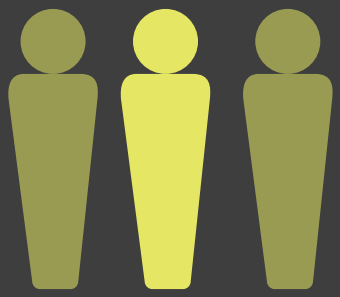
CIHR Institute of
Gender and Health

SCIENCE IS BETTER WITH SEX AND GENDER

Strategic Plan
2018-2023

Canadian Institutes of Health Research
Instituts de recherche en santé du Canada

Canada



In Canada, men die younger than women, while women experience a heavier burden of chronic illness. Why?

Canadian Institutes of Health Research (CIHR)
Institute of Gender and Health
Room 97, 160 Elgin Street
Address locator: 4809A
Ottawa, Ontario K1A 0W9
www.cihr-irsc.gc.ca

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SCIENCE IS BETTER WITH SEX AND GENDER

WELCOME TO OUR STORY

Imagine if we only tested prostate cancer drugs on female cell samples, or created anti-smoking campaigns only for men.

Does that make sense?

Men, women, girls, boys and gender-diverse people are similar in many ways; but, when it comes to our health and well-being, differences matter.

Every cell is sexed and every person is gendered. Sex and gender influence our risk of developing certain diseases, how well we respond to medical treatments, and how often we seek care. Did you know that, in Canada, men typically die younger than women, yet more women struggle with chronic illness? Why? These are complicated questions. The more we understand about how sex and gender affect health, the more we can improve health and well-being for everyone.

It starts with better science.

As part of the Canadian Institutes of Health Research (CIHR), the Institute of Gender and Health (IGH) fosters research that explores how sex and gender influence health. We use these findings to tackle the biggest health challenges. Our vision includes every*body*—men, women, girls, boys and gender-diverse people.

We've made amazing progress. We've collaborated, questioned, and built a community of researchers and knowledge users addressing the most pressing health challenges—integrating sex and gender to spark discovery, innovation and health impact.

We know there's more to be done and so does the IGH research community—which is why they have directed us to renew and advance our commitment to integration, innovation and impact for our 2018-2023 strategic plan. We will transform research methods to ensure health research is more rigorous and its findings generalizable to everyone. We are interdisciplinary. We are international. We are leading science towards the delivery of personalized health at the point of care.

Have you considered the possibilities?

THE SCIENCE

The science of sex and gender is evolving rapidly.

It is no longer acceptable for basic science studies to be performed exclusively in male animals, or for women to be excluded from clinical trials. Sex differences in genetics, epigenetics, molecular biology, immunology and drug metabolism challenge the status quo, one-size-fits-all approach to health and disease. The launch of sex-specific drug dosing over the past five years and the promise of sex-specific therapy heralds a new era of personalized medicine.

Gender is emerging as a powerful predictor of cardiac and mental health outcomes. Gender-transformative approaches are improving the way we design, implement and scale up novel health interventions. Growing recognition of diverse gender identities is not only changing public policy but pushing research to be more inclusive of previously uncounted voices—like those of transgender and Two-Spirit individuals.

At CIHR, we promote the use of SGBA+ (sex- and gender-based analysis plus) in health research; acknowledging that both biology (sex) and society (gender) influence our health and wellbeing in distinct yet interrelated ways. CIHR's SGBA+ policy aligns with the Government of Canada's commitment to the integration of sex and gender throughout its policies and programs—including the way government-funded research is conducted. The *plus* in SGBA+ points to the many other factors that can intersect with sex and gender to influence health.

As the landscape shifts towards better integration of sex and gender in science, the Institute of Gender and Health continues to drive best practices in health research. Our strategic plan places sex and gender science at the heart of experimental design, measurement, analysis, reporting and implementation. Our journey to integrate, innovate and positively impact health outcomes takes full advantage of the opportunities and challenges that lie ahead.

EVERY CELL IS SEXED AND EVERY PERSON IS GENDERED

Sex and gender shape us inside and out—influencing everything from our biology to our behaviour. From the washrooms we use and the clothes we wear to the boxes we check on a form at the doctor's office. Sex and gender permeate our lives, while being difficult to recognize and define.[1] Putting simple boxes around the complex and interconnected concepts of sex and gender is not easy; however, doing so can help researchers apply the two concepts consistently and distinguish between the many different ways in which sex and gender shape our lives—including our health.

While it is important to clearly distinguish between sex and gender, we also need to understand the dynamic relationship between these and other factors that influence health and well-being. Intersectional factors—like income, social status and supports, Indigeneity, sexual orientation, education, employment, ability, ethnicity, social and physical environments, geographical location, genetics and personal health practices—contribute to varied experiences and outcomes for men, women, girls, boys and gender-diverse people.

While sexual orientation and gender are distinct, there are undeniable connections between the communities and movements that represent individuals who do not identify as heterosexual and/or cisgender. As such, IGH is proud to include research that investigates the health and wellness of individuals who identify as LGBTQI2S (lesbian, gay, bisexual, transgender, queer and questioning, intersex and Two Spirit) among our priorities.

At IGH, we make a distinction between sex and gender while acknowledging that they are interrelated and potentially inseparable. Our understanding of sex and gender and how they intersect with other factors will continue to evolve as research advances.

'Sex' and 'gender' are often used interchangeably, despite having different meanings:

SEX refers to a set of biological attributes in humans and animals. It is primarily associated with physical and physiological features including chromosomes, gene expression, hormone levels and reproductive/sexual anatomy. Sex is usually categorized as female or male but there is variation in the biological attributes that comprise sex and how those attributes are expressed.

