Mary Horrigan Connors Center for Women's Health and Gender Biology

2024 ANNUAL REPORT





Mary Horrigan Connors Center for Women's Health and Gender Biology

"Together, we will build a health care system that puts women and their lived experiences at its center.

Where no woman or girl has to hear that "it's all in your head," or, "it's just stress."

Where women aren't just an after-thought, but a first-thought.

Where women don't just survive with chronic conditions, but lead long and healthy lives."

First Lady Dr. Jill Biden
White House Initiative on Women's Health Research

Vision and Mission



The mission of the Mary Horrigan Connors Center for Women's Health and Gender Biology is to **ignite change in the health of women through catalyzing research, bolstering knowledge, and transforming training for the next generation of leaders in medicine.**

There has been significant progress in women's health research during the past decade, in part due to research at the Connors Center at Brigham and Women's Hospital. However, the extent to which diseases, drugs, devices, and other therapeutic innovations may impact women and men differently is still unknown for a wide range of health conditions. As such the Connors Center strives to change this paradigm with cutting edge research that expands sex-specific and sex-differentiating knowledge about novel interventions, as well as via systems-based investigations and interdisciplinary research collaborations on conditions and diseases that are exclusive, predominate, or differential in women. The Connors Center aims at encouraging the global research community to imbue all medical research with a sex and gender lens, with the ultimate goal of advancing the health of every woman.

To help carry out its mission, the Connors Center seeks to train new leaders in women's health research and provide critical seed funding to early-career investigators. In addition, Center faculty advance sexand gender-informed curricula and other educational resources for physicians and scientists-in-training and continue to be leading advocates for policy changes that will improve healthcare for women in Boston and around the world.

Connors Center Members

There are over 140 Connors Center Members belonging to multiple departments, divisions, and institutions across the Mass General Brigham system and beyond. These members build a community with other researchers at the hospital and affiliated institutions through collaboration on research initiatives, participation in Connors Center events and other activities and programs organized at the Connors Center.

Greetings from Connors Center Executive Director, Hadine Joffe, MD, MSc



I am delighted to showcase the accomplishments of the Mary Horrigan Connors Center for Women's Health and Gender Biology at Brigham and Women's Hospital in 2024. We have continued the critical work of translating novel and existing sex- and gender scientific findings into new sex- and gender-informed treatments, policy changes, and clinical innovations. Our work would not be possible without the generous support of Jack and Eileen Connors, the Women's Health Advisory Board and our other generous donors Following the loss of Jack earlier this year, we are dedicated to continuing to be champions for women's health, just like Jack.

2024 has been a significant year for women's health research with recent commitments at the national level to increase funding for this critical work from government agencies like the White House Initiative on Women's Health Research, the Advanced Research Projects Agency for Health (ARPA-H) and the Department of Defense (DoD). Building on this momentum, the Center has continued its mission of transforming the health of women through catalyzing sex- and gender-informed research, and leads the way at the Brigham and across the Mass General Brigham enterprise to represent all research focused on women's health and sex/gender medicine.

Our major accomplishments of 2024 include:

- The creation and launch of the MGB-wide Sex and Gender Informed Research Collaborative Think Tank (SIRCTT)
- Launching the first community-focused educational campaign on clinical trials for women of color in partnership with the Walgreens Clinical Trials Office
- Participating in the first White House Conference on Women's Health Research, and hosting Governor Healey's visit to Brigham and Women's Hospital

- Hosting the 2024 LEADERS National Summit of over 50 female academic leaders in the field of women's health from across the U.S. and Canada
- Celebrating a record-setting Women's Health Luncheon, raising over \$1 million to support women's health research
- Propelling a remarkable return on investment of our early-career program

As we look forward to a new year, the Center remains committed to advancing research on the health of women and continuing to champion these efforts across our healthcare system.

Hadine Joffe, MD, MSc Executive Director The Mary Horrigan Connors Center for Women's Health and Gender Biology Paula A. Johnson Professor of Psychiatry in the Field of Women's Health, Harvard Medical School

Greetings from Academic Medical Center President David F. M. Brown, MD



The mission of the Mary Horrigan Connors Center for Women's Health and Gender Biology is deeply aligned with the overarching goals of Brigham and Women's Hospital and Mass General Brigham (MGB). Together, we are committed to fostering collaboration across disciplines and institutions to achieve impactful, patient-centered, and equitable outcomes — both within our healthcare system and beyond.

The 2024 annual report showcases the vital work of the Connors Center as a leading research hub that applies a sex- and gender-informed approach to medicine and scientific inquiry. Through groundbreaking research that

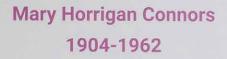
explores how sex and gender differences influence health outcomes, as well as through their support and mentorship of early-career investigators, the Connors Center is driving critical achievements in the field. Their ongoing efforts to educate and engage the broader community about the importance of considering sex and gender in science and medicine are helping to pave the way for a future where women's health research is prioritized and adequately resourced.

I hope you enjoy learning about the incredible work accomplished by the Connors Center over the past year. They are a driving force behind the advancement of women's health research not only within the Brigham and MGB but also across national and international organizations and programs, making a profound impact on health systems and patients worldwide.

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David F. M. Brown, MD President, Academic Medical Centers Mass General Brigham

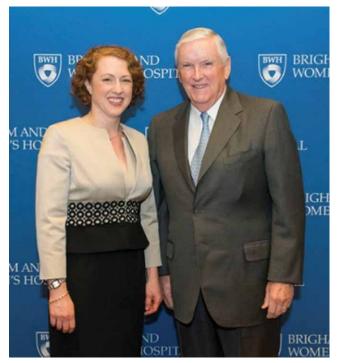
1942 – 2024 In Memoriam — Jack Connors Jr.



The Mary Horrigan Connors Center for Women's Health and Gender Biology was established in 2002 through a generous gift from Jack and Eileen Connors. The center bears the name of Jack's mother, Mary Horrigan Connors, who was born in 1904 with the assistance of a midwife one away from what 10 years would become the Peter Brigham Hospital. Our dear friend Jack Connors Jr., passed away in July 2024 at the age of 82 following a brief illness. We lost a champion for women's health, a visionary leader that recognized the importance of advancing the health of women via both clinical care and research at a time when women were scarcely considered by the scientific and medical community.



