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## NIH Programs Support Women Navigating the "Braided River" of Biomedical Research Careers

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*As directed by a mandate from the U.S. Congress, ORWH supports the recruitment, retention, reentry, and sustained advancement of women in biomedical careers. In the feature story of this issue of* In Focus, *we look at some of the key programs developed in fulfillment of this mission, particularly the continuity supplements (NOT-OD-23-031 and NOT-OD-23-032) and the NIH Loan Repayment Programs. The continuity supplements, designed in part to address the underrepresentation of women in biomedical research, support early-career biomedical investigators during critical life events, particularly at career stages when scientists are more likely to leave the research workforce. NIH's Loan Repayment Programs help to defray the rising and often exorbitant costs of an education in medicine for investigators pursuing research questions related to NIH mission areas. These programs support qualified, promising applicants who might otherwise leave research careers because of the financial obligations of student loans. These and similar NIH programs support women and others as they take their individual biomedical career journeys along complicated paths—routes that ORWH has taken to describing collectively as a "braided river," a waterway with many sources, tributaries, adaptive courses, and potential destinations.*

*This issue also explores exciting developments in sex differences research, including the development of new cell lines of male or female cells with an otherwise identical genetic composition. These cell lines can reduce potential confounding variables in some experimental models and yield more robust and generalizable findings. Other articles discuss limited access to breast cancer screening services in rural areas, health and research disparities for patients with disabilities, recent ORWH-led meetings and conferences, and many other topics.*

*We hope you find this issue of* In Focus *interesting and informative. Please share it with your colleagues and subscribe by clicking the link on the front or back cover.*


Janine Austin Clayton, M.D., FARVO
Director, NIH Office of Research on Women's Health
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# NIH Programs Support Women Navigating the "Braided River" of Biomedical Research Careers

For decades, commentators have figuratively described the career paths of women in scientific careers and problems with retention as a "leaky pipeline." Many women begin scientific careers by entering the pipeline as students and early-career scientists or clinicians but leak out of the discipline before reaching senior or leadership positions.

Although women obtain approximately 41% of Ph.D. degrees in science, technology, engineering, mathematics, and medicine (STEM), they hold only 28% of tenure-track faculty positions.[1] Data from the Association of American Medical Colleges show that women now outnumber men in U.S. medical schools.[2] However, almost 40% of women physicians leave medicine or switch to part-time work within 6 years of completing their medical residencies.[3] Further, a comprehensive study published in *The New England Journal of Medicine* found that women with M.D. degrees working in academic medicine between 1979 and 2018 were less likely than men to reach high faculty ranks and leadership positions.[4] The same study found that this gender gap was essentially consistent over those three decades.[4]

Commentators have offered many explanations for the leaks in the pipeline, including problems with work–life balance; pursuit of other types of careers; family and other caregiving responsibilities; hostile workplaces, sometimes involving gender discrimination and sexual harassment; and shortages of opportunities, role models, and mentors for women.[1] Although these factors have affected the retention of women in STEM for decades, the COVID-19 pandemic compounded these problems. As reported by the survey research firm Morning Consult in October 2021, the pandemic coincided with massive losses of health care workers, the majority of whom are women—with 18% of this workforce resigning and another 12% experiencing layoffs.[5]

Several observers have pointed out deficiencies in the pipeline metaphor and how conceptualizing problems as leaks has shaped our understanding of the issue to the detriment of the retention of women in STEM. In 2015, an editorial in *Inside Higher Ed* called for retiring the leaky pipeline metaphor, as it tends to stigmatize women and others for following career paths outside of dated professional norms in STEM. The pipeline metaphor encourages us to conceive of a scientific career as one that must follow a structured, linear route. Further, the metaphor implies that leaks—whether they are caused by nonscientific professional opportunities, family responsibilities, illnesses, or other reasons—can and should be fixed with patches to retain trained personnel along this single prescribed professional track.

More recent discourse has suggested new metaphors for the multitude of possible career paths for women and others with STEM backgrounds. These paths may be less linear than the pipeline model would suggest but no less fulfilling or productive. Speakers at a recent meeting of ORWH's Building Interdisciplinary Research Careers in Women's Health (BIRCWH) program suggested at least two such metaphors. Legacy of Leadership Lecturer Judith A. James, M.D., Ph.D., discussed the "winding road of research," and Ruth L. Kirschstein Memorial Lecturer Katherine E. Hartmann, M.D., Ph.D., described the "whitewater skills" that students and researchers need to navigate the "category 6 rapids" of academic and personal life. A 2021 editorial in *Eos*, a magazine published by the American Geophysical Union, suggested that we should consider STEM careers collectively as "a braided river" (Figure 1).[6] The writers stated, "A contemporary approach to today's