GENDER refers to the socially-constructed roles, behaviours, expressions and identities of girls, women, boys, men, and gender- and sexually-diverse people. It influences how people perceive themselves and others, how they act and interact and the distribution of power and resources in society. Gender identity is not confined to a binary (girl/woman, boy/man) nor is it static; it exists along a continuum and can change over time. There is considerable diversity in how individuals and groups understand, experience and express gender through the roles they take on, the expectations placed on them, relations with others and the complex ways that gender is institutionalized in society.

GENDER

Socially-constructed roles, behaviours, expressions and identities of girls, women, boys, men and gender-diverse people.

SEX

Biological attributes of humans and animals, including physical features, chromosomes, gene expression, hormones and anatomy.

SEX & GENDER MATTER

There are many similarities between men, women, girls, boys and gender-diverse people; but when it comes to our health and well-being, differences matter.

Recognition of these differences began with a focus on reproductive health and now reaches well beyond our anatomy, thanks to a growing body of literature pointing to numerous sex- and gender-based differences extending from the societal level down to our cells. Sex and gender influence our risk of developing certain diseases, our symptoms and severity of illness, how well we respond to interventions, and how often we seek care. While investigating how patterns differ between groups is important, there is also sex and gender variation within groups that must be considered. We cannot assume, for example, that all women or all men are the same.

Understanding the influence of sex and gender on our health isn't just about studying the differences and similarities between us. We need to understand the mechanisms and pathways underlying the trends we observe, and how sex and gender intersect with other factors like age or income to shape our overall health.

DID YOU KNOW?

1. The X chromosome has 1,669 genes. The Y chromosome has 426 genes. Only 33% of genome-wide association studies (GWAS) include the sex chromosomes.[2]

2. In Canada, trans youth who live in their felt gender all the time are nearly 50% more likely to report good or excellent mental health.[3]

3. Using high-throughput phenotype data, sex affects 56% of quantitative data sets and 9.9% of qualitative data sets in wildtype mice, and sex moderates the genotype effect in 13.3% of qualitative and 17.7% of quantitative data sets in mutant mice [4]

4. Males are three times more likely to die from suicide than females.[5]

5. In animal experiments, genes associated with depression show distinctly different patterns of expression in males and females but converge on a similar pathway.[6]

6. Feminine gender, independent of female sex, is associated with a higher risk of recurrence of cardiovascular events.[7]

7. Mechanical pain hypersensitivity is mediated by microglial cells in male mice. However, an entirely different type of immune cell, likely T-cells, are responsible for the same effect in females.[8]

8. Men are twice as likely as women to escalate opioid doses and twice as likely to die from opioids.[9,10]

9. Sex hormones can change the way you react to drugs: they may increase cannabis dependence in females and opioids suppress testosterone in males.[11,12]

10. Women are more than 20% more likely to develop lung cancer than men who smoke the same number of cigarettes.[13]

11. Sex differences in microbial exposure early in life may influence the microbiome and the lifetime risk of autoimmune diseases.[14]

12. Women aged 85 or older are most likely (47%) to be prescribed inappropriate medications.[15]

13. Close to 750,000 Canadians are estimated to be living with Alzheimer's and other dementias—and almost three quarters of them are women.[16]

14. Men account for a quarter of cases of eating disorders like anorexia nervosa and bulimia; yet treatment is largely geared towards women.[17]

15. While high blood pressure is equally prevalent in men and women, they are not equally affected nor do they have the same risks.[18]

16. Hate crimes motivated by attraction (sexual orientation) are most likely to be violent and to be perpetrated by someone who is known to the victim.[19]

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THE INSTITUTE

MANDATE

Our assignment

To support and champion a health research agenda that embraces sex and gender and is therefore more scientifically rigorous and responsive to the diverse health needs of people in Canada and around the world.

VISION

The future we want to see

A world where sex and gender are integrated as key considerations across health research and its applications.

MISSION

How we achieve our vision and fulfill our mandate

To foster research excellence regarding the influence of sex and gender on health and to apply these findings to identify and address pressing health challenges facing men, women, girls, boys and gender-diverse people.

IGH is one of 13 institutes that make up the Canadian Institutes of Health Research (CIHR), the Government of Canada's health research investment agency.

Created in 2000, CIHR's mission is to create new scientific knowledge and to enable its translation into improved health, more effective health services and products, and a strengthened Canadian health-care system. CIHR provides leadership and support to more than 13,000 health researchers and trainees across Canada.

Each Institute plays a critical role in supporting CIHR's commitment to research excellence and training the next generation of researchers. Our Institute leads and contributes to priority-driven funding initiatives that deliver on CIHR's Roadmap to prevent illness, manage chronic conditions, spark innovation in health, and improve the health and wellbeing of Indigenous peoples in Canada. In investigator-initiated competitions, we promote the integration of sex as a biological variable and gender as a social determinant of health in all research protocols. We collectively aim to mobilize and translate research evidence into tangible health impacts across Canada and around the world.

WE ARE...

MORE THAN A FUNDING INSTITUTE

At the CIHR Institute of Gender and Health, we envision a world where sex and gender are integrated as key considerations across health research and its applications. Our mission is to foster research excellence regarding the influence of sex and gender on health, and to apply these findings to identify and address pressing health challenges facing men, women, girls, boys and gender-diverse people. Fulfilling our mission requires that IGH be more than a funding institute. IGH plays an important leadership role in advancing knowledge, building capacity in sex and gender science across disciplines and career stages, and accelerating the application of evidence in the real world. Under the leadership of our Scientific Director and Institute Advisory Board, our role is to champion a health research agenda that embraces sex and gender and is therefore more scientifically rigorous and responsive to the diverse health needs of people in Canada and around the world.

