

Advancing Excellence, Increasing Impact

Strategic Plan Refresh for Two Years Ending FY2023

CIFAR

CONTEXT: THE CHANGING RESEARCH LANDSCAPE

This refreshed Strategic Plan outlines a clear path forward for CIFAR for the next two fiscal years (FY 2022/23), building on the strong foundation of the organization's existing five-year plan, launched in FY2018.

The early years of the five-year Plan, from 2018 to 2020, saw significant shifts in CIFAR's global stakeholder environment. Issues including climate change, racism, and income inequality contributed to rising social discontent, political polarization and populist nationalism. Mass protests and uprisings around the world were fueled by environmental concerns, racial and gender discrimination, and economic disparities.

These years brought challenges, but also positive changes to the global research landscape, reinforcing the need for CIFAR to adopt a more proactive and targeted approach to global partnerships and collaboration. Advances in technology including new virtual communications tools offered new ways for CIFAR to connect, collaborate and extend its reach around the world.

Undoubtedly, the most profound changes came with the emergence of SARS-CoV-2 and the resulting global pandemic in early 2020. The pandemic has quickly disrupted global economies, health systems, and education systems, with the costs being borne disproportionately by the disadvantaged and vulnerable. The pandemic has shown a lens on inequality within and between countries, the importance of leadership, and the culture of the scientific enterprise itself. The global pandemic brought the importance of flexibility and resilience to the forefront for CIFAR, as it had to re-think and shift the way work is conducted both internally and with its global stakeholder network.

Addressing the pandemic has required a global, concerted, and multilateral effort, with science at its core. The pandemic has affirmed the centrality of science and global collaboration across countries and disciplines, both central to CIFAR's values and mission, to address the most important questions facing science and humanity. From diagnostic tests to vaccines to new therapeutic drugs, the pandemic has demonstrated that science and the world's scientific community are the most powerful weapons we have to defeat this virus. At the same time, science has become politicized in many countries. The urgency and focused demands of the pandemic have brought profound cultural changes to the scientific enterprise itself, from increased transparency to team research to the importance of clear communication with the public.

CIFAR will enter its 40th year in 2022 with optimism about the future. Its unique approach and track record of supporting, and fostering collaboration amongst, the world's leading researchers and thought leaders will continue to lay the foundation for ground-breaking and important research during the life of this plan, and for decades to come.

CIFAR IS A GLOBAL RESEARCH ORGANIZATION

CIFAR is a global research organization that convenes extraordinary minds to address the most important questions facing science and humanity.

CIFAR's core expertise is in the way it designs, supports and promotes research collaboration – across disciplines and geographic borders; between early-stage and established world-class researchers; and between researchers and knowledge users.

By building long-term, interdisciplinary, global communities of collaboration, CIFAR provides the world's top researchers with an unparalleled environment of trust, transparency and knowledge sharing. Its time-tested model inspires new directions of inquiry, creating a culture of risk-taking, accelerating discovery, and yielding profound advances in knowledge and important changes in the way the world thinks about important questions. Through knowledge mobilization, CIFAR is a catalyst for change in industry, government and society.

CIFAR's global network currently includes more than 400 researchers from 161 institutions in 18 countries– a community that includes the most highly cited researchers in the world. As of 2020, twenty Nobel Prizes had been awarded to CIFAR-affiliated researchers.

CIFAR has been supported by the governments of Canada, Alberta, British Columbia, Ontario, Quebec, France and the UK, as well as international partner organizations, individuals, foundations and corporations.

IMPACT ON A GLOBAL SCALE

Since its inception in 1982, CIFAR has had a significant impact on the way the world understands life and health, earth and space, individuals and society and information and matter. The questions CIFAR addresses are of importance to the world, spanning geographic borders and scientific disciplines.

CIFAR is behind many significant research advances and the emergence of entirely new fields of study including:

- Artificial intelligence (AI)
- Quantum computing
- Human microbiome
- Role of institutions in successful societies
- Importance of the early years in brain development
- Endogenous growth theory
- Advances in superconductivity
- Socioeconomic determinants of health
- Role of human happiness and wellbeing in global development
- Genetic networks underlying human health and disease

CIFAR's MISSION, VISION AND VALUES

MISSION:

CIFAR convenes extraordinary minds to address the most important questions facing science and humanity.

VISION:

New knowledge for a better world.