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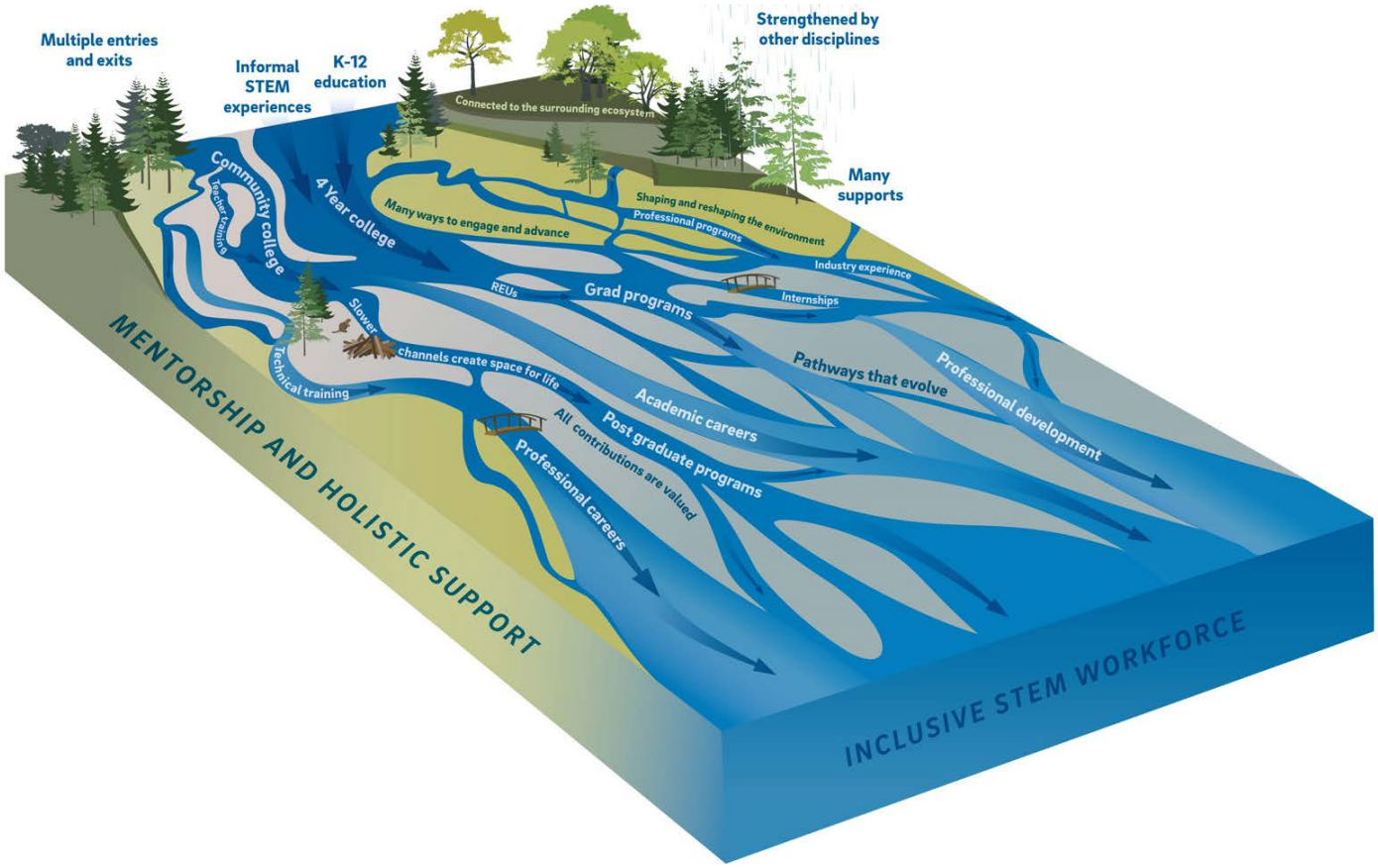


**Figure 1.** A graphic model of STEM careers development as a braided river. *(Image by Jennifer Matthews and reprinted courtesy of R. L. Batchelor, H. Ali, K. G. Gardner-Vandy, A. U. Gold, J. A. MacKinnon, and P. M. Asher. 2021. Reimagining STEM Workforce Development as a Braided River,* Eos, *102, doi.org/10.1029/2021EO157277.)*

science careers looks less like a structured pipeline and more like a collection of paths that change and adapt to the needs of the individual."[6]

NIH leadership understands that our diverse society benefits from an equally diverse workforce in clinical medicine and STEM research. As the *Eos* editorialists suggest, the individuals who make up this diverse workforce will necessarily spring from multiple sources, follow divergent paths, and arrive at different destinations. NIH supports the careers of women and others along the many courses of the braided river through multiple career-oriented programs and funding opportunities. In addition, deficiencies of the pipeline metaphor aside, retention of women in STEM remains a top NIH priority to maximize the return on our national investment in training a qualified professional workforce.

ORWH's careers team works collaboratively across NIH Institutes, Centers, and Offices (ICOs) to promote and maintain a well-trained, diverse, and robust research workforce to advance science for the health of women. Several ongoing ORWH-led and NIH-wide initiatives and programs support the retention of women and others conducting important biomedical and biobehavioral research. In this article, we discuss some of these programs and highlight two of them—the NIH continuity supplements and Loan Repayment Programs—and explore the careers of four women who have benefited from these opportunities.

## NIH Continuity Supplements

Two administrative supplement funding programs, known familiarly as the continuity supplements, support and enhance retention of early-career biomedical investigators during critical life events such as childbirth, adoption, serious illness, and having primary caregiving responsibilities for an ailing immediate family member. NIH developed these programs in response to a challenge from former NIH Director Francis S. Collins, M.D., Ph.D., to address the persistent underrepresentation of women in NIH-relevant research.