TRANSDISCIPLINARY

Sex and gender intersect all areas of health research—uniquely positioning IGH to collaborate broadly across disciplines, research themes and institutes both within CIHR and beyond it. For 17 years, we have supported research that fills critical knowledge gaps across diverse areas, including mental health, cancer, heart disease, substance use, sexual and reproductive health, violence, and workplace health and wellbeing. To date, IGH has partnered with our fellow institutes to integrate sex and gender into CIHR-wide initiatives that span topics like personalized health, community-based primary health care, traumatic brain injury, substance use, heart disease, boys' and men's health, the microbiome, human immunology and transplantation, developmental origins of health and disease, Indigenous health, and neurodegeneration. We have also fostered innovation through transdisciplinary partnerships outside of the health sciences. The number of domains of research relevant to IGH's mandate continues to grow as we learn more about the relationships between sex, gender and health as well as its application to transdisciplinary science.

INTERNATIONAL

IGH is unique on the international health research stage. Recognized as the only national research institution in the world with a dedicated mandate in sex, gender and health research, IGH positions Canada as a global leader in the creation and translation of knowledge in this area. As a result, IGH has developed a network of international partners and collaborators in 21 countries.

IGH IN NUMBERS

1

Scientific Director

3,000

Successful completions

of IGH's three online training modules: biomedical research, human data collection and data analysis.

$8.6 MILLION

Annual budget for strategic initiatives that advance research on sex, gender and health.

16

Major CIHR funding initiatives that include sex and gender considerations as a core component.

Partners and collaborators in

21

countries around the world, including the United States, Belgium, Italy, France, Sweden, Norway and Ireland.

60

Sex and Gender Champions included in CIHR-funded team and network grants since 2015.

14,201

Views *(and counting!)* of IGH's animated videos on sex and gender in science, available on CIHR and IGH YouTube channels.

8,448

Views of IGH *Science Fact or Science Fiction* fact sheets on the CIHR Website in English and French.

OUR PROGRESS

IGH is guided by the three core strategic directions of **Integration**, **Innovation** and **Impact**.

1

INTEGRATION:
Transforming the health research ecosystem to foster the integration of sex and gender in science.

2

INNOVATION:
Promoting innovative methods, new research approaches and discoveries in the field of sex and gender science.

3

IMPACT:
Transforming health outcomes by ensuring knowledge generated by our community is translated into improved health for everybody.

From 2013-2017, we advocated for the integration of sex and gender in funding, ethics, publishing and policy and we launched three online training modules.

We invested over six million dollars in supplemental funding to encourage basic scientists to consider sex as a biological variable in their research. We contributed scientific leadership on major initiatives including personalized health, cannabis, opioids, indigenous health and others. We worked with the College of Reviewers and the Competition Chairs to improve the quality assessment of sex and gender in peer review. We funded teams to investigate the added value of addressing gender in knowledge translation interventions. We supported advances in Boys' and Men's Health from the cellular to the societal level. We crossed disciplinary boundaries through our leadership of the joint Healthy and Productive Work Initiative with the Social Sciences and Humanities Research Council of Canada.

We helped narrow the gap between research evidence and policy in a first-ever Policy-Research Partnership with Health Canada. We leveraged the power of a global academic-pharma-regulatory agency alliance to accelerate the delivery of personalized drug therapy at the point of care. We ran Hackathons and Design Jams to spark innovation and mobilize knowledge into action. We led Best Brain Exchange events with the provinces around sex- and gender-based analysis. We convinced professional medical societies to re-think their clinical practice guidelines to include sex- and gender-specific evidence. We brainstormed with the Association of Faculties of Medicine of Canada on how to change medical curricula to better integrate sex- and gender-specific medicine for the next generation of physicians and allied health-care professionals.

The next few pages highlight some of our key activities and accomplishments.
These are our accomplishments so far. We list them here to illustrate why we and the IGH community feel it is important to continue on this successful trajectory—leveraging the global momentum and political will we have helped to build.

INTEGRATION MILESTONES

2014

SEX AND GENDER CHAMPIONS ON TEAM GRANTS

Inclusion of a Sex and Gender Champion is made a mandatory requirement for the Developmental Origins of Health and Disease and Strategy for Patient-Oriented Research (SPOR) networks in Chronic Disease grant applications.

More than 60 Sex and Gender Champions are now funded across a variety of CIHR funding initiatives and have formed a community of practice.

2015

GENDER, SEX AND DEMENTIA

crosscutting platform is embedded in the Canadian Consortium for Neurodegeneration and Aging.

RESEARCHER CAPACITY BUILDING

IGH launches its first training module, *Integrating Sex in Biomedical Research*. By the end of 2017, it had over 1,100 successful completions.

INTERNATIONAL LEADERSHIP

IGH partners with the NIH Office of Research on Women's Health to develop indicators and resources to support the integration of sex as a biological variable.

2016

TWO MORE TRAINING MODULES

IGH launches two more online modules: *Sex and Gender in Primary Data Collection with Human Participants* and *Sex and Gender in the Analysis of Data Collected from Human Participants*. By the end of 2017, both modules had more than 800 successful completions each.