CORE VALUES:

- Excellence:** We strive for the highest quality in everything that we do. We expect the very best of ourselves and others.
- Creativity:** We encourage bold new ideas and unique approaches to address important questions.
- Collaboration:** We work together in partnership with colleagues, researchers, thought leaders and supporters – sharing ideas and resources to generate better outcomes.
- Diversity:** We are committed to creating a diverse, inclusive and equitable environment in all of CIFAR's interactions.
- Risk-Taking:** We are prepared to take risks, accept setbacks, and move forward to reach CIFAR's ambitious goals.
- Respect:** We foster an open and trusting culture, where each person's expertise is respected, and individuals openly share ideas and new approaches.

THREE INTERCONNECTED AREAS OF ACCOUNTABILITY

There are three interconnected **Areas of Accountability** where CIFAR contributes to research excellence and impact. Success in one amplifies success in the others.

- **Advancing Knowledge:** Bringing together the world's leading researchers to address high-risk, high-reward questions. CIFAR focuses on the most important questions facing science and humanity through long-term, international, interdisciplinary collaboration.
- **Developing Future Research Leaders:** Supporting high-potential early-career researchers across the globe through mentorship, networking, and skills training. CIFAR creates a research environment that is diverse, equitable and inclusive. It accelerates discovery by including future research leaders in its global, interdisciplinary research network.
- **Mobilizing Knowledge:** Engaging experts in industry, civil society, healthcare, and government in cross-sectoral conversations with global research leaders to drive innovation. CIFAR's public engagement programming stimulates scientific curiosity and shares the organization's research advances and programmatic activity with its stakeholders.

By helping researchers push further, inspiring early-career leaders to join them, and facilitating connections between researchers and knowledge users, CIFAR helps to expand understanding and catalyze action in areas of global importance.

CIFAR's APPROACH TO RESEARCH EXCELLENCE AND IMPACT

CIFAR is unique – both in Canada, and among global research institutions. For almost 40 years CIFAR has approached its mission in a differentiated way, based on a **combination of four mutually reinforcing characteristics**:

1. A global, interdisciplinary research network

- Design, convene, and support collaborative networks of exceptional researchers and scholars from across disciplines and around the world.

2. Open inquiry

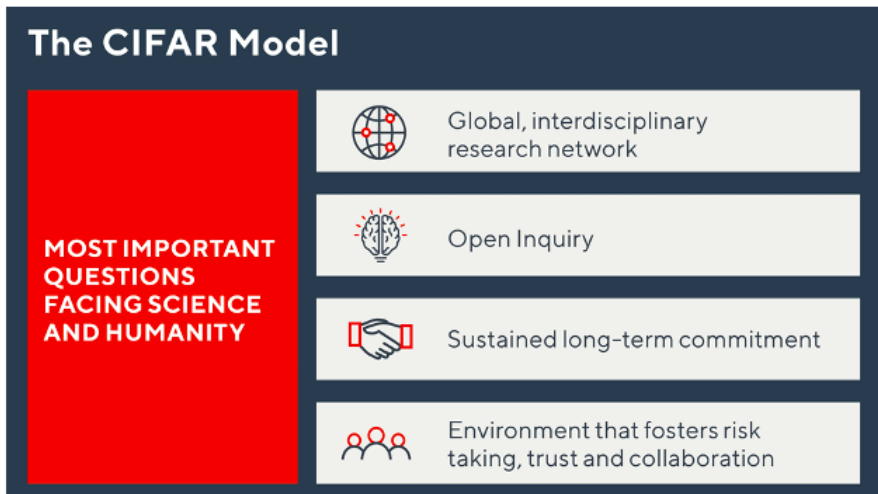
- Seek and sponsor innovative thinking by providing the structure and challenging environment where ideas at the frontiers of knowledge can be shared and debated.

3. Sustained long-term commitment

- Complex, important challenges require a sustained effort and support. CIFAR funds its Research Programs for the long-term (typically 10+ years).

4. An environment that fosters risk taking, trust and collaboration

- Provide the time and space researchers need to address the most important questions facing science and humanity.