Eileen and Jack Connors



Hadine Joffe, MD and Jack Connors

In the early 2000s, Jack and his wife Eileen made pioneering gifts to establish the Mary Horrigan Connors Center for Women's Health and Gender Biology and the Mary Horrigan Connors Center for Women and Newborns (CWN),



named after Jack's late mother, Mary Horrigan Connors. Jack and Eileen's incredible generosity and advocacy have allowed us to advance research to improve the health of women and transform their care.

Jack was thrilled to learn that we have a photo of his mother displayed in the Mary Horrigan Connors Center for Women's Health and Gender Biology office space at Brigham and Women's Hospital (pictured above). The photo stands as a daily reminder of the Center's mission, and Jack's passion and advocacy for equity to improve the health of women. We will honor Jack's legacy as we continue this critical work that was so important to him.

Words can't fully describe Jack's incredible spirit and the vast legacy he will leave behind. We feel fortunate to have known Jack and will seek to imbue his compassion and wisdom into our work. He was an incredible leader, mentor and advocate and we will miss him terribly.

Leadership



Hadine Joffe, MD, MSc **Executive Director**



Primavera A Spagnolo, MD, PhD, Associate Director Scientific Director of First.In.Women Precision Medicine Platform



Laura Holsen, PhD **Director of Research** Training



Cindy Liu, PhD Director of Psychosocial Stress, Diversity, and Health



Deborah Bartz, MD, MPH **Director of Education**



JoAnn Manson, MD, MPH, DrPH Scientific Advisor



Lydia Pace, MD, MPH Director of Women's Health Policy and Advocacy, Director of Global Women's Health Fellowship



Polina Teslyar, MD Director of the Women's Mental Health Fellowship



Janet Rich-Edwards, ScD, MPH **Director of Lifecourse** Epidemiology



Alisa Goldberg, MD, MPH Director of the Fellowship in Complex Family Planning

Staff



Aleta Wiley, MPH, MSc Director of Research **Program Management**



Aisling Maher, BA Senior Administrative Assistant



Emily Sinrod, BS Research Assistant



Natasha Minor, MPH **Director of Operations** and Programming



Monica Bennett Fonseka, MS Doruntina Fida, MPH **Research Specialist**



Trisha Shenoy Research Trainee



Annie Walsh, BS Senior Project Manager



Research Coordinator



Vandya Goel Research Trainee



Patricia Gallegos, MPH **Project Manager**



Julie Wilson, BA **Research Assistant**



Tiffany Tran, BA Assistant Director of Finance



Jacqueline McCormick, BA **Program Coordinator**



Hannah Kim, MSc **Research Assistant**

With Gratitude to the Women's Health Advisory Board

The generosity and advocacy from the Women's Health Advisory Board is critical to the success of the Connors Center and the annual Women's Health Luncheon. The Luncheon provides essential philanthropic support to the Connors Center to sustain the cutting-edge science that is improving the health of women. The event featured longtime public health advocate and vice chair of the Clinton Foundation Chelsea Clinton, DPhil, MPH as the keynote speaker along with presentations on health equity from deputy chair of Radiology Catherine Giess, MD and founder and director of the Trauma Imaging Research and Innovation Center Bharti Khurana, MD, MBA. The luncheon raised over \$1 million – a new record.

In addition to the Luncheon, members of the advisory board have helped establish and build key Connors Center programs including: The Mary Ann Tynan Fellowship in Women's Health supports physicians and scientists improving the health of women; the Gretchen S. Fish Fund for Women's Health Interdisciplinary Stress Program of Research (WHISPR) advances understanding of how physiologic and psychological stress impact women's health and diseases; the Martignetti Award in Women's Health provides distinguished scientists both time and resources to pursue new avenues of sex- and genderinformed research; and the Casey Toolin McAuliffe Memorial IGNITE Award provides early-stage investigators the resources needed to explore key questions in women's health. In addition, the Scott Schoen and Nancy Adams **Research Fund in Women's Cardiovascular** Disease supports women's cardiovascular disease initiatives through a Specialized Cardiac and Vascular Disease IGNITE Award and a First.In.Women Fellowship to develop



Chelsea Clinton, DPhil, MPH (center), with (from left) Lisa Hughes; Giles W.L. Boland, MD, president of Brigham and Women's Hospital and executive vice president of Mass General Brigham; David F. M. Brown, MD; Hadine Joffe, MD, MSc, executive director of the Connors Center; and host committee co-chairs Melissa Weiner Janfaza and Isabelle Loring

the next generation of transformative researchers focused on therapeutic innovation for women with cardiovascular disease. **The Hale Fund for Women's Health** supports the Connors



Bharti Khurana, MD, MBA, Hadine Joffe, MD, MSc, and Catherine Giess, MD

Center's work in understanding how exposure to stress impacts cardiovascular and brain health in women, and The Lisa L. Leiden Fund for Excellence in Women's Health accelerates research and educational activities to improve the patient-care experience for women and the well-being of nursing staff. Funding from Kendra Wilde helps support Dr. Cindy Liu's research examining the effects of the COVID pandemic on women during the perinatal period, while the discovery of novel diagnostic tools for ovarian cancer is being supported by a philanthropic gift from **Pam Miles**. Finally, two anonymous donors have provided generous seed funding to support the Connors Center's work in community-oriented research and education projects across multiple therapeutic areas, including maternal mental health.

Catalyzing Research



Connors Center research falls under two major pillars, the **First.In.Women®** (FiW) Precision Medicine Platform and Stress and Women's Health Research. FiW's translational research structure helps fund and promote research at Brigham and Women's Hospital (BWH) focusing on treatments of all diseases that affect the health of women. Through the FiW platform, the Connors Center educates, informs, and engages a range of stakeholders, internally across Mass General Brigham (MGB) and externally, to ensure novel therapeutics are optimally understood in both women and men. The second research pillar focuses on how distinct types of stress impact women's physical and mental health.

First.In.Women® Precision Medicine Platform (FiW)

FiW facilitates the intentional and timely inclusion of sex and gender factors in every step of the R&D process, using standardized, evidence-based methods that promote efficiency, accuracy and reproducibility. We accomplish this important goal by:

- 1 Conducting research aimed at facilitating the adequate representation of women, particularly those from underserved groups, in clinical trials;
- Performing analyses and developing tools that facilitate the inclusion of sex and gender-related factors in the data collection and analysis plan;
- Partnering with academia, industry and non-profit organizations;
- Supporting and expanding the sex and gender research community within BWH and MGB via education, training, networking opportunities and seed grants.