SCIENCE EDITORS ADOPT SAGER GUIDELINES *(Sex and Gender Equity in Reporting)*

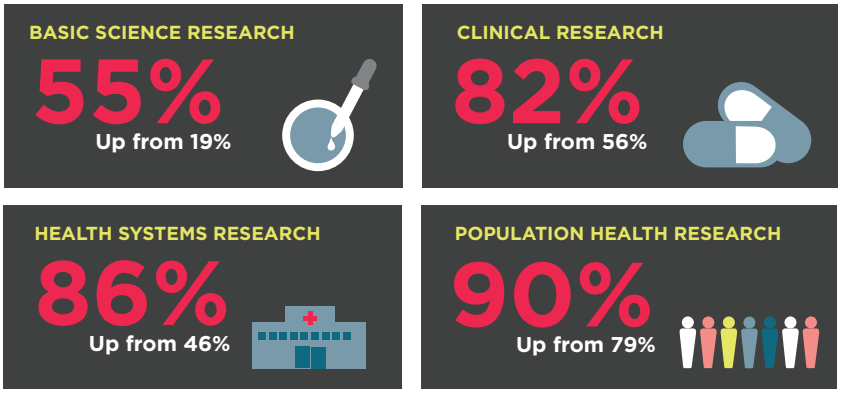
As a member of the Gender Policy Committee of the European Association of Science Editors, IGH contributes to the development of the SAGER Guidelines, which are released in 2016. IGH takes a leadership role in the promotion of the guidelines by holding webinars for Canadian journal editors and publishing articles in Nature.com, JAMA and the Lancet.

AN QUALITY OF SCIENCE IMPERATIVE

Stemming from a number of IGH presentations, CIHR develops a sex- and gender-based analysis in research action plan, to be rolled out from 2017-2019.

SEX AND GENDER ACROSS CIHR PILLARS

Increase in the proportion of CIHR successful investigator-initiated applications with integration of sex and/or gender (2010 compared with 2016).



"I found your presentation engaging and eye-opening. I didn't know what I didn't know about sex and gender in health research!"

- Audience member, IGH Presentation, Canadian Student Health Research Forum (2017)

2017

MANDATORY TRAINING
IGH training module certificate becomes a mandatory eligibility requirement for a number of large-scale CIHR initiatives like Personalized Health.

FUNDERS AND ETHICS BOARDS INTEGRATE SEX AND GENDER
ZonMw, the Netherlands' organization for health research, emulates IGH best practices in sex and gender integration.

Members of the National Alliance of Provincial Health Research Organizations like les Fonds to Recherche du Quebec (Quebec's research funder) discuss making sex and gender integration a priority.

The Canadian Association of Research Ethics Boards endorses the implementation of sex- and gender-based analysis.

GENDER INCLUSIVITY is the theme of the Pathways Annual Gathering, which brings together researchers and Indigenous communities engaged in CIHR-funded research.

DISCOVERY SNAPSHOT

Sex Differences in Chronic Pain

The generally-accepted notion in pain research has been that immune cells called microglia are responsible for transmitting pain through the nervous system; however, this theory is based on experiments performed overwhelmingly in male rodents only.[20]

In a 2015 study carried out by labs in Montréal and Toronto and led by Dr. Jeffrey Mogil and Dr. Michael Salter, researchers interfered with microglia functioning and found striking sex differences. While blocking microglia functioning reduced pain in male mice, it had no effect on pain transmission in female mice.[8] An entirely different type of immune cell, likely the T cell, appears to carry out this function in females.

This discovery, published in *Nature Neuroscience* in 2015, has significant implications for the field of pain research and demonstrates the potential for scientific discovery offered by sex- and gender-based analysis.

INNOVATION
HIGHLIGHTS

DISCOVERY SNAPSHOT

Gendered Interventions for Cardiac Disease?

There are important sex differences in cardiovascular disease. However, researchers from the GENESIS-PRAXY study, led by Dr. Louise Pilote, have demonstrated that gender also plays a significant role in women's and men's outcomes after a cardiac episode.[7]

By developing and applying a novel gender index, researchers were able to measure sex and gender independently. Their results illustrated that patients of both sexes who scored high on factors traditionally considered 'feminine' were more likely to have symptoms recur in the year after their initial cardiac event, compared to those who scored higher on masculine traits. These findings suggest that personality traits and social roles typically assigned to or associated with women may increase the risk of negative outcomes in patients with cardiac disease.

This discovery illustrates why it's important to look closely and question assumptions when differences between males and females are found: are they biological? Social? A combination? A thorough analysis of both sex- and gender-related factors has the potential to break new ground and improve health outcomes for individuals of all genders.

SUPPORTING INNOVATION
through multi-institute partnerships

- Boys' and Men's Health
- Canadian Longitudinal Study on Aging
- Chronic Disease
- Deprescribing
- Environmental Exposures
- Gender in Knowledge Translation Interventions
- Gender, Work and Health Chairs
- Healthy and Productive Work
- Healthy Life Trajectories
- Human Immunology
- Pain
- Pathways to Health Equity for Aboriginal Peoples
- Personalized Health
- Policy-Research Partnerships
- Sex as a Biological Variable
- The Microbiome
- Traumatic Brain Injury
- Women's Brain Health
- Women's Heart Health

PUSHING DISCIPLINARY BOUNDARIES

Healthy and Productive Work

IGH is the scientific lead on the CIHR Healthy and Productive Work Signature Initiative, which represents a partnership between CIHR and the Social Sciences and Humanities Research Council. This unique collaboration not only brings together health and social science researchers but also fosters meaningful engagement of knowledge user partners.