The first program, announced in *Notice of Special Interest: Administrative Supplements to Promote Research Continuity and Retention of NIH Mentored Career Development (K) Award Recipients and Scholars* (NOT-OD-20-054, recently reissued as NOT-OD-23-031), supports junior investigators who have received K awards as they transition from individual mentored career development to research

independence. This program aims to improve retention and minimize departures at this juncture from the biomedical research workforce. The second program, announced in *Notice of Special Interest (NOSI): Administrative Supplement for Continuity of Biomedical and Behavioral Research Among First-Time Recipients of NIH Research Project Grant Awards* (NOT-OD-20-055, recently reissued as NOT-OD-23-032), enhances the retention of investigators as they transition from career development grants to R01 grants or as they apply to renew their first independent Research Project Grant awards. Through fiscal years 2020 and 2021, the first two years the continuity supplements were available, the programs proved highly popular and successful, with an application acceptance rate of approximately 65% for both programs. The majority of awardees were women, and most applicants listed childbirth as the critical life event prompting their application. Awardees used the supplemental funds to hire additional personnel to ensure that research projects continued to make progress.

Below, we share the stories of three recipients of these supplements.

**Elaheh Rahbar, Ph.D.**

**Amanda R. Mathew, Ph.D.**

**Elaheh Rahbar, Ph.D.** Dr. Rahbar is an Associate Professor in the Department of Biomedical Engineering at the Wake Forest University School of Medicine. She earned a B.S. in materials science and engineering from Michigan State University in 2006 and a Ph.D. in biomedical engineering from Texas A&M University in 2011. Dr. Rahbar then did her postdoc training at the University of Texas Health Science Center, in the Department of Surgery, from 2011 to 2014. Thereafter, she took her position as a tenure-track Assistant Professor at Wake Forest and received a K25 award in 2017.

She explains the circumstances that prompted her to apply for a continuity supplement. "I had my first child in March of 2019, when my lab was engaged in the research supported by my K25 award. We experienced delays in securing full-time child care and couldn't get a spot in day care until my daughter was 5 months old," she says. "Two of my senior Ph.D. students had recently graduated, and I needed a person who could maintain the lab during this transition period."

Dr. Rahbar learned about the continuity supplement program from her husband. "He had seen a post about the program on NIH's Twitter feed and forwarded the message to me," she says. "I ended up applying for the supplement after I had returned from maternity leave. In hindsight, it would have been better to submit my application much earlier."

Nevertheless, the supplemental funds enabled Dr. Rahbar's research to continue while she cared for her child. "I used the continuity supplement to support a full-time lab technician, who expanded my lab's ability to do 3D cell culture experiments and to fabricate microfluidic devices for tissue engineering applications," she says. "This lab tech also enabled me to delegate a lot of the administrative work to maintain the lab, to complete institutional review board work, and to install and train students on new equipment."

Dr. Rahbar has presented her lab's work at several professional conferences and has used her promising preliminary data and results to complete a new R01 application to expand the research. "My short-term career goal is to solidify my lab's 3D in vitro model for translational applications in precision nutrition," she explains. "I'd like to optimize our model so that it can be more cost-effective and robust for higher-throughput research."

Dr. Rahbar's continuity supplement also allowed her career progress to continue after her daughter was born. She says, "I've been promoted to Associate Professor and currently serve as the principal investigator on several grants." Dr. Rahbar explains that in the future, she hopes to unlock the mechanisms by which dietary polyunsaturated fatty acids influence the hepatic (i.e., the liver's) environment. "If we can unlock how diet influences key inflammatory or immune responses, then we can harness diet to reverse a variety of pathological conditions," she says.

**Amanda R. Mathew, Ph.D.** Dr. Mathew is an Assistant Professor in the Department of Family and Preventive Medicine at Rush University in Chicago. She received her Ph.D. in clinical psychology from the University of Houston, completed predoctoral training in cancer prevention at the University of Texas MD Anderson Cancer Center, and completed postdoctoral training in behavioral medicine/health psychology at the Medical University of South Carolina and Northwestern University's Feinberg School of Medicine. Dr. Mathew's research program addresses smoking cessation treatment development for special populations of cigarette smokers, such as those with chronic illnesses and mental health conditions. Her research program draws on several methodological approaches, including human laboratory studies, qualitative research, mixed-methods

research, single-case experimental design, and randomized clinical trials.

Dr. Mathew received a K23 award to study the psychological risk factors underlying smoking persistence in patients with chronic obstructive pulmonary disease. She had her first child in October 2019 and applied for a continuity supplement a few months later, after returning to work and seeing an announcement about the program from NIH's Twitter account.

"I was happy to identify the opportunity for more research support while I was transitioning back to full-time work," she says. "If the supplement had been available before I went on leave, I would have applied for it in advance. That way, I could have used the funds throughout my maternity leave, but the support also worked well after my return to work."

"The process of preparing the continuity supplement application itself was beneficial," she adds. "Completing the application and getting the department head's letter of support helped me think through the resources I needed to meet my research goals and showed my institution that I was actively working to make my return to work as productive as possible."

