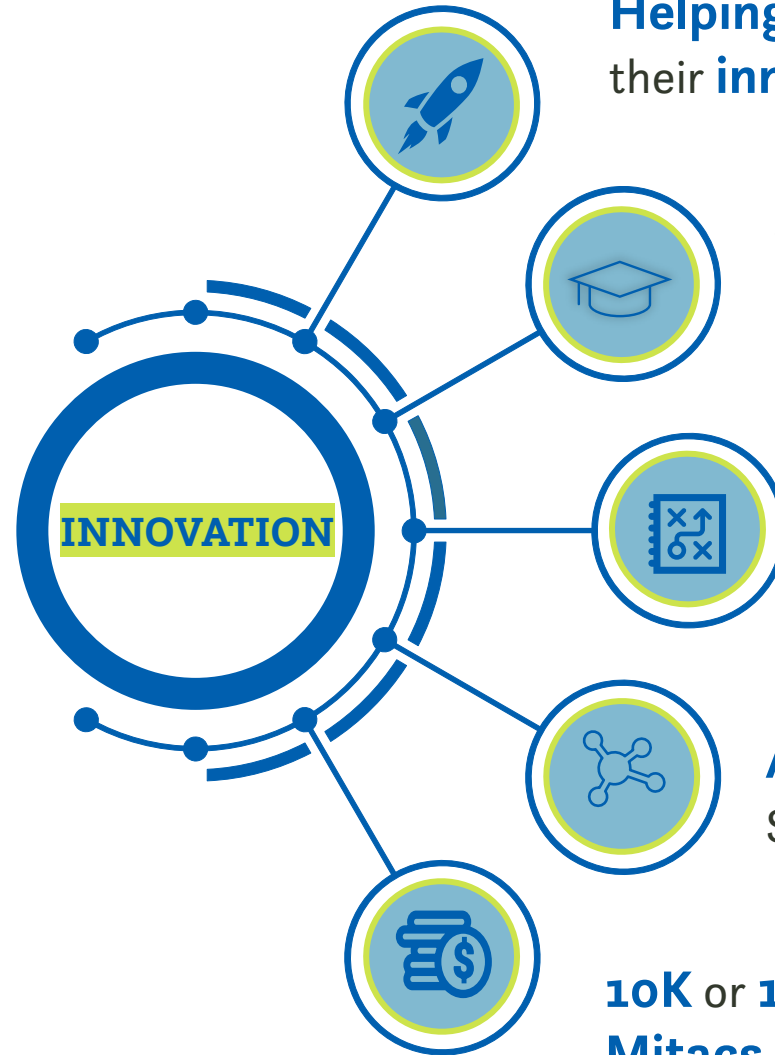
Not a competition:
applications are accepted at
any time



Decision communicated
in ~ **6 weeks**



High success rate



Helping partner organizations on
their **innovation** journey

Same trainee eligibilities & **plug-and-play** framework as Accelerate

Addresses a **business challenge** the
the partner is currently facing

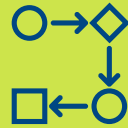
All sectors & disciplines
Small or large **multidisciplinary projects**

10K or **15K** block (4-6 month) cost shared by
Mitacs & partner organization

Business Strategy Internship: examples



Development of
New technology,
software, hardware



Optimize process
(operational,
production)



Develop strategies (IP,
communication,
marketing, cybersecurity
etc.)



Modernize practices
of the organization
(EDI, management,
robotics, etc.)



Market Research
for innovative
technology

Mitacs Elevate



Postdoctoral Fellowship

1- or 2-year PDF project with an eligible partner organization



Exclusive professional development curriculum

Invaluable access to networking and peer learning opportunities



Address complex challenges

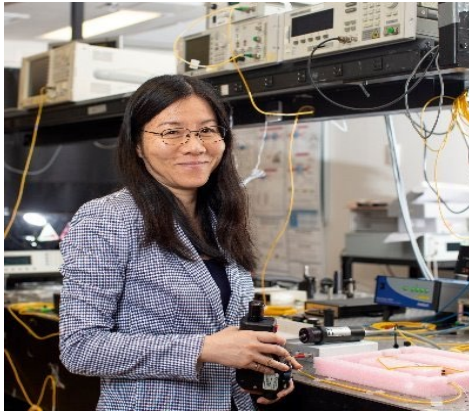
Supports research collaborations in any sector/discipline

Award valued at \$60K per year - cost shared by Mitacs & partner organization

Applications **OPEN YEAR-ROUND (new)**

impact: Mitacs and faces of quantum

Research Talent



University of Toronto's Prof. Li Qian has supervised 10 interns across 8 projects. Her projects with the Royal Bank of Canada (RBC) focused on developing a quantum communication network built on RBC's optical fiber infrastructure and perform secure commercial transactions using quantum-generated secure keys in the integrated classical communication network

International HQP



Globalink intern, Vladyslav Los, came from Germany to work with the University of Waterloo's Institute for Quantum Computing to investigate how to control quantum systems that have multiple states, and to understand the impact for real-life solutions.

Diverse HQP



Elevate fellow, Stefania Sciara, partnered with Ki3 photonics to deliver an integrated quantum photonic platform capable of generating complex entangled states based on few photons simultaneously entangled in high-dimensional time and frequency modes.

Entrepreneurs



With the help of the Mitacs Accelerate program, Quantum Bridge Technologies, a start-up founded by Drs. Hoi-Kwong Lo and Mattia Montagna was able to develop and commercialize their technology Quantum Key Infrastructure™ (QKI).

Key Takeaway:

Mitacs helps to facilitate, strengthen, support, and fund collaborative research projects with non-academic partners across Canada, and international academic partners.

Thanks to our funding partners

Canada 

Alberta 

 BRITISH COLUMBIA

 Research Manitoba

New Brunswick  Nouveau

Newfoundland Labrador 

NOVA SCOTIA 

Ontario 

innovationpei 

Québec 

Saskatchewan 

Yukon 


 mitacs

Thank you

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