Work Stress and Wellbeing Hackathon

In 2017, IGH hosts CIHR's first-ever Hackathon, on the topic of work stress and wellbeing. This unique event helps create connections across disciplines by connecting researchers developers, designers and people with lived experience of mental health challenges to spark innovation in mental health.

"Bravo and thank you to IGH for helping improve research in Canada and sharing achievements globally."

-Workshop Presenter

ON THE INTERNATIONAL STAGE

- In 2016, IGH co-founds the Matera Alliance, an international effort to improve the applicability of drug trials to women, with Germany, Italy, the Netherlands, Sweden and the United States.
- IGH hosts the 2017 Annual Meeting of the Organization for the Study of Sex Differences (OSSD) in Montreal and supports trainees from across Canada to attend.
- As a major sponsor and organizer of the event, IGH helps bring the International Gender Summit to Canada for the first time in 2017.
- As co-lead on the Personalized Health Initiative, IGH leads CIHR's participation in Gender-NET Plus, an international funding initiative that supports collaborations between Canadian and European researchers.

International Knowledge Exchange

As an international leader in sex and gender integration in the health sciences, IGH is often invited to share promising practices and the latest science in the field. Most recently, we have been invited to present at the following meetings:

- International Conference on Gender in Science and Technology, Taiwan
- Gender Medicine Summit, Italy
- Gender and Health Congress, The Netherlands *(attended by Queen Máxima)*
- Sex and Gender Health Education Summit, United States

DISCOVERY SNAPSHOT

Inclusive Survey Methods

Growing recognition of diverse gender identities that exist outside the man/woman binary is pushing research to be more inclusive. Research organizations are increasingly aware that good science must not only account for sex and gender but must do so in a way that is transgender- (trans-) inclusive.

Dr. Greta Bauer and colleagues have evaluated population health survey methods to determine the most effective trans-inclusive approach to population surveys. Bauer points out that existing measures leave gaps in accounting for sex and gender where trans participants are concerned.

In 2017, Dr. Bauer published a new multidimensional sex and gender measure designed to be trans-inclusive.[21] The measure includes three simple items to assess gender identity and lived gender, with optional additions for Indigenous two-spirit individuals.

This tool will allow population health researchers to be more inclusive of transgender individuals and better measure and collect sex and gender data.

IMPACT HIGHLIGHTS

POLICY SNAPSHOT

Setting the Standard for Caregiver-Friendly Workplaces

There are more than 5.6 million employees in Canada with adult/elder care responsibilities. Lack of workplace support can result in caregiver-employees leaving the workforce, missing work days, retiring early or becoming less productive—all of which can result in costs to employers. And, given the gendered nature of care work (both formal and informal), women are disproportionately affected.[22]

Women provide more caregiving hours, help with more caregiving tasks and assist with more personal care than men. Female worker-carers spend an average of 9.5 hours per week providing care, compared to 6.9 hours among their male counterparts. As a result, women carry a larger burden, have higher levels of depression and lower levels of self-reported health and wellbeing.

To help address the challenges faced by carer-employees in Canada, IGH Chair in Gender, Work and Health, Dr. Allison Williams, partnered with the Canadian Standards Association to apply a sex and gender lens to the development of the *Carer-Inclusive and Accommodating Organizations Standard.*

This standard has the potential to enhance work-life balance for carer-employees, improve workforce retention for employers and reduce health-care costs.

KNOWLEDGE TRANSLATION CAPACITY

- From 2013-2017, IGH invests more than $2M to build knowledge translation (KT) capacity through grants, summer programs, webinars, grantee annual meetings, social and traditional media training and design jams.
- IGH hosts a KT consultation in 2016 with leading Canadian experts. The meeting inspires publication of the article *Why Sex and Gender Matter in Implementation Research*, which now serves as a KT resource for researchers.[23] In its first year, the article is accessed 3,600 times.
- In 2016, CIHR publishes an abridged sex- and gender-based analysis training module for its College of Reviewers, which includes a section on Sex, Gender and Knowledge Translation.

RAISING AWARENESS

- IGH publishes two videos on Sex, Gender and Health on YouTube, which now have more than 11,000 views.
- Hundreds of copies of IGH's Sex and Gender Infographic and Non-Binary Gender pins have been distributed in Canada and around the world.
- From 2015 to 2017, IGH gives dozens of interviews to the media including, Nature.com, CBC's The National and The Current, Radio-Canada, The Wall Street Journal, Châtelaine, Canadian Living, the Globe and Mail, De Telegraaf (the Netherlands) and D La Repubblica (Italy).
- IGH plays a core role in SGBA+ (sex- and gender-based analysis plus) awareness week activities. Jeopardy games, quizzes, interactive sessions and presentations are broadcast throughout CIHR, the Public Health Agency of Canada and Health Canada each year.

"The Women's Heart Health Design Jam has left me more inspired than ever to pursue my academic career. I can't wait to see what the future holds!"

- Design Jam Participant

POLICY AND PRACTICE

Practice

- IGH-funded research informs clinical practice guidelines on male infertility; risk assessment, genetic counseling and genetic testing for BRCA-related cancer in women; and U.S. Preventive Services Task Force recommendations.
- IGH publishes an audit of Canadian clinical practice guidelines (CPGs). Important omissions are noted.[24] As a result, IGH engages with the Canadian Medical Association to explore opportunities to improve CPGs with respect to sex and gender.
- In 2017, the Canadian Cardiovascular Society partners with IGH to ensure sex and gender research is integrated into practice recommendations for clinicians. As a pilot, a Sex and Gender Champion is included on the committee responsible for updating the Management of ST-elevation Myocardial Infarction Clinical Practice Guideline.
- IGH-funded Boys' and Men's research team, *Shape the Path*, develops *Men on the Move*, a model to help inactive senior men become physically active. The model is then adapted for both men and women and rolled out across the province of B.C. as *Choose to Move,* in partnership with the BC Recreation and Parks Association and the YMCA.
- IGH collaborates with the Association of Faculties of Medicine Canada (AFMC) to develop strategies to integrate sex and gender into medical school curricula.