The Women's Health and Research Participation Survey



Led by Dr. Spagnolo, the Women's Health Research and Participation Survey was launched nationally in January 2023, with the aim to assess the health needs and behaviors of women living in the United States, and to understand their

Primavera Spagnolo, MD, PhD

knowledge, attitudes and experiences related to clinical trials. The survey closed in May 2023 after receiving over 5,300 responses. Dr. Spagnolo and her team, with the support of the Survey and Data Management Core at Dana-Farber Cancer Institute have analyzed the survey data, focusing on understanding how race/ethnicity, socio-economic status and medical history shape women's view of their health needs and their perception of clinical research. They are now summarizing their findings in a manuscript that will be published in early 2025.

Empowering Women to Transform the Health of Their Communities – Project Artemisa

Women, particularly those from underserved communities, remain underrepresented in, and underserved by, clinical trials in multiple therapeutic areas. This lack of inclusion limits women's availability and access to effective medical interventions and contributes to dramatic health disparities. Leveraging findings from the women's health and research participation survey, and with guidance from MGB leaders in community health, the Connors Center is working to address this issue. Drs. Spagnolo and Joffe, together with the Connors Center team, are launching a multi-step program, Project Artemisa, which aims at increasing knowledge of clinical trials and reducing mistrust in the scientific community.

Project Artemisa is a community-based education and skill-building program that empowers minoritized women to become community research advocates among their families and communities, with the ultimate goal of helping underserved groups to navigate the complexities of clinical trials, and to ensure that women can advocate for their health, considering all available treatment options, including clinical studies.

Drs. Joffe, Spagnolo and their team have begun piloting this project among Englishand Spanish-speaking women of color living in neighborhoods identified as target priority areas by the MGB Center for Community Health and Health Equity (Mattapan, Mission Hill, Jamaica Plain, Dorchester, Roxbury). This project will be conducted in partnership with the Walgreens Clinical Trial Office, which shares in our strong commitment to advance diversity in clinical trials. This critical work parallels our emerging effort to better understand women's health issues in multiple therapeutic areas, including maternal mental health, especially among women of color. The team is working to build tools for the hospital and community health organizations to increase awareness and offer timely screening and referrals.



Cindy Liu, PhD



Amanda Koire, MD, PhD



Natalie Feldman, MD

Cindy Liu, PhD, is the Director of Psychosocial Stress, Diversity, and Health at the Connors Center and focuses on the cultural and socioemotional development and race and ethnic disparities related to maternal and child mental health.

Amanda Koire, MD, PhD,

is a Research Scientist at the Connors Center, leading community-oriented research and education projects under the guidance of Drs. Spagnolo, Liu, and Joffe. Dr. Koire is an associate psychiatrist in the Department of Psychiatry and an instructor at Harvard Medical School.

Natalie Feldman, MD, is a

Research Scientist at the Connors Center, working on research and education projects focusing on maternal mental health, particularly postpartum anxiety. Dr. Feldman is an associate psychiatrist in the Department of Psychiatry and an instructor at Harvard Medical School.



White House Conference on Women's Health Research

On December 11, 2024, Connors Center Executive Director Hadine Joffe, MD, MSc, attended the first-ever White House Conference on Women's Health Research. The conference brought together women's health researchers, business leaders, advocates, innovators, elected officials and federal agency representatives to discuss the ongoing efforts to increase funding for women's health research in the United States, following the historic Executive Order that President Biden signed in March 2024 to affirm his commitment to women's health research. The conference included remarks from President Joe Biden and First Lady Dr. Jill Biden and panel discussions on cutting-edge women's health research from experts in the field.

During her remarks, Dr. Biden honored the progress that has been made in the past year but noted that "today isn't the finish line; it's the starting point. We — all of us, we have built the momentum. Now it's up to us to make it unstoppable." She also celebrated attendees for being "the researcher who makes sure that each proposal considers women from the beginning ... the investor who searches for the next breakthrough product or treatment ... the voice in every space, from boardrooms to classrooms to laboratories, who asks, "What are we doing to advance women's health?"







Governor Healey Visit to Brigham and Women's Hospital

On April 16, 2024, Governor Maura Healey visited the Connors Center for Women's Health and Gender Biology at BWH to highlight Massachusetts' leadership in life sciences and announce the reauthorization of the Life Sciences Initiative, the **Mass Leads Act**. Governor Healey was joined by Economic Development Secretary Yvonne Hao, Health and Human Services Secretary Kate Walsh, and President and CEO of Mass General Brigham Dr. Anne Klibanski for a tour of the Connors Center, led by Drs. Joffe and Spagnolo.

Governor Healey announced nearly **\$3 million in new grants** to support institutions that are leading projects to improve women's health outcomes and early-stage research that advances the understanding of diseases and conditions that disproportionately affect women.







The 2024 First Look awards were announced as part of this funding, and Connors Center leadership provided a tour of the hospital showcasing how women's health is a priority at BWHI.

Scott Schoen and Nancy Adams First. In.Women Cardiovascular Fellowship

In 2024, Drs Xiaowen "Wendy" Wang, MD and Drs. Maria Pabon completed their First.In.Women Cardiovascular Fellowship program. Dr. Wang's fellowship project focused on evaluating sex differences in clinical characteristics and outcomes in PARADISE-MI, a randomized. controlled trial evaluating the use of specific treatments in patients with high-risk myocardial infarction. Her work led to several publications and presentations at national and international conferences including the American Heart Association Scientific Session and the European Society of Cardiology Heart Failure Congress. Dr. Pabon focused on adverse pregnancy outcomes and risk of cardiovascular diseases. Findings from her project were summarized in a publication in the Journal of the American College of Cardiology, and were also presented at the American College of Cardiology National Conference in April 2024.







Wendy Wang, MD

Maria Pabon, MD Leilah Grant, PhD

In October 2024, **Leilah Grant, PhD** was named the Connors Center First.In.Women Research Scientist. With this funding, Dr. Grant's projects will combine her expertise in sleep and circadian medicine with her interest in women's health research. Her projects are investigating the effects of a circadian-based dietary intervention, time-restricted eating, on cardiometabolic, sleep and mood health in peri- and postmenopausal women, the association between ovarian reserve and sleep health, and the relationship between melatonin, a circadian hormone, and estradiol.