Dr. Mathew used the supplement to support additional labor from her research assistant and the data management center at Rush University. "They took on a larger role in running the day-to-day operations of our ongoing study so that I could ensure that some of my time was protected for manuscript and grant writing."

Dr. Mathew's continuity supplement enabled her research to progress and, later, expand. "I submitted an application for an R03 grant in June of 2020, which was selected for funding," she says. "I also led a research team in conducting a scoping review paper on smoking cessation, published in the *Journal of Studies on Alcohol and Drugs*,[7] which served as background information for

**Candace H. Feldman, M.D., M.P.H., Sc.D.**

an R01 application that was selected for funding in September of 2022."

Dr. Mathew plans to expand her research program on smoking cessation treatment development, particularly for smokers with chronic medical and mental health conditions. "I would also like to advance my research on optimizing self-management programs for chronic lung disease. Ultimately, I hope my research will contribute to reducing the burden of tobacco-related disease and disability," she says.

**Candace H. Feldman, M.D., M.P.H., Sc.D.** Dr. Feldman is a practicing rheumatologist, health equity researcher, Associate Physician at Brigham and Women's Hospital, and Assistant Professor at Harvard Medical School. She earned a B.A. and an M.D. from Yale University, an M.P.H. from the Johns Hopkins Bloomberg School of Public Health, and an Sc.D. from the Harvard T.H. Chan School of Public Health. She completed her residency in internal medicine/primary care and a fellowship in rheumatology at Brigham and Women's Hospital. Dr. Feldman studies health disparities related to rheumatic diseases.

While studying avoidable acute care use among individuals with lupus—research supported by a K23 award from the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)—Dr. Feldman experienced several critical life events that could have caused major delays in her work. "I applied for a continuity supplement after the birth of my third child," she says. "At the same time, due to the COVID-19 pandemic, schools for my older two children were closed, and I was struggling to help my elderly parents temporarily relocate to Boston and to help care for them while they were here."

The continuity supplement helped Dr. Feldman's research continue while she cared for her children and parents. "I used the funds to increase support from a programmer, who assisted in database analyses, and from a research assistant to help move our projects forward," she says. COVID-19-related lockdowns prevented her research team from conducting in-person interviews for a planned component of her project. "The continuity supplement helped me to maximize the use of the available infrastructure and to get extra help to transition to web-based interviews, recruit study participants, increase outreach to patients, and develop a virtual study platform." Dr. Feldman presented this research at the American College of Rheumatology Convergence last year. The supplement also facilitated completion of analyses for another aim of her K23 award, and the journal *Seminars in Arthritis and Rheumatism* recently published these findings.[8]

After she received the continuity supplement, Dr. Feldman's research and career have progressed without major interruptions. She conducts several pilot studies supported by two P30 grants, contributes to the NIH RECOVER Initiative, serves as the co–Principal Investigator on an R01 grant leveraging community–academic partnerships to improve COVID-19 vaccine uptake among Black individuals with rheumatic diseases, is preparing to apply for another R01, and continues her career researching health equity issues among people who have rheumatic and musculoskeletal conditions and are at high risk for avoidable adverse outcomes.

## NIH Loan Repayment Programs

As part of our national investment in training a diverse and highly qualified biomedical and biobehavioral research workforce, the U.S. Congress established

the NIH Loan Repayment Programs (LRPs) to defray escalating costs of advanced education and training in medicine and clinical specialties. High costs force some scientists to leave their research careers for higher-paying private industry or private practice careers. LRPs ease the financial pressure for qualified, promising scientists by repaying up to $50,000 annually in exchange for their commitment to engaging in research relevant to NIH's mission.

**Jamila Minga, Ph.D.** Dr. Minga is a successful applicant of the LRPs and works as an Assistant Professor and research faculty member at the Duke University School of Medicine, in the Department of Head and Neck Surgery & Communication Sciences. In this position, she also delivers clinical services 1 day each week in the speech and hearing clinic with adult neurogenic populations. She earned a B.A. in linguistics and an M.S. in speech language and hearing sciences at the University of North Carolina at Chapel Hill and a Ph.D. in communication sciences and disorders at the University of North Carolina at Greensboro. She has served as a licensed and nationally certified speech-language pathologist and an Assistant Professor at North Carolina Central University, where she was supported by NIH as a BIRCWH Scholar.

Dr. Minga shared her educational and professional journey with us. "I am an identical twin from a socioeconomically disadvantaged background. Both my twin and I have doctorates. Without loans and scholarships, we could not have afforded this level of education," she says. She began her academic career at a State-funded public school, and her income could not meet the demands of student loan repayment. "I often had to supplement my salary with as-needed speech-language pathology jobs," she says.

"I learned about the NIH LRPs from a dear friend who received the award while completing her postdoctoral study," Dr. Minga says. After securing an academic

**Jamila Minga, Ph.D.**

research position, Dr. Minga submitted six LRP applications between 2015 and 2021 before she was accepted. "The NIH LRP award signified financial freedom for me. It released me from the bondage and burden of debt, allowed me to eliminate the supplemental jobs, and provided me with more time to focus my efforts on advancing my career and obtaining Federal funding support for my research," she says.