Policy

- In 2015, IGH hosts a 'Rapid Response' forum on family violence, which helps inform a $100 million federal investment in domestic violence prevention. IGH-funded team, PreVAiL (Preventing Violence Across the Lifespan), is the first to receive funding under this initiative.
- IGH and Health Canada partner to fund Health Policy-Research Partnerships. These partnerships connect sex, gender and health researchers with policy-makers to foster the application of sex and gender evidence into health policies and programs.
- In 2016, IGH is called upon to testify at the Parliamentary Standing Committee on the Status of Women to provide best practice examples and leadership on SGBA+ application in government.
- CIHR Best Brain Exchange events are led or supported by IGH on topics such as:
  - Addiction Treatment and Recovery
  - Enabling the Continued Social and Economic Contribution of Older Adults
  - Masculinity and Male Suicide Prevention

HACKING THE KNOWLEDGE GAP

The Hacking the Knowledge Gap Series aims to build knowledge translation (KT) capacity and accelerate the translation of knowledge into practice by applying design thinking as a novel KT approach. Design thinking involves collaborative, outside-the-box problem solving. Trainees receive grants to attend a two-day Design Jam, where they team up with senior researchers, designers, developers, marketing and communications professionals and people with lived experience to develop innovative KT solutions. Design Jams held so far include, Women's Heart Health and LGBTQI2S Health and Wellness.

OUR STRATEGY

Making science better with sex and gender.

Starting in 2013, the CIHR Institute of Gender and Health began executing its new strategic plan, which focused on Integration, Innovation and Impact. The new strategy was designed to build on our track record of excellence, to maximize the capacity and growing momentum of our community, and to position the Institute as a driving force behind the changing research landscape in sex and gender science. The new strategy looked beyond funding opportunities to how IGH could shape and accelerate the uptake of methods, measures, and analytic approaches to advance sex and gender knowledge across all four themes of health research. We developed online training modules and embedded sex and gender champions in research teams.

We are proud of the progress we've made. But there is more to be done. Which is why, emerging from consultations with and support from the IGH research community, we have decided to renew our commitment to our three strategic directions of Integration, Innovation and Impact for the next six years. We have also updated and refreshed our goals and planned activities to reflect the lessons we have learned, the progress we have made and our ambitions for the future.

The following pages present our refreshed goals, provide some examples of how we aim to achieve them and describe how we will measure our progress.

STRATEGIC DIRECTION ONE:

INTEGRATION

OUR STRATEGY

Over the past five years, IGH has relentlessly driven home the message that sex and gender are critical components of rigorous and reproducible science. The next six years will require creativity and persistence to take sex and gender integration to the next level—from awareness to implementation.

Specifically, we will:

- Assist researchers in gaining the knowledge, skills and self-efficacy required to apply SGBA+ (sex- and gender-based analysis plus) as both applicants and peer reviewers;
- Build capacity among the next generation of health researchers by targeting trainees and new investigators as potential early adopters;
- Work with funders to progress from awareness to evaluation of sex- and gender-based factors in the peer review process;
- Work closely with research ethics boards to ensure that ethical considerations related to sex and gender are recognized and implemented in research; and
- Encourage journal editors to implement best practices for the reporting of sex and gender in peer-reviewed publications.

GOALS

1. **Increased capacity to integrate sex and gender considerations by researchers across all career stages and health research themes**
2. **Greater integration of sex and gender considerations by peer reviewers and health research funders**
3. **Greater integration of sex and gender considerations in the research ethics review process**
4. **Improved reporting of sex and gender considerations in science publications**

ACTIONS	INDICATORS
• Host, attend and present at scientific meetings to increase methodological capacity for considering sex and gender in research designs, analysis and reporting • Develop, update and promote SGBA+ learning resources for researchers • Promote the integration of sex and gender into training and curricula • Support integration efforts led by senior sex and gender scientists and trainees	• Proportion of CIHR-funded researchers by pillar incorporating sex and gender into research • Successful completions of IGH training modules • Trainee events hosted or attended by IGH that include a sex and gender component • Interactions with and support provided to the Sex and Gender Champion Community of Practice and the IGH Trainee Network
• Guide and support CIHR in the implementation of the Sex- and Gender-Based Analysis in Research Action Plan[25] • Develop and apply mechanisms to improve the integration of sex and gender in research funding applications and peer review processes • Promote successful strategies to improve the integration of sex and gender to other research funders	• Resources, tools and processes developed by IGH to assist peer reviewers in assessing the quality of sex and gender integration in research proposals • Increased quantity and quality of CIHR peer reviewer comments on sex and/or gender in research proposals • Uptake of strategies by CIHR and other research funders to improve integration of sex and gender
• Engage in activities (eg. meetings, presentations, journal articles) to raise awareness of the importance of sex and gender among the research ethics review community. • Work with research ethics boards and organizations to develop guidance on how to incorporate sex and gender into the research ethics review process	• Engagement and influence with research ethics boards and organizations to integrate sex and gender considerations • Reach and uptake of SGBA+ guidance tools for research ethics boards
• Promote uptake of the SAGER (Sex and Gender Equity in Reporting) Guidelines among Canadian health science and medical journals • Work as a member of the Gender Policy Committee of the European Association of Science Editors to promote the uptake of the SAGER guidelines among international journal editors	• Uptake by Canadian health science journals to include language about sex and gender in their instructions to authors and reviewers • Uptake by international health science journals to include language about sex and gender in their instructions to authors and reviewers

STRATEGIC DIRECTION TWO:

INNOVATION

OUR STRATEGY

As the only funding institute in the world with a specific focus on sex, gender and health, IGH and the community of researchers it supports have put Canada on the map as a leader in sex and gender science. Over the next six years, we will support new discoveries in sex and gender science—both within and outside our community—and ensure that Canadian researchers have opportunities to collaborate on the world stage.