IGNITE Research Awards

The IGNITE Awards are a key component of FiW that advances the Center's understanding of female-specific and sex-differentiating mechanisms of diseases and effects on novel therapeutics. The awards are one-year, \$50,000 grants to investigators at BWH and are funded by generous donors at the annual Women's Health Luncheon. IGNITE investigators leverage FiW to shape the scientific focus of the study, utilize Connors Center and FiW resources, and assess milestones, deliverables, and project goals to make sure emerging clinical translation remains aligned with the FiW mission. The IGNITE program includes several types of

Over the past 7 years, the Connors Center has raised



\$4 million in early-stage investigator grants to ____

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7 🔊

awardees

publications

national presentations Over the last year, the Connors Center has distributed nearly



\$350,000 in funding leading to

\$18.7 million of further grant funding

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NIH/Federally-

funded grants

5,497[%] ROI awards: The IGNITE Research Awards, The Casey Toolin McAullife Memorial IGNITE award, the Cardiac and Vascular IGNITE award, the Gayle Brinkenhoff Memorial IGNITE award, and the Connors BWH-MGB Collaborative IGNITE awards.



Saranna Fanning, PhD

The 2024 Casey Toolin McCauliffe IGNITE awardee is **Saranna Fanning, PhD**, *The Parkinson's Disease Patient Lipidome as a Sex Differentiator, Diagnostic, and Therapeutic target.* The Casey Toolin McAuliffe IGNITE award is

made possible through funding from Women's Health Advisory Co-Chair Jennifer Toolin McAuliffe.

The Specialized Cardiac and Vascular IGNITE Award supports innovative early-phase, proofof-concept investigations on sex- and genderdifferences in cardiac and vascular diseases, including studies on disease mechanisms, biomarkers, diagnostics and therapeutics.



The 2024 Specialized Cardiac and Vascular IGNITE awardee is: **Shashi Kant, PhD, FAHA**, *Sex-Differential Role of Sortilin¹ in the Regulation of Endothelium-Dependent Vascular Homeostasis.*

Shashi Kant, PhD, FAHA

This award is made possible through funding from the Scott Schoen and Nancy Adams Research Fund in Women's Vascular Disease.

The Gayle Brinkenhoff IGNITE Award for Cancer Research supports innovative proof-of-concept investigations related to breast cancer.



The 2024 Gayle Brinkenhoff IGNITE Awardee is **Aditi Hazra**, **PhD, MPH**, Leveraging Artificial Intelligence to Improve Shared Decision-Making Among Women of Color Diagnosed with Non-Invasive Ductal Carcinoma

Aditi Hazra, PhD, MPH

in situ. This Award is made possible through funding from the Global Philanthropy Division of RevitaLash Cosmetics.

BWH-MGB Collaborative IGNITE Awards

In 2024, the Connors Center continued to expand its role in leading collaborative sex- and gender-informed research across the MGB system. Over the course of 2025, we look forward to growing this initiative in partnership with all MGB institutions. Building on the success of the first two Connors BWH-MGB Collaborative IGNITE Awards previously distributed, a third collaborative award was distributed this past year. This award supports a Brigham and Women's investigator and their collaboration with an investigator from another MGB institution on a joint project.



Fei Liu, PhD



Menglu Yang, PhD

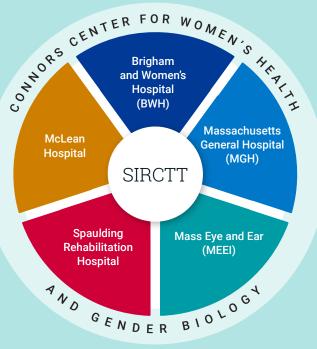
The 2024 awardees are **Fei Liu**, **PhD** from Brigham and Women's Hospital and **Menglu Yang**, **MD**, **PhD** from Mass Eye and Ear, who received funding to support their project *Finding New Clues for Sjögren's Syndrome: Investigating DNA in Tears for Better Diagnosis*. This award is funded by the MGB Office of the Chief Medical Officer.

The Collaborative IGNITE awards laid the conceptual foundation for a new Connors Center initiative, the **Sex/Gender Informed Research Collaborative Think Tank (SIRCTT)**.



Sex/Gender Informed Research Collaborative Think Tank (SIRCTT)

In collaboration with leaders from across the MGB system, the Connors Center launched the **Sex/Gender Informed Research Collaborative Think Tank (SIRCTT)**. Our goal is to create and foster alliances that leverage and expand the scientific strengths in sex/gender informed and women's health research across the MGB system via collaborative networking, educational and training opportunities for early career researchers.



SIRCTT provides opportunities for both established researchers in the sex and gender and women's health space to interact, exchange knowledge and resources, and collaborate, and for junior investigators to learn the fundamentals of sex/gender-informed research and expand their network. SIRCTT's mission and goals are supported by a dedicated advisory board, including members from Brigham and Women's, Massachusetts General Hospital, Mass Eye and Ear, McLean Hospital, and Spaulding Rehabilitation Hospital, and by the faculty core, which includes established sex/gender and women's health research investigators with a large array of expertise, from genetics to imaging, health policy, epidemiology, among others.

Connors Center/Massachusetts Life Sciences Center First Look Awards

The First Look Awards are a collaboration between the Massachusetts Life Sciences Center (MLSC) and the Connors Center. This grant program aims to support translational research at Massachusetts research institutions that furthers understanding of sex and gender differences, especially for diseases or conditions that affect women exclusively, predominately, or differentially. Five awards were granted in 2024 to investigators at institutions across Massachusetts, including MGH, Worcester Polytechnic Institute, and BWH. The 2024 First Look awardees are **Anahita Dua, MD, MBA, MSc**, Personalizing Anti-platelet Medications to Decrease Thrombotic Rates in Elderly Patients with Peripheral Artery Disease Post Lower Extremity Revascularization, **Christina Bailey-Hytholt, PhD** and **Diana Alatalo, PhD**, Lithium-Loaded Lipid Particles for Treating Bipolar Disorder During Pregnancy and Breastfeeding, Lydia Shook, PhD, Characterizing the Immune Landscape of the Placenta in Pregnancies Complicated by Type 1 Diabetes, **Mariane Le Fur, PhD**, Non-Invasive Diagnosis of Endometriosis by Molecular Imaging, and **Natalie Feldman, MD**, Pilot of a Digital Mental Health Intervention for Postpartum Anxiety.