In combination, these four characteristics **bring a powerful and differentiated approach to research**

ACTIVITIES:

A. Core Research Programs

CIFAR's **Research Programs** are designed around fundamental questions of importance to science and humanity – where insight and answers can have a significant impact on the world. For each program, CIFAR convenes a collaborative interdisciplinary network of outstanding Canadian and international researchers. CIFAR provides bespoke infrastructure and administrative support to each program to enable the means and mechanisms of collaboration that are optimal for each program. This support typically includes two or three program meetings per year along with a variety of cross-program meetings and a small amount of unrestricted research funds. During the COVID-19 pandemic CIFAR programs adapted to digital collaboration tools, which are expected to remain among the many tools employed to support CIFAR programs going forward.

CIFAR Research Programs as of March 2021	<u>Launched</u>	<u>Next Review</u>
1. Bio-inspired Solar Energy (BSE)	2014	2026
2. Boundaries, Membership and Belonging (BMB)	2019	2025
3. Brain, Mind and Consciousness (BMC)	2014	2026
4. Child & Brain Development (CBD)	2003	2025
5. Earth 4D: Subsurface Science & Exploration (E4D)	2019	2025
6. Fungal Kingdom: Threats & Opportunities (FKG)	2019	2025
7. Gravity and the Extreme Universe (GEU) <i>(successor to Cosmology & Gravity, 1986)</i>	2017	2023
8. Humans & the Microbiome (HMB)	2014	2026
9. Innovation, Equity & the Future of Prosperity (IEP)	2019	2025
10. Learning in Machines & Brains (LMB) <i>(successor to Neural Computation and Adaptive Perception, 2004)</i>	2014	2025
11. Quantum Materials (QM)	1987	2025
12. Quantum Information Science (QIS)	2002	2025

Pan-Canadian AI Strategy

In March 2017, the Government of Canada appointed CIFAR to lead the Pan-Canadian AI Strategy, a \$125 million investment to maintain Canada's position as a world leader in AI by attracting, developing and retaining top research talent and building dynamic and robust AI research and innovation ecosystems in three primary centres. With a critical mass of over 100 Canada CIFAR AI (CCAI) Chairs, CIFAR and its partner Institutes, Amii (Edmonton), Mila (Montreal) and the Vector Institute (Toronto) will shift focus as the group heads into the second phase of the Strategy. Together, the group will build community and collaboration amongst CCAI Chairs and CIFAR researchers and advance strategic research priorities, including AI for health, AI for energy and the environment, and advancing EDI in AI.

B. Research Enhancing Initiatives

To catalyse collaboration within and between programs, CIFAR introduced several **Research Enhancing Initiatives** between 2017 and 2021. These new programs have already introduced CIFAR to new ideas and new researchers, and have enhanced collaboration.

- **Catalyst Funds** support high-risk/high-payoff projects between CIFAR researchers (e.g., themed meetings, shared trainees, extended visits, etc.). They can also be used to explore new research

collaborations that could enhance the research within programs. These funds are meant to spur new areas of inquiry; support synergies between programs; and increase partnership activities.

- **Cross-program Workshops** between two or more programs to foster new knowledge across the CIFAR portfolio, opening new avenues of investigation and new opportunities for external engagement through knowledge mobilization.
- **Societal Impact Funds** provide seed funding to CIFAR Fellows and CIFAR Azrieli Global Scholars participating in a knowledge mobilization engagement to help them act on bold and innovative ideas stemming from that engagement. The fund will enable fellows to work collaboratively with relevant non-academic participants to advance knowledge or its application to key sectoral problems through high risk, exploratory and/or applied research projects. Launched as a pilot in 2020, an evaluation framework will be developed to measure the impact of the program.

C. Global Call for Ideas

CIFAR's first **Global Call for Ideas** was launched in 2013. The Global Call process provides a mechanism to identify cutting edge challenges to be addressed by new programs, and engage new researchers to help shape these programs, through a transparent, competitive approach. CIFAR's second Global Call was launched in the autumn of 2017. Coinciding with the competitive renewal of six of CIFAR's existing programs, this formed the basis for the reshaping of CIFAR's research program portfolio in 2019.

As part of the revised process for the third global call, CIFAR completed three strategic foresight exercises positioned as the "Futures Council". Thought leaders from across the public and private sectors engaged with CIFAR's research team to imagine the future of research.

The third Global Call will be launched within a *themed* framework based on the trends and developments identified through the Futures Council exercises.

The final selection of programs in FY 2022/2023 (new and renewed) will be based primarily on research excellence as judged by expert peer review, with the constraint that the end result is a balanced portfolio of questions that engage a broad spectrum of disciplines and have a truly global perspective.