Specifically, we will:

- Advance the field of sex and gender science across all CIHR themes and internationally;
- Launch innovative funding opportunities that support sex and gender researchers to question assumptions, integrate gender-transformative approaches and investigate the causal mechanisms underlying sex and gender differences;
- Prioritize support for Indigenous-led research across IGH's mandate areas; and
- Leverage our reputation as an international leader to connect Canadian and international sex and gender scientists.

GOALS

1. **Expanded development and application of methods and measures that facilitate new understandings of how sex and gender influence health**
2. **Increased scientific discoveries in sex and gender across health research disciplines**
3. **Improved knowledge exchange and coordination between leading Canadian and international sex, gender and health researchers**

ACTIONS	INDICATORS
• Act as a catalyst to support the development and advancement of the field of sex and gender science • Fund research that advances the field of sex and gender science • Fund research that explores the influence of gender on Indigenous wellness	• IGH-led cross-cutting CIHR major initiatives integrating sex and gender • Number of discoveries and methodological papers related to sex and gender resulting from IGH-funded priority-driven research • IGH-supported funding initiatives that include a focus on Indigenous-led research
• Work with other institutes and partners to develop and launch major initiatives that have the potential to significantly advance sex and gender science in a particular field of study • Develop and launch funding initiatives that seek to deepen knowledge about the mechanisms behind observed sex differences • Prioritize investment in Indigenous-led research within IGH mandate areas	• Multi-institute initiatives on which IGH is a partner • Multi-institute initiative strengthening workshops where sex and gender science discoveries are presented • IGH-supported research is recognized by the research community as significantly ground-breaking in the field of sex and gender science • Proportion of IGH funding budget invested in Indigenous-led research
• Participate in international funding initiatives that facilitate collaborations between Canadian and international researchers • Support inclusion of Canadian researchers at international meetings and conferences • Host networking events and meetings that include Canadian and international researchers • Track new innovations in sex and gender science (particularly from our community) and promote them broadly	• Canadian researchers supported through IGH-led ERA-NET co-funds • Canadian researchers supported by IGH to attend or contribute to international meetings and conferences • Events hosted by IGH that include Canadian and international researchers • Invitations for IGH to speak at international fora, such as funder meetings or international sex and gender research and practice conferences

STRATEGIC DIRECTION THREE:

IMPACT

OUR STRATEGY

Over the past five years, IGH has worked hard to connect researchers with those who can use their findings to improve the health of men, women, boys, girls and gender-diverse people. The next six years will be about building relationships across the health ecosystem that can help us translate sex and gender science into personalized health at the point of care.

Specifically, we will:

- Work with government departments and agencies to ensure policies are responsive to the health needs of men, women, girls, boys and gender-diverse people;
- Increase our focus on clinical practice to ensure the newest and best knowledge about how sex and gender influence health is making its way to the point of care;
- Build knowledge translation capacity and create opportunities for exchange between trainees, researchers, knowledge users and individuals with lived experience; and
- Raise awareness among the public, researchers and health research organizations about the importance of sex and gender to health.

GOALS

1. **Greater application of sex and gender considerations in health policies and programs**
2. **Greater application of sex and gender considerations as an integral part of personalized health-care delivery**
3. **Increased public awareness and understanding of the important links between sex, gender and health**

ACTIONS	INDICATORS
• Provide funding and support to Policy-Research Partnerships initiative with Health Canada • Promote the evidence-based integration of sex, gender and intersectional factors into health-related policies and programs • Support knowledge exchange events to foster knowledge exchange between researchers, policy-makers and other stakeholders and knowledge users	• Evidence of the influence of SGBA on the effectiveness of health policies and programs • Federal policies and programs influenced by IGH-related activities • Knowledge exchange events hosted or co-hosted by IGH
• Support knowledge translation of findings relevant to sex and gender science that emerge from CIHR's Personalized Health initiative • Raise awareness of the importance of sex- and gender-specific medicine, therapies and interventions and gender-transformative patient communication • Promote the integration of sex and gender science into clinical practice guidelines	• Uptake of sex- and gender-related findings from CIHR's Personalized Health Initiative • Interactions and partnerships with health-care professionals and societies that foster the dissemination and uptake of sex- and gender-specific health-care practices • IGH activities influence addition of sex and gender considerations in clinical practice guidelines
• Promote sex and gender science discoveries to traditional media outlets • Provide knowledge translation training and opportunities to IGH-funded researchers and trainees • Use social media and other means to raise awareness among the public about the importance of sex and gender to their health	• Interviews with IGH staff and IGH-supported researchers published by traditional media • Knowledge translation training events and opportunities made available to IGH-funded researchers and trainees • Engagement with IGH messaging through social media channels