Funding from Pam Miles – Post-Traumatic Stress Disorder and Ovarian Cancer Research

Naoko Sasamoto, MD, PhD and Kathryn Terry, ScD received funding from Women's Health Advisory Board Member Pam Miles for their research project Discovery of New Blood-Based Biomarkers to Improve Ovarian Cancer Survival. This research effort focuses on identifying prognostic biomarkers at time of diagnosis utilizing an innovative biomarker discovery platform, which will help providers design personalized treatment strategies for women with ovarian cancer. Results from this study will open new research avenues to discover novel therapeutics targets and blood biomarkers that would identify patients who may most benefit from new treatments that specifically target ovarian cancer.

Generous additional support was provided by Pam Miles in 2024 that will allow Drs. Sasamoto and Terry to complete their project. It will also support a further collaborative project between **Drs. Spagnolo, Terry and Sasamoto** that seeks to understand the relationship between women with post-traumatic stress disorder (PTSD) and ovarian cancer, assessing their risk and focusing on the role of vaginal and gut microbiota and immune response. This will further advance ovarian cancer research by helping to identify the mechanisms by which certain women have an increased risk to develop this type of cancer and will lay the foundation for preventive strategies.





Naoko Sasamoto, MD, PhD

Kathryn Terry, ScD

LEADERS Committee and Summit



The Leaders Empowering the Advancement of Diversity in Education, Research and Science (LEADERS) Committee seeks to reduce gender disparities that persist in health care by increasing the number of endowed chairs in women's health across all fields of academic internal medicine and related disciplines. Dr. Joffe serves on the steering committee of this esteemed group of colleagues in the field of women's health and sex-differences research. The vision for LEADERS originated over a decade ago when the first meeting was hosted at the Connors Center at BWH in 2013. Since then, LEADERS has taken shape in a powerful and influential way.

This year, Dr. Joffe and the Connors Center had the honor of hosting the 12th Annual LEADERS Summit in Boston on September 26–27, 2024. The Event included a Welcome Reception, a day-long Summit at BWH featuring remarks from Dean of Harvard Medical School, George Q. Daley, MD, PhD, Chair of the White House Initiative on Women's Health Research, Carolyn M. Mazure, PhD, Director of Advanced Research Projects Agency for Health (ARPA-H), Renee Wegrzyn, PhD, Founder and CEO of Women's Health Access Matters (WHAM!), Carolee Lee, and President and CEO of Mass General Brigham, Anne Klibanski, MD. The Summit concluded with a dinner and fireside chat with Rochelle Walensky, MD, MPH, Former Director of the Centers for Disease Control and Prevention (CDC).

Stress Research

The second pillar of research focuses on Stress and Women's Health Research, and how different kind of stressors — environmental, psychological, and physiological stress — impact the health of women. Two signature Connors Center programs under this pillar include: **The Brigham/Harvard Center for Reproductive Outcomes of Stress and Aging (ROSA)** that investigates neural processing of stress in postmenopausal women, and the **Women's Health Interdisciplinary Stress Program of Research (WHISPR)** that examines the effect of stress on the health of women and convenes a community of stress investigators at BWH.

The Brigham/Harvard Center for Reproductive Outcomes of Stress and Aging (ROSA) Center



The ROSA Center is funded by the National Institutes of Health (NIH) and assembles a network of leading investigators across BWH and Harvard Medical School (HMS). Connors Center investigators received the NIH Specialized Center of Research Excellence (SCORE) U54 grant

for a five-year, multi-project investigation of neural processing of stress and adverse health outcomes in aging women.

The Center is led by **Hadine Joffe, MD, MSc**, Principal Investigator, and JoAnn Manson, MD, MPH, DrPH, Leadership Administrative Core Co-Leader. In addition, investigators from across BWH and HMS lead three major research projects and three additional cores (sleep resource, leadership, career enhancement). Additional project and core leaders include **Jorge Chavarro, MD, ScM, ScD; Ursula Kaiser, MD; Elizabeth Klerman, MD, PhD; Pamela Mahon, PhD; Victor Navarro, PhD; Kathryn Rexrode, MD, MPH; Janet Rich-Edwards, ScD, MPH**, and **Emily Oken, MD, MPH**.

ROSA investigators study the role of stress and its neural mechanisms in reproductive aging health outcomes that are associated with a higher risk of cardiovascular disease and dementia in aging women. As the Center entered the fifth year of this five-year grant, ROSA researchers are publishing findings from the work including articles in Menopause, Journal of the Endocrine Society, and Sleep Health. These findings will help reduce adverse health consequences of reproductive aging in menopausal women.

The ROSA Center team secured a Diversity and an Administrative Supplement from NIH to further support the work of the ROSA Center. **Diana Soria**, **PhD** received a diversity supplement to support her research evaluating the associations of exposure to greenness with menopausal symptoms and sleep duration and quality. These findings are projected to be published in 2025. The Administrative supplement supports additional expenses incurred due to repercussions of the COVID pandemic.

In 2024, the ROSA Center team submitted a renewal application to NIH to support an additional five years of research. In this application our investigators expanded upon their initial findings to investigate the role of exposure to artificial light at night on stress, cognition, and overall health in women as they go through menopause.

The ROSA Center also provides funding opportunities to expand its research focus. The ROSA Scholar program helps early-stage faculty or established investigators refocus their careers on sex-differences and women's health translational research, providing them with the necessary tools to become leading researchers in the field with a mentored research project that hopefully results in NIH K- or R-level funding. In addition, the ROSA Pilot program distributes 2-year awards that allow earlystage investigators to obtain preliminary data, facilitating applications for future NIH K- or R-level awards.



The 2023 ROSA Scholar is **Izzuddin Aris, PhD**, Neighborhood Vulnerability and Menopause and Cardiovascular Health in Midlife Women in Project Viva.

Izzuddin Aris, PhD

At the end of 2023, the 2023 ROSA Pilot Awardees were announced, whose projects have occurred over the 2024 year. The 2023 ROSA Pilot Awardees are **Holly Crowe**, **PhD, MPH**, *Migraine Phenotypes and Vasomotor Symptoms Across the Menopausal Transition*, **Delphine Franssen**, **PhD**, *MKRN3 Action on Vasomotor Symptoms in a Menopausal Mouse Model*, **Encarnación Torres Jiménez PhD**, *Deciphering the Thermoregulatory Response to Estrogen Decline During Menopausal Transition Triggering Vasomotor Symptoms*, and **Matthew Weaver, PhD**, *Does Sleep Mediate Relationships Between Environmental Exposures and Stress*,





Delphine Franssen,

PhD

Holly Crowe, PhD, MPH



Encarnación Torres Jiménez, PhD

12

Matthew Weaver, PhD

Mood, and Wellbeing? These awardees have made great strides on their projects and in progressing their careers, such as Dr. Holly Crowe, who secured a K01 award from NIH.