After the LRP reduced Dr. Minga's financial burdens, she was able to engage in her academic interests with greater focus. "With the award, I have been able to pursue my scientific explorations into qualifying and quantifying the characteristics of communication after a right hemisphere stroke, to expand my behavioral research to include neuroscientific processes and procedures, and to increase my publication record exponentially," she says.

Dr. Minga recently received a K23 award from the National Institute on Deafness and Other Communication Disorders (NIDCD) to explore the neuroanatomic correlates of discourse production characteristics after a right hemisphere stroke. "As this award is my first grant as a principal investigator, my immediate goal is to manage and complete this 5-year project and disseminate the findings in high-impact journals," she says. "Later, I hope to use the findings of my K23 research as the basis to apply for an R01 grant to support more involved research in this area."

In the future, Dr. Minga plans to continue her current areas of research, develop diagnostic tools and treatment approaches specific to survivors of right hemisphere strokes, and establish a center that uses an interdisciplinary rehabilitation model to study them. She also hopes to secure a promotion to associate professor and an academic leadership role. "My future is certainly much brighter with an NIH LRP award," she says. "Persistence and tenacity certainly pay off."

## Other NIH Programs Supporting and Advancing Careers in Biomedicine

NIH as a whole and ORWH in particular have initiated several other programs and working groups to support women and others in STEM careers and their retention.

**BIRCWH.** The ORWH-led BIRCWH program, mentioned above, connects junior faculty, known as BIRCWH Scholars, to senior faculty mentors with shared interest in women's health and sex differences research. Since the program's creation in 2000, more than 750 junior faculty members have participated in the BIRCWH career development training, most of whom have pursued productive careers in women's health research, published impactful research articles, and received one or more NIH-level research grants.

**WRHR.** In 1998, the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), with support from ORWH, established the Women's Reproductive Health Research (WRHR) program to create a pool of clinically trained junior investigators representing several subspecialties and emerging areas of obstetrics and gynecology in academic settings across the United States.

**AGIE.** The Advancing Gender Inclusive Excellence (AGIE) funding opportunity will support a coordinating center that will serve as an online central repository for sharing resources, tools, technologies, expertise, and strategies to advance

gender equity in the biosciences' academic and research workforce.

**WgWBC.** The Working Group on Women in Biomedical Careers (WgWBC), in collaboration with ICOs, develops innovative strategies and concrete actions to promote entry, recruitment, retention, and sustained advancement of women in biomedical and research careers, both within NIH and throughout the extramural community. To date, key efforts have included the continuity supplements detailed above, the NIH Prize for Enhancing Faculty Gender Diversity in Biomedical and Behavioral Science, and the AGIE.

**WOCRN.** The Women of Color Research Network (WOCRN) provides information about NIH grant processes, advice on career development, and a forum for networking and sharing information to women of color in biomedical science and supporters of their advancement.

**Re-entry and Re-integration Supplements.** The notice of special interest titled *Research Supplements to Promote Re-entry and Re-integration into Health-Related Research Careers* (NOT-OD-21-134) announced supplemental funding to existing NIH research grants to support full- or part-time research by women or men returning to the scientific workforce. The Re-entry Supplements Program provides mentored research training opportunities for a minimum of 1 year to scientists who have had at least 6 months of interruption in their careers for family responsibilities or other qualifying circumstances so they can re-enter active research careers. The Re-integration Program addresses the critical need of scientists who have been adversely affected by unsafe or discriminatory environments resulting from unlawful harassment to rapidly transition into new research environments that are safe and supportive. More information is available on this ORWH webpage.

**OITE.** The NIH Office of Intramural Training & Education (OITE) supports intramural trainees working on NIH campuses. ORWH collaborates with OITE to support two important diversity programs: HiSTEP 2.0, a program to support high school students from disadvantaged backgrounds, and the OITE Postbac Enrichment Program (OITE-PEP), a program to bring a diverse cadre of bachelor's degree holders to NIH for training before graduate or professional school.

**Researching the Mitigation of Sexual Harassment in the Biomedical Research Enterprise.** In 2021, ORWH and several NIH institutes published *Notice of Special Interest (NOSI): Interventions Designed to Change the Culture to Mitigate or Eliminate Sexual Harassment in the Biomedical Research Enterprise* (NOT-OD-21-150). This represents NIH's first funding opportunity to support research on evidence-based interventions that will diminish or eliminate sexual harassment in the biomedical research environment by changing institutional cultures.

## The Braided River Leads to Greater Equity and Better Science

Whether we represent pursuing a STEM career as walking a winding road, navigating whitewater rapids, or traveling a braided river, NIH leadership acknowledges that the education and career progress of individuals in the biomedical and biobehavioral sciences can be as varied and diverse as the STEM workforce we hope to actualize. Through programs such as the ones described above, NIH fosters supportive, inclusive, and equitable environments in which women and others can further their careers in the biomedical and biobehavioral sciences. NIH does so in the interest of social equity, in part, but also to engender more robust scientific research. Ample research—such as that presented in the seminal publication *Beyond Bias and Barriers* by the National Academies of Sciences, Engineering, and Medicine (NASEM)—demonstrates that diversity in the scientific workplace generates more innovative solutions and that diverse teams produce more impactful research.[9] This diverse workforce not only springs from multiple sources but will travel many distinct and intertwining routes toward its destination.