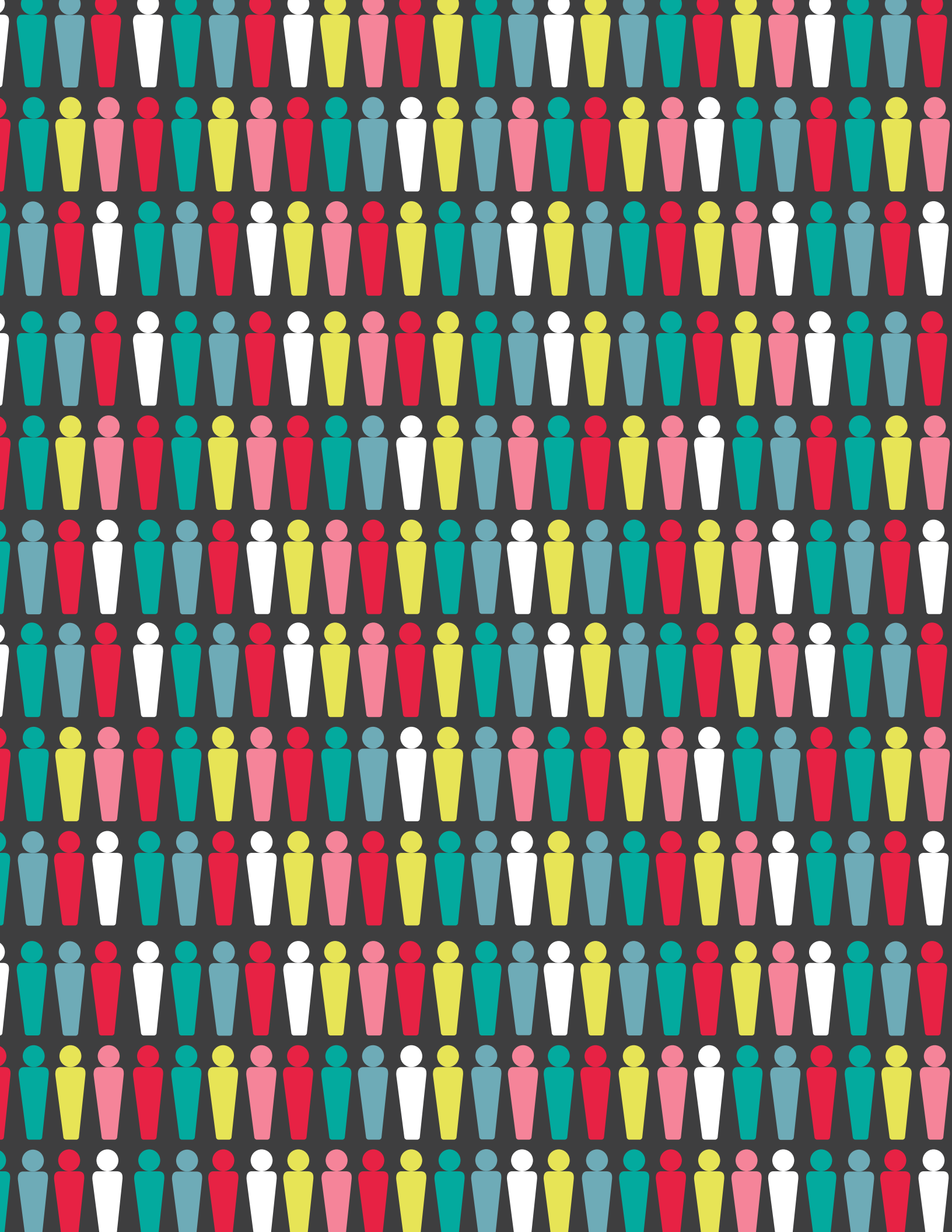
OUR FUTURE

Strategy 2018-2023 is a renewal of our commitment to the three strategic directions of *Integration*, *Innovation* and *Impact*. We are proud of the progress we have made over the last five years. Now is the time for IGH to build on our track record of excellence and the growing momentum of sex and gender science to respond to emerging health challenges facing Canada and the world. With these strategic directions and our refreshed goals, we will work towards transforming the health research ecosystem, promoting innovation in sex and gender science and transforming health outcomes. We will move from awareness to implementation.

We are more than a funding institute. We look beyond funding programs to how IGH can shape science to foster the creation and application of new knowledge that supports better health for diverse groups of men, women, girls, boys and gender- and sexually-diverse people. As we look to the future, IGH will continue to think outside the box to create innovative opportunities. We will turn our focus to emerging areas of discovery: we will incentivize more basic scientists to consider sex as a biological variable and we will explore the potential for sex hormones to augment the power of personalized medicine. We will measure the impact of gender on knowledge translation interventions; and we will invest in gender-transformative, community-driven Indigenous health and wellness research. We will continue to act as the go-to international leader on the integration of sex and gender in health research and as a leading resource for sex and gender science. We will ensure our activities support our goals and address the evolving needs and priorities of CIHR and our research community.

This is an exciting moment for sex and gender science—in Canada and the world. Canada is home to a diverse network of researchers and knowledge users who are integrating sex and gender in their work to spark discovery, innovation and health impact. Our community continues to grow as an increasing number of health researchers recognize the immense potential for new discoveries and more rigorous science when sex and gender are properly accounted for. The future of sex, gender and health research is full of opportunity.

Science is better with sex and gender.



THANK YOU

The development of IGH's 2018-2023 strategy would not have been possible without the commitment and contributions of our diverse community of researchers, knowledge users and partners as well as our fellow CIHR Institutes and colleagues. Thank you for passionately sharing in our commitment to make science better with sex and gender.

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