2024 NIH Annual SCORE Meeting

ROSA Center investigators joined others from the National SCORE Consortium at the 2024 Annual SCORE Meeting, a networking opportunity where the ROSA team presented their innovative research and promoted the Center's exciting initiatives. ROSA investigators **Pamela Mahon**, **PhD**, **Holly Crowe**, **PhD**, **MPH**, **Encarnacion Torres Jimenez**, **PhD** and **Izzuddin Aris**, **PhD** presented their work at the meeting in September, 2024. **Diana Soria**, **PhD** and **Izzuddin Aris**, **PhD** presented their work at the national SCORE monthly meetings.



The Women's Health Interdisciplinary Stress Program of Research (WHISPR)

WHISPR is funded by the Gretchen S. Fish Fund for Women's Health and Stress Research. WHISPR advances our understanding of the relationship between physiologic and psychological stress and women's health and disease. Since its inception in 2018, the program has continued supporting pilot projects, facilitating collaborations between investigators, and hosting an annual scientific symposium. WHISPR research spans clinical, translational, population, and basic research studies that

WHISPR continued

will investigate interactions of physiologic indicators of stress and stress exposures with women's health and disease. WHISPR includes investigators from across BWH to develop cutting edge research and foster synergy in this interdisciplinary field.

The 2024 WHISPR awardees are **Rose Olson**, **MD**, Uncovering the Link Between Sexual Assault and Chronic Pain Conditions (CPC) in Women, and **Sergey Karamnov**, **MD**, The Role of Socioeconomic and Psychosocial Stress Determinants in Postoperative Atrial Fibrillation: a Female-Specific Risk Score.





Rose Olson, MD

Sergey Karamnov, MD

The 7th annual WHISPR Symposium and Awardee Presentation was hosted at BWH on April 23, 2024. It was held in conjunction with the ROSA Center. Over 100 individuals registered to attend in person and virtually from the Connors Center, the MGB system, the greater Boston community, and beyond.





Aimee McRae-Clark, PharmD, BCPP

Aimee McRae-Clark, PharmD, BCPP, delivered the keynote address, entitled *Sex, Stress, and Relapse*. Dr. McRae-Clark is a dually appointed Professor in the Departments of Psychiatry and Behavioral Sciences and Neurosciences at the Medical University of South Carolina (MUSC). She leads the MUSC Specialized Center of Research Excellence (SCORE) on Sex Differences. In her talk, Dr. McRae-Clark discussed the differences in presentation of substance use disorders (SUD) by sex/gender, how the trends and risks of SUD in women differ from those in men, and the need to further investigate the roles of hormones and stress factors when treating SUD patients and preventing relapse.

Joji Suzuki, MD provided brief remarks on Substance Use Disorder (SUD) Treatment Research at BWH: Improving Existing Interventions and Systems of Care. Dr. Suzuki is the founding Director of the Division of Addiction Psychiatry in the Department of Psychiatry, BWH, and an Associate Professor of Psychiatry at HMS.



Joji Suzuki, MD

Lisa L. Leiden Fund for Excellence in Women's Health Research



The Lisa L. Leiden Fund for Excellence in Women's Health Research has facilitated a partnership with **Annie Lewis-O'Connor, PhD, NP-BC, MPH, FAAN**, founder and director

Annie Lewis-O'Connor, FAAN, fo PhD, NP-BC, MPH, of the B FAAN

FAAN, founder and director of the Brigham's Coordinated Approach to Resilience and

Empowerment (CARE) Clinic. Together, the Connors Center and Dr. Lewis-O'Connor will accelerate research and educational activities aimed at improving care for women and the well-being of nursing staff, with a particular focus on exposure to traumatic events, emotional and physical pain, and other stressful life experiences more common in women. The Leiden Fund supports three projects:

Building a Learning Collaborative to Address Stress Among Healthcare Providers



Andrea MacDonald, RN, BSN

Led by **Dr. Lewis-O'Connor**, this project aims to create and foster a 'Learning Collaborative' dedicated to mitigating stress and promoting wellness among women and nurses. Dr. Lewis-O'Connor is continuing her work with **Andrea MacDonald**, **RN**,

BSN, of the Emergency Department at BWH, and **Drs. Liu and Spagnolo** from the Connors Center to implement the first program addressing stress and trauma exposure among Brigham nurses working in the emergency department. Further, Dr. Lewis O'Connor surveyed nearly 300 nurses about their experiences working in COVID-19 treatment units during the pandemic and found that utilizing a trauma-informed approach by leaders could build resilience and enhance workplace wellness among this population.

Studying Stress, Well-being, Resilience, and Social Support During Motherhood



Research led by **Cindy Liu, PhD**, has followed mental health outcomes among pregnant individuals and new mothers during the COVID-19 pandemic. This work aims to capture the range of experiences in

Cindy Liu, PhD

women's mental health during motherhood to better identify interventions for improving family well-being. The study has enrolled over 2,000 women across the United States. Her team has published over a dozen papers since 2020 and in 2024 published two papers focused on maternal stress and infant neurodevelopment, and virtual group experiences on peripartum mental health during the pandemic. This past year, her team has been actively processing survey and videobased data involving interactions with mothers and infants.

Improving Clinical Care for Women with Functional Neurological/ Conversion Disorder



Primavera A Spagnolo, MD, PhD, is working with Dr. Lewis-O'Connor to incorporate trauma-informed care in the management of functional neurological/conversion disorder, a female-predominant and highly disabling condition.

Primavera Spagnolo, MD, PhD

Together, they are preparing a manuscript on trauma-informed approaches for the disorder, organizing a talk on this topic at the Brigham, and designing an online course for care providers.

The Hale Fund for Women's Health provides support for Connors Center

for Connors Center investigators to examine important contributors to health

in midlife women. Specifically, how exposure to stress adversely impacts cardiovascular and brain health in women, the role of brain chemistry in women with stress-related mental health disorders, and how harnessing women's hormones might help treat depression in women. This work is led by Executive Director **Hadine Joffe, MD, MSc** in collaboration with Associate Director **Primavera A Spagnolo, MD, PhD**. Examples of supported projects include:

Shadab Rahman, PhD, MPH and Leilah Grant, PhD, of the Division of Sleep and Circadian Disorders, are investigating how female hormones and sleep impact metabolism and cardiac risk factors. They presented this research at the 2023 National Endocrine Society Annual Meeting. Their findings highlight the importance of sleep for midlife women's heart health.