*Lisa Begg, Dr.P.H., RN; Cecilia Gaultney, M.P.S.; Eric Sarlin, M.A., M.Ed.; Xenia Tigno, Ph.D.; and Mavreen Tuvilla, Ph.D., M.S., contributed to this report.*

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# Leveling the Playing Field: Initiatives to Improve Gender and Racial Equity in NIH Funding

**Xenia Tigno, Ph.D.**

The number of NIH-funded training grants awarded to women at the pre- and post-doctoral levels has increased steadily since 1990, with women representing 60–61% of predoc and 55–56% of postdoc awardees. Similarly, women constitute the majority of career development (K) awardees (58%). However, dramatically lower percentages of women obtain R01 awards, grants that provide up to 5 years of support for mature, hypothesis-driven research projects with strong preliminary data. Women received only 35% of R01 or equivalent awards in 2022, though that did represent an improvement over the 1998 rate of 22%. In short, although the application success rate for smaller, earlier-career awards has been about equal or even higher for women than men in recent years, women do not receive the larger awards for independent research projects at commensurate rates. Further, more than 70% of NIH-funded grants were awarded to White applicants from January to November 2022. To realize greater equity in the funding space, we must invest to definitively address the barriers that prevent women and members of underrepresented racial and ethnic groups from applying for and receiving R01s and equivalent grants.

The COVID-19 pandemic exacerbated many of the existing challenges that beset women, people of color, and people with disabilities, among others—particularly those from multiple minoritized populations. Reports from the National Women's Law Center (NWLC) and the National Academies of Sciences, Engineering, and Medicine (NASEM) paint a grim picture of the economic and professional statuses of U.S. women in general and of those in STEMM fields. The NWLC report explains how women have faced disproportionate consequences since the start of the pandemic. Compared with men, women are more likely to have lost their jobs or left the workforce; to work in health or child care, two fields profoundly affected by the pandemic; and to have faced increased caregiving responsibilities. Although men have returned to the workforce in pre-pandemic numbers, according to the NWLC report, 1.1 million fewer women were in the labor force in March 2022 than in February 2020. The NWLC's research also shows that Black women, Latinas, and other women of color have experienced particularly heavy economic challenges. The NASEM report suggests that the pandemic "endangered the engagement, experience, and retention of women in STEMM" and possibly rolled back some of the achievement gains that had been made by women in academia. Many STEMM professionals faced setbacks in ongoing studies, canceled conferences, and a lack of separation between domestic and work activities. The pandemic magnified these disparities for women in STEMM and resulted in negative effects on their productivity, networking, collaborative capacity, career development, authorship opportunities, work-life balance, boundary setting, caregiving responsibilities, and mental well-being. The NASEM report also indicates that many women from minoritized populations experienced even greater negative professional effects.

NIH as a whole—and ORWH in particular—instituted several programs to support the advancement of women and other underrepresented groups in the NIH-funded biomedical workforce. These opportunities, which aimed to increase the recruitment and retention of a diverse workforce, took on greater relevance during the pandemic, when the pre-pandemic challenges facing women became more apparent. For example, many early-career scientists facing challenges such as childbirth or increased caregiving responsibilities availed themselves of the continuity and retention supplements (recently reissued as NOT-OD-23-031 and NOT-OD-23-032). These supplemental funds enabled scientists facing qualifying life events to add personnel or resources so they could continue to make progress on their research and remain competitive for the next round of applications. *(This issue's feature story discusses three awardees of these supplements and their career journeys.)*

Women experience more family-related interruptions in their research careers than men. Thus, the first funding opportunities created by ORWH were the re-entry supplements, which offered scientists the opportunity to re-enter the biomedical workforce and retool themselves after career interruptions due to a variety of causes including but not limited to childbirth. Last year, NIH expanded such opportunities with the re-integration supplements, which enable victims of sexual, racial, and other forms of aggression to leave their vulnerable situations and find safer and more welcoming spaces. Re-integration supplements are available even to graduate students and postdoctoral fellows. In addition, as women in the workforce are more likely than men to be subjected to harassment, ORWH created a funding mechanism to support research on interventions to reduce or eliminate sexual harassment in the workplace (NOT-OD-21-150), the only award of its kind at NIH. *(Arghavan Salles, M.D., Ph.D., featured in this issue's Scientist Spotlight, received an ORWH award through this mechanism.)*

Several institutions of higher education in the United States have successfully implemented strategies toward achieving gender equity in the scientific workforce. In recognition of their efforts, ORWH awarded 10 institutions the NIH Prize for Enhancing Faculty Gender Diversity in Biomedical and Behavioral Science. To encourage other institutions to execute similar strategies or develop new ones, ORWH issued a funding opportunity to create the Advancing Gender Inclusive Excellence (AGIE) Coordinating Center (RFA-OD-21-010), which will promote institutional, systemic, and sustainable processes toward advancing women's careers in biomedical research.

ORWH remains committed to advancing women in biomedicine through all stages of their careers and thus created a pilot program in partnership with the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) to train midlevel researchers to lead cross-disciplinary, cross-sectoral projects. The ORWH–NIAMS Team Science Leadership Scholars Program helps its trainees to cultivate the leadership and team science skills that will enable them to lead complex, high-impact research programs in academia, industry, and the public health sector.