D. Activities to Support Next Generation Leaders

Support of early career researchers is a component of all CIFAR programs, whether through summer/winter schools for students, involvement of trainees in meetings, or making sure early career researchers are included in workshops or knowledge mobilization activities. In addition, through CIFAR's Next Generation Initiative, programs may develop complementary activities dedicated to the development of future research leaders. The centerpiece of the Next Generation Initiative is the CIFAR Azrieli Global Scholars program, a highly competitive research fellowship and leadership development program for leading early career researchers from around the world.

The CIFAR Azrieli Global Scholars Program provides outstanding early career researchers with substantial research funding and support to participate in CIFAR research programs, build an interdisciplinary research network, and refine their leadership skills. This program is among the most generous and comprehensive fellowship opportunities for early career scholars in the world.

Training, Career Advancement and Growth Opportunities enable early career researchers to build their networks and enhance their research and leadership skills, gaining exposure not only to leading academics, but also to the interdisciplinary thinking and approaches at a critical time in their career, seeing the way for the next generation of research - and CIFAR - leaders. These include summer/winter

schools, trainee attendance at program meetings, frontiers of science symposia, women in science workshops, support for postdoctoral scholars and senior graduate students, and the CIFAR National AI for Good Training Program.

E. Knowledge Mobilization

CIFAR's knowledge mobilization activities reach beyond the core of its research programs to connect CIFAR researchers with thought leaders – and potential knowledge users – in the broader public and private sectors.

Knowledge mobilization encompasses a broad spectrum of activities that aim to build connections between research and real-world applications and practice. CIFAR tailors its knowledge mobilization activities to the intersection of societal needs and the strengths of its research programs.

Just as it is impossible to take a one-size-fits-all approach to research programs, CIFAR's knowledge mobilization activities are diverse, including:

- **Thought Leader Engagements** focused in-person opportunities (e.g., workshops, symposia, briefings) for information sharing and dialogue between researchers and knowledge users – enriching the ongoing research process and, ultimately, its economic societal outcomes.
- **Publications and Resources** synthesize the evidence emerging from CIFAR's research programs and knowledge mobilization engagements in accessible formats to provide relevant, timely and targeted information for knowledge users.
- **Policy Labs** engage the public policy community in conversations with experts from other sectors to help them understand, navigate and, respond to the policy opportunities and challenges emerging from the rapid deployment of AI and other emerging technologies.
- **Solution Networks** are global teams of cross-sectoral, interdisciplinary experts who design, develop, and implement responsible AI governance solutions. Launched as a pilot program in 2021, in partnership with the International Development Research Centre, Solution Networks will develop governance solutions for responsible AI in low-middle income countries.

F. Public Engagement

CIFAR's public engagement programming targets science enthusiasts: educated, non-expert adults who are motivated to seek out and consume scientific information for personal interest and intellectual stimulation. Accessible, plain language is used to enrich and elevate dialogue and debate around complex questions (stimulating scientific curiosity) rather than to explain scientific process, terms and concepts (science literacy). Engagement matters because it starts, and continues, the stakeholder journey, which leads to new subscriptions, donations, support, and partnerships for CIFAR. The CIFAR Virtual Talks series is the organization's primary public engagement initiative under this strategic plan. It is supported by communications planning and analytics and is an important part of the organization's comprehensive communications strategy.

EXTRAORDINARY PEOPLE DRIVE CIFAR'S SUCCESS

Solving the world's most challenging problems requires extraordinary people. CIFAR researchers pursue important questions facing science and humanity; innovative knowledge users help put new ideas into action; and the broad community of individuals and groups that organize, engage in, and support CIFAR's activities, are the organization's greatest assets.

CIFAR's bold ambitions require the talent and dedication of all members of its community, many of whom belong to more than one of the following groups. CIFAR will continue to build relationships with, and support the capabilities of, all its stakeholders.