Jessica Busler, PhD, of the Department of Psychiatry, conducts research connecting mood and vexations of hot flashes to metabolism in midlife women, identifying links between mental well-being and metabolic health in postmenopausal women. Dr. Busler presented this research at the 2023 NIH SCORE National Meeting.

Education and Training



The Connors Center's mission includes bolstering knowledge in the field of women's health research through hosting educational events, programs, and symposia that convene academics, physicians, scientists, industry, and community partners. By integrating and applying knowledge of women's health and sex- and gender-differences to care delivery, the Connors Center aims to transform training and develop a generation of women's health research trainees through fellowships and training programs.

The Connors Center leads the way at BWH as a major resource for early-career investigators through its robust programs that focus on pilot funding, research training, and educational activities. Paired with funding opportunities is active training and mentorship on funded projects and careers, as well as educational symposia through which the awardees/



Laura Holsen, PhD

fellows and their work are showcased across the academic community.

Education and training efforts at the Connors Center are led by the Director of Research

Training, **Dr. Laura Holsen**. In this role, Dr. Holsen works to expand the career development efforts and sponsorship of trainees and pilot award recipients within the Center. She leads this training mission and provides formal oversight of early career investigators.

This year, Dr. Holsen has examined the return on investment (ROI) of the Center's education and training program to further understand how awardees have benefited from resources provided by the Center. Since 2017, the Center has distributed nearly \$4 million in early-stage investigator grants to 97 awardees, which has led to 185 publications and 60 national presentations. Over the last year, the Connors Center has distributed nearly \$350,000 in funding, leading to \$18.7 million of further grant funding and 11 NIH/Federally funded grants. This represents a 5,497% ROI.

Connors Center Medical Education Initiative — Harvard Medical School Course on Sex- and Gender-Informed Medicine: Research, Clinical Practice and Population Health

Led by Connors Center Director of Education **Deborah Bartz, MD, MPH** in collaboration with Connors Center Scientific Advisor **JoAnn Manson, MD, MPH, DrPH** and other experts throughout MGB and Fenway Health, the Medical Education Initiative supports efforts to incorporate sex- and gender-informed medical education into Harvard Medical School curricula, beginning with a cross-campus Advanced

Integrated Science Course (AISC) for junior and senior medical students. Co-taught by Dr. Bartz and Massachusetts General Hospital physician Alex Keuroghlian, MD, MPH, the Sex- and Gender-Informed Medicine course aims to prepare students for the translation of research to clinical practice that appropriately incorporates the role of sex and gender diversity in health and disease. The goal is to engage clinicians to apply a sex/gender lens from the onset of their training to build a workforce with the knowledge and skills to transform and advance sex- and gender-informed medical care and research. Dr. Bartz plays an integral role in student teaching, advising and curriculum development for the next generation of trainees in women's health research and clinical care.







Deborah Bartz, JoAnn Manson, MD, MPH MD, MPH Director of Education

Alex Keuroghlian, MD, MPH

Monday	Tuesday	Wednesday	Thursday	Friday
Course Introduction COVID-19 Case Example	Clinic: Women's and Men's Health Care	Research Methods Primer I	Clinic: LGBTQIA+ Health Care	Research Methods Primer II
Research Methods Primer III, Genetics	Clinic: Life Course Considerations: Neonatal Intersex Care; Oncology Palliative Care	Endocrinology of Gender-Affirming Care; Hormone Disruptors; Competitive Sports Access	Clinic: Multidisciplinary Gender-Affirming Medical and Surgical Care	Immunology
Depression; Minority Stress and Mental Health	Clinic: Team-based Care for Eating Disorders; Substance Use Disorders; Minority Stress & Mental Health	Cardiovascular Disease, Interaction with the Healthcare System	Clinic: Trauma and Toxic Stress, Medical Trauma; Culturally Responsive Sexual Health Care for Black Women	Pharmaco- epidemiology, -regulation, and -ethics, Health Law
Global Health, Health Systems, Implementation Science	Clinic: Health Systems Outside the Standard Health System	Health Policy	Student Capstone Presentations	Intersection of Professional & Sex- and Gender-related Identities

Harvard Medical School Course on Sex- and Gender-Informed Medicine: Content at-a-Glance

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Annual Research Symposium

The 7th Annual Connors Center Research Symposium was held at BWH on October 30, 2024, in conjunction with the ROSA Center, an NIH Specialized Center of Research Excellence on Sex Differences. Over 300 people registered from the MGB system, Connors Center network, Greater Boston community, and beyond. Speakers included recipients of Connors Center grant awards and fellowships, and ROSA Center associate scientists.



Vivian Ota Wang, PhD, FACMG, CGC, answering questions after her keynote address

Vivian Ota Wang, PhD, FACMG, CGC delivered the keynote address entitled Redux, Remix, and Essential: Why Sex and Gender Matter in Women's Health Research. Dr. Ota Wang is the Deputy Director of the National Institutes of Health Office of Research in Women's Health (NIH ORWH). During the symposium, she shared insights into the NIH ORWH and the crucial need of sex/gender-stratified research. Dr. Ota Wang also provided information on the White House Initiative on Women's Health Research and other NIH-related Notices of Funding Opportunities (NOFOs) and Notices of Special Interest (NOSIs). Her talk concluded with a call to action, urging attendees to champion the cause of sex-and-gender-varied research for the sake of addressing inequities, disparities, and injustices.



2024 Annual Symposium Speakers, pictured from left to right: Kara McKinley, PhD; Florian Fintelmann, MD; Izzuddin Aris, PhD; Hadine Joffe, MD, MSc; Vivian Ota Wang, PhD, FACMG, CGC; Rohini Dutta, MBBS, MPH; Primavera Spagnolo, MD, PhD; Dr. Lidia Minguez-Alarcon, PhD (Not pictured: Kendra Harris, MD)

Work in Progress Meetings

The Connors Center organizes and hosts Work in Progress (WIP) Meetings for all Awardees each year in the Fall. These meetings include content experts from within BWH and the MGB system, and beyond. WIP meetings provide Awardees with the valuable opportunity to share information and updates on their ongoing research projects and receive feedback and advice on how to navigate challenges and solidify next steps. The one-hour meetings serve to support Awardees as well as connect them to experts in their field they may have not normally had the opportunity to connect with.