To enhance ORWH's successful 23-year-old BIRCWH program, ORWH partnered with the National Institute on Drug Abuse (NIDA) to create the ORWH–NIDA BIRCWH Scholars Innovation Program. This program increases BIRCWH Scholars' awareness of substance use disorders, particularly among women and underrepresented or underserved populations. This new program provides additional mentoring and skills development, extends networking opportunities, and promotes diversity in substance use research. BIRCWH Scholars become successful biomedical investigators, and about 88% of program graduates remain in the research field long term. Many compete successfully for Research Project Grants and produce high-impact publications that address women's health topics and conditions.

Together, these programs help to create a robust workforce competent in the science of the health of women and to address some of the barriers that prevent women and other underrepresented groups from attaining greater success in scientific careers. NIH is looking to create solutions for challenges facing women in biomedicine, including the pregnancy penalty, childbirth, child care, elder care, stress, burnout, and inflexible work hours. Through these and other programs, NIH will help to encourage, enable, and empower women in science to reach their full potential.

# IN THE JOURNALS

## Sex Differences Researchers Develop New Lines of Male and Female Cells from the Same Human Donor

*(Original article by Waldhorn et al. 2022. Stem Cell Reports PMID: 36427492.)*

Benjamin E. Reubinoff, M.D., Ph.D., Ithai Waldhorn, M.D., and colleagues have developed new cell lines of male or female cells with an otherwise identical genetic composition. These cells, called isogenic human induced pluripotent stem cells (hiPSCs), originated from a single donor patient with a rare subtype of Klinefelter syndrome, a male born with an extra X chromosome and having an XXY genetic profile. Dr. Reubinoff's team reprogrammed these cells to create separate cell lines with XY, XX, X0, or XXY genetic makeups. These hiPSC lines constitute a major advancement for researchers in that the cell lines are genetically identical aside from their chromosomal differences. To date, most researchers studying sex differences have been limited to comparing experimental results from male and female animals or from cell lines developed from different sources, all of which can introduce confounding variables that may yield less robust findings. Experimental models developed with hiPSCs, by contrast, will better enable scientists to distinguish between chromosomal and hormonal effects. Demonstrating the potential of these hiPSCs, Dr. Reubinoff and colleagues used the hiPSC lines to identify a link between increased expression of schizophrenia-associated genes and the Y chromosome, a finding that may explain observed sex biases in the onset and severity of the disease. Other examples cited for the use of hiPSC lines include the study of chromosomal influences on early neural development and sex biases in disease progression. Moreover, experimental models developed with hiPSCs have the potential to inform the development of new classes of pharmaceuticals to treat disease.

You can read additional information on the development and potential of hiPSCs in a recent issue of *The Scientist*.

## Scientists Investigate Sex Differences and Genes Associated with Lupus, Sjögren's Syndrome, and Schizophrenia

*(Original article by Kamitaki et al. 2020 Nature PMID: 32499649.)*

Nolan Kamitaki and colleagues studied how genetic variations may help to explain sex differences in the incidences of lupus, Sjögren's syndrome, and schizophrenia. Women have ninefold higher incidences of the autoimmune

diseases lupus and Sjögren's syndrome, whereas men have a much higher incidence and more severe cases of schizophrenia. The investigators analyzed genome sequencing data from thousands of individuals with and without these diseases as well as blood plasma from 1,844 donors and cerebral spinal fluid from 533 donors. The researchers examined alleles, or variations, of the *C4* genes of the major histocompatibility complex, a set of genes that express proteins associated with the immune system. The analysis showed that the same alleles that increase risk for schizophrenia also reduce risk for lupus and Sjögren's syndrome. As *C4* alleles function more strongly in men, the levels of proteins expressed by these genes may contribute to the sex differences seen in the risks for and the incidences of these diseases.

## Researchers Evaluate Chromosomal Analysis for Women with Turner Syndrome Pursuing Pregnancy

*(Original article by Snyder et al. 2021. Eur. J. Med. Genet. PMID: 33524610.)*

Emma A. Snyder, M.S., Angela E. Lin, M.D., and colleagues investigated chromosomal differences associated with Turner syndrome, a condition affecting only females. Resulting from a missing or partially missing X chromosome, Turner syndrome can cause short stature, heart defects, thyroid abnormalities, kidney problems, and other health issues. Turner syndrome often results in irregularities, known as mosaicism, in skin cells, blood cells, and other types of cells. The researchers hypothesized that in-depth chromosomal analysis, beyond current clinical standards of blood tests for mosaicism for women with Turner syndrome, could better inform genetic counseling for women who have the condition and are interested in becoming pregnant.

Investigators evaluated 118 patients at Massachusetts General Hospital's Turner Syndrome Clinic. Some of these patients exhibited mosaicism in the 45,X cell line; others in both the 45,X and the 46,XX cell lines. In addition to standard blood tests, researchers also performed supplemental tissue testing—either fluorescent in situ hybridization analysis of cells obtained from a cheek swab or karyotype analysis of skin fibroblast cells. The investigators found that patients with mosaicism in more than 70% of 45,X cells had higher incidences of cardiac and renal abnormalities as well as a slightly higher (though not statistically significant) incidence of hyperthyroidism.