- **Community of Researchers**
 - 400 researchers from more than 161 institutions in 18 countries (as of 2020) – selected for their research excellence, their openness to disruptive thinking and deep collaboration across disciplines and borders, and their commitment to impact.
- **Early-Career Researchers**
 - Early career researchers with strong leadership potential who are selected to participate in the CIFAR Azrieli Global Scholars program and other next generation initiatives.
- **Innovative Thought Leaders**
 - Global knowledge users in business, government, health and international development who interact with CIFAR researchers through Knowledge Mobilization activities. They provide feedback to the research process and help turn research into innovation and impact.
- **Management and Staff**
 - Talented and dedicated employees who embrace CIFAR's Mission, Vision and Values. They excel as they help to develop, and execute on, CIFAR's strategy.
- **Board of Directors**
 - Business, academic and community leaders who share their expertise, provide guidance and governance to make CIFAR more effective, and serve as ambassadors for the institution.
- **Donors, Funders and Partners**
 - Governments, institutions, foundations, corporations, and individuals who support and participate in CIFAR's activities and investments.
- **Science Enthusiasts (Public)**
 - Educated, non-expert adults who are motivated to seek out and consume scientific information for personal pleasure and intellectual stimulation. They subscribe to CIFAR's publications and engage with the organization primarily online.

GOALS

Now is the time to build on a successful 40-year history and the growing appreciation of the 'CIFAR model'. CIFAR will take steps to reinforce and build on its unique and successful approach. It will focus on increasing impact in each area of accountability. It will advance equity, diversity and inclusion. And, it will increase its global presence and reputation to position CIFAR for continued success.

By the end of FY 2022/23:

1. There will be evidence of substantial **knowledge advances** from within and across CIFAR's activities
 - Leading researchers from multiple disciplines will be engaged in renewed programs and activities. New interdisciplinary research collaborations will begin, resulting in an expansion of significant, highly cited research publications and significant research impact.
2. There will be measurable impact on the development of **next generation research leaders**
 - CIFAR will continue to embrace and support the energy, intelligence and enthusiasm of outstanding early career researchers from around the world. It will work with these exceptional young investigators to identify entirely new ways to harness and further develop their talents.
3. There will be **innovations in** practice, policy, programs and products in **key sectors**
 - Dynamic communities of researchers and thought leaders in key sectors of international influence will come together to share ideas and advance new insights and innovations in society, policy, technology and economy.
4. There will be evidence of **significant advances in equity, diversity and inclusion**
 - CIFAR will serve as a model for equity, diversity and inclusion, and will help the broader research community make progress towards more equitable, diverse and inclusive practices.
5. There will be **recognition** of CIFAR as a **leading global organization** for addressing the most important questions facing science and humanity
 - CIFAR's contribution to the global research ecosystem will be recognized around the world, and valued by its key stakeholders. CIFAR will have an elevated profile and will be known for its role in advancing knowledge for science and humanity.

HOW WILL IMPACT BE MEASURED?

CIFAR will measure its success over the next two fiscal years by evaluating its performance against its near-term objectives in each impact area. The organization will also consider how well it is positioned to deliver on its longer-term (5-10 year) aspirations in each.

SUCCESS AND IMPACT TO 2023 AND BEYOND

IMPACT AREA	Next Two Years (FY2022 and FY2023)	Long-Term (FY2024 and beyond)
Knowledge Advances	<ul style="list-style-type: none"> • CIFAR's Portfolio of programs is diverse, and addresses complex global challenges with potential for profound impact • The accomplishments of CIFAR researchers have been accelerated by involvement with CIFAR 	<ul style="list-style-type: none"> • The CIFAR approach has advanced knowledge in key areas and new research communities have been developed
Next Generation Research Leaders	<ul style="list-style-type: none"> • A diverse and outstanding group of scholars and alumni are active participants in CIFAR's global network • The careers of trainees and next-generation researchers are accelerated by enhanced knowledge, skills, and networks 	<ul style="list-style-type: none"> • Early career researchers who have been engaged in CIFAR's programs and network have become changemakers in academia, policy and/or business
Innovation in Key Sectors	<ul style="list-style-type: none"> • Expanded communities of thought leaders and researchers in key sectors are engaging regularly • Communities are sharing, leveraging, and building on ideas to develop new innovations in practice, policies, programs and products 	<ul style="list-style-type: none"> • There is evidence of innovations in practice, policies, programs and products driven by CIFAR's knowledge mobilization activities
Leader in Advancing EDI	<ul style="list-style-type: none"> • The CIFAR community has been strengthened by incorporating equity, diversity and inclusion in all aspects of its work • CIFAR's actions, systems and processes are having a meaningful impact in removing systemic barriers faced by underrepresented groups in science 	<ul style="list-style-type: none"> • CIFAR's excellence and impact have increased as a result of greater equity, diversity and inclusion in its community and global research network • CIFAR is a catalyst that stimulates change in research and academic systems around the world
Recognized as a Global Leader	<ul style="list-style-type: none"> • CIFAR's role and impact are increasingly recognized through media mentions, awards, and invitations • Partnerships with leading research institutions and other global organizations have expanded 	<ul style="list-style-type: none"> • CIFAR's role and impact are widely recognized in key global centres • CIFAR is a highly valued partner for all stakeholder groups