Fellowships

With both clinical and research fellowships, the Connors Center equips a new generation of leaders in women's health with critical-seed funding. These fellowships showcase commitment to the discovery, dissemination, and integration of knowledge on women's health and sex- and gender-based differences and the application of this knowledge to care delivery.

Mary Ann Tynan Fund

The Mary Ann Tynan Fund is endowed in the name of Mary Ann Tynan, the third woman elected partner at Wellington Management Company. It is awarded to physicians and scientists at BWH who are driven to improve the health of women.

The current Tynan Research Scientists are **Behnood Bikdeli, MD, MS,** whose research focuses on the assessment of sex differences in presentation, treatment strategies, outcomes, and response to therapies in thrombotic cardiovascular diseases, and **Liane Hunter**, **MD, PhD**, whose focus is on the biological mechanism of neurodegenerative diseases, to understand sex-specific outcomes for brain-related disorders.



Behnood Bikdeli, MD, MS



Liane Hunter, MD, PhD

Global Women's Health Fellowship

The Global Women's Health Fellowship Award supports critical research advancing the health of women worldwide, elevating the visibility of the field of global women's health. The fellowship trains clinicians, research fellows, and earlycareer clinical investigators for successful careers that use innovative and meaningful research to transform the health and well-being of women around the globe. In addition, fellows conduct clinical and field research based on robust quantitative and analytical research skills and obtain fundamental knowledge and understanding of global health issues that uniquely impact the health of women within the context of social, cultural, and political environments.

The 2024 Global Women's Health Fellowship awardees is **Rumbidzai Mushavi**, **MD**, to support her research project *Exploring provider comfort with PrEP and contraceptive service integration in south-west Uganda*. The Global Women's Health Fellowship is directed by **Lydia Pace**, **MD**, **MPH**.



Rumbidzai Mushavi, MD

Women's Mental Health and Reproductive Psychiatry Fellowship

The Women's Mental Health and Reproductive Psychiatry Fellowship in the Department of Psychiatry at BWH trains expert clinicians in the psychiatric care of women and in the assessment and treatment of psychiatric symptoms linked with female reproductive transitions. The fellows are mentored and trained by Fellowship Director **Polina Teslyar, MD**.

Sara Kashani, MD, was the 2023–2024 Fellow, and Natalie Feldman, MD was the 2022–2024 Fellow. The 2024–2026 Women's Mental Health and Reproductive Psychiatry Fellow is Marissa Caan, MD.





Polina Teslyar, MD

Sara Kashani, MD



Natalie Feldman, MD



Marissa Caan, MD

Complex Family Planning Fellowship

The two-year Complex Family Planning Fellowship provides obstetrician-gynecologist residency graduates with an opportunity to build on their clinical skills in complex abortion and family planning while developing research expertise. The Fellowship is accredited by the Accreditation Council for Graduate Medical Education (ACGME) and is offered at 33 leading universities across the United States. Fellows are trained and mentored by Fellowship Director **Alisa Goldberg, MD, MPH**, Associate Fellowship Director **Kari Braaten, MD, MPH**, and faculty members **Deborah Bartz, MD, MPH, Kathryn Fay, MD, MSc** and **Elizabeth Janiak, ScD**.

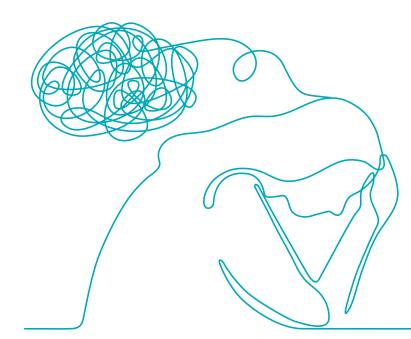
The first year Complex Family Planning fellow is **Armide Storey, MD**. The second year Complex Family Planning fellow is **Kendra Harris, MD**.



Armide Storey, MD



Kendra Harris, MD



Center Publications, Honors, and Awards



The Center is grateful for the efforts of Brigham and Women's Office of Strategic Communications, whose team works closely with ours to share Connors Center news and updates across the hospital and Mass General Brigham system.

Publications from Connors Center Leadership and Members

Center Leadership and Members regularly publish their research findings in high impact journals.



Scan the QR code for a list of publications from 2024.

Press Coverage of Center

Research by Connors Center leadership and members is frequently covered in the popular press in outlets such as *The New York Times*, *The Washington Post*, *The Wall Street Journal*, *TIME Magazine* and *GQ*.



Scan the QR code for a list of featured press coverage from 2024.

Awards and Promotions

JoAnn E. Manson, MD, DrPH, MACP received an Outstanding Clinical Investigator Award from the Endocrine Society and achieved 25 years of continuous funding from the National Heart, Lung and Blood Institute (NHLBI). Hadine Joffe, MD, MSc received the William Silen Lifetime Achievement in Mentoring Award from Harvard Medical School. Behnood Bikdeli, MD, MS was promoted to Assistant Professor of Medicine at Harvard Medical School and was elected as a Fellow of the American College of Cardiology (FACC). Elizabeth Klerman, MD, PhD received the Distinguished Scientist Award from the Sleep Research Society. Hermioni L. Amonoo, MD, MPP, MPH received the Clinical Scientist Development Award from the Doris Duke Charitable Foundation. Rose Olson, MD received a Faculty Career Development Award from the Brigham and Women's Office for Research Careers. Marie Billaud, PhD was appointed to Assistant Professor of Surgery at Harvard Medical School.

Commitment to Diversity, Equity, and Inclusion

The Connors Center is dedicated to advancing diversity and equity in our communities. This includes increasing diversity at all levels, creating a space and culture of respect and inclusion, and recognizing and eliminating inequities for all. As such, our educational and training programs and grants have supported and continue to support investigators from diverse backgrounds, and we strongly encourage and support the role of diversity, equity, and access in all research conducted and supported by the Connors Center.



"This is not a time to throw up our hands. This is a time to roll up our sleeves. This is a time to organize, to mobilize, and to stay engaged for the sake of freedom and justice and the future that we all know we can build together."

– Vice President Kamala Harris

Brigham and Women's Hospital

Mary Horrigan Connors Center for Womens Health and Gender Biology

To learn more about how to support the Connors Center: Laura Ogonowski, Director of Development logonowski@mgb.org | 617.634.9912

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