PRIORITIES FOR THE NEXT TWO YEARS

Four Strategic Priorities have been identified – each representing an area where attention and resources will be needed over the next two years. **Woven through these priorities is a recognition that CIFAR will benefit from enhancing its values in action** – a commitment to excellence, creativity, collaboration and diversity; a willingness to take risks; and respect for new ideas and differing perspectives.

STRATEGIC PRIORITIES

PRIORITY	Objective(s)	Actions / Initiatives
1. Increase alignment, collaboration and impact across all CIFAR programs	<ul style="list-style-type: none"> ● Increase impact from collaboration across CIFAR's full suite of programs ● Diversify the portfolio of CIFAR programs ● Evaluate impact within a quantifiable framework backed up by qualitative case studies 	<ul style="list-style-type: none"> ● Complete a themed Global Call, selecting new programs in areas that complement the existing programs ● Support cross-programmatic activities for CIFAR researchers ● Support collaboration and exchange in PCAIS strategic research priorities ● Support CIFAR researchers in partnership with thought leaders and experts from target sectors to develop new innovations in practice, policies, programs ● Develop and deploy a common evaluation framework to measure impact across programs
2. Create a more equitable, diverse and inclusive environment within CIFAR and in the extended CIFAR community	<ul style="list-style-type: none"> ● Increase diversity within CIFAR's Board of Directors through recruitment ● Evaluate EDI data collected to establish measurable goals and targets within the research community ● Advance EDI in the Canadian AI ecosystem 	<ul style="list-style-type: none"> ● Securely and ethically gather EDI data for staff, Board and research community ● Implement training for staff, board and research community ● Work with Board Governance Committee to recruit diverse board members ● Establish new initiatives to provide support across the career span to AI researchers who identify as members of underrepresented groups
3. Move towards a sustainable, diversified funding model	<ul style="list-style-type: none"> ● Secure multi-year agreements that support sustained mission activity ● Expand number of donors/funders and increase gift sizes ● Diversify funding sources ● Increase international partnerships 	<ul style="list-style-type: none"> ● Identify new funders ● Cultivate, solicit and steward funding sources/partners ● Secure multi-year support for endeavours that support mission ● Develop international partnership strategy
4. Celebrate CIFAR's impact and successes over the first 40 years through a 40th Anniversary Awareness Campaign	<ul style="list-style-type: none"> ● Raise CIFAR's profile among key stakeholder groups (donors/partners/funders, science enthusiasts, research community, etc) ● Generate engagement/enthusiasm about CIFAR's future, while acknowledging its past 	<ul style="list-style-type: none"> ● Host three to four marquee events including a launch event in June 2022 to mark a decade of leadership by CIFAR President & CEO ● Frame our marketing initiatives with the anniversary and make announcements about gifts, research/PCAIS initiatives, CIFAR researchers, etc. ● Create buzz about CIFAR through marketing and media relations: what we have done and what we are going to do ● Leverage 40th Anniversary for fundraising

SUMMARY

Over the next two years, CIFAR will continue to support some of the world's best researchers as they advance excellence and increase impact.

The Global Call 3, which will be based on ideas that emerged from CIFAR's Futures Council meetings, promises to enhance and reshape CIFAR's portfolio of research programs and its global community of researchers. CIFAR's 40th anniversary in 2022 will also be an important occasion to showcase the organization's impact and present a compelling case in support of the organization's vision for the next 40 years.

By focusing efforts on expanding CIFAR's research portfolio, including a second phase of the Pan-Canadian AI Strategy; mentoring promising early-career researchers through next generation initiatives; and connecting researchers to thought leaders in business, policy and civil society, CIFAR will advance its mission.

CIFAR's success depends on its visionary community of funders, research partners, corporations, foundations and individuals. Together with partners in Canada and abroad, CIFAR will achieve its vision to create new knowledge for a better world.