The researchers conclude that the additional information on cell mosaicism might improve genetic counseling for women with Turner syndrome. The investigators also call for further study to expand on their limited sample size as well as cardiac surveillance for women who have Turner syndrome and 45,X mosaicism and are pursuing pregnancy.

## Access to Breast Cancer Screening Remains Limited in Rural Areas

*(Original article by Wiese et al. 2023. J. Natl. Cancer Inst. PMID: 36515214.)*

A recent study by Daniel Wiese, Ph.D., and colleagues determined that although access to mammography services did not change appreciably from 2006 to 2022, accessibility remains limited by travel time in many areas of the contiguous United States, particularly in rural communities.

The researchers analyzed data from the American Community Survey of the Census Bureau, information on mammography service locations from the Food and Drug Administration, and Behavioral Risk Factor Surveillance System data from the Centers for Disease Control and Prevention. From these data, the investigators estimated that the percentage of women ages 45–84 with limited access (i.e., not within a 20-minute drive time) to mammography was 12.7% (7.5 million women) in 2006 and 12.2% (8.2 million women) in 2022. Accessibility varied by region, with 26% of women having limited access in 10 States and over 50% having limited access in rural areas of 28 States. The researchers identified a slight decline of 1.1% in the proportion of women age 45 or older remaining up to date on breast cancer screening from 2006 to 2018—as well as a larger decline of 6.0% in most States in 2020, coincident with the onset of the COVID-19 pandemic.

The researchers note that increased access to mammography would enhance breast cancer screening efforts and likely improve outcomes. Although establishing mammography locations in rural areas could prove logistically or economically impractical, providing transportation or mobile mammography services could increase participation in some regions.

## Improving Health Care and Biomedical Research for People with Disabilities Requires Changes in Education, Policy, and Data Practices

*(Original article by Iezzoni et al. 2022. Health Aff. (Millwood) PMID: 34982624; perspective article by Swenor and Deal. 2022. N. Engl. J. Med. PMID: 35029848.)*

Data from the Centers for Disease Control and Prevention (CDC) from 2016 and 2019 indicate that over 1 in 4 U.S. adults have a disability. Although laws protect the rights of those with disabilities, equitable access to health care and the inclusion of people with disabilities in biomedical research persist as challenges.

Many health care providers report a limited understanding of the Americans with Disabilities Act (ADA), a civil rights law enacted in 1990 that protects those with disabilities in many areas of public life, including health care. Lisa I. Iezzoni,

M.D., M.Sc., and colleagues surveyed over 700 U.S. physicians, 35.8% of whom stated that they knew little or nothing about their ADA responsibilities. Further, 71.2% of study participants responded incorrectly about who determines reasonable ADA accommodations, and 68.4% indicated that they could be at risk for ADA lawsuits. The researchers as well as many of the respondents indicated that more medical training on caring for patients with disabilities and on ADA requirements could improve care, accessibility, and equity.

Biomedical research often excludes people with disabilities, in spite of numerous initiatives for greater inclusivity by NIH and other organizations as well as increasing public awareness of the importance of including diverse populations in clinical studies from media coverage of COVID-19 research. In a recent editorial, Bonnielin Swenor, Ph.D., M.P.H., and Jennifer A. Deal, Ph.D., M.H.S., argue that most research initiatives omit "those with sensory, physical, or cognitive impairments, mental illness, or other conditions that affect daily life." The commentators discuss how those with disabilities are more likely to have unmet medical needs and to have incomes below Federal poverty levels; how research can explore inequities associated with disabilities and with the intersection of disability with other minoritized identities; and how research can address the heterogeneity of disability and of those with disabilities. Drs. Swenor and Deal conclude by calling for policy changes as well as enhanced data collection and analysis practices to improve the inclusion of those with disabilities and thus the quality and generalizability of research findings.

# WOMEN IN SCIENCE

## FEATURED RESEARCH AND PERSPECTIVES

### Interview-Based Studies Characterize Gender Inequities in Academic Medicine

*(Original articles by Murphy et al. 2022. Acad. Med. PMID: 34495884 and Trusson and Rowley. 2022. BMJ Open PMID: 35288388.)*

Two recent studies used semistructured interviews to assess gender-based barriers and inequities in academic medicine. Although these research efforts were distinct and conducted in different nations, the studies had complementary findings regarding persistent gender inequities in the field. Both studies also identified potential mitigating institutional and interpersonal factors, such as family-friendly policies, programs promoting women's advancement, and supportive mentoring.

Jennifer R. Grandis, M.D., Marie Murphy, Ph.D., and colleagues at the University of California, San Francisco recently interviewed over 100 women and men, all faculty members at U.S. medical schools. The researchers identified four common themes associated with mentoring relationships and gender. First, both men and women said relationships with women mentors or mentees raise awareness of gender inequities in academic medicine. Second, mentors, both women and men, acknowledged that women mentees face gender-related challenges and thus had provided assistance to help their women mentees overcome these challenges. Third, both women and men mentors reported that they had tried to model work-life balance and create family-friendly workplaces for mentees. Finally, some of the women interviewed, but none of the men, reported having been sexually harassed by mentors. The researchers conclude that within the field of academic medicine, the mentor-mentee relationship provides an opportunity to address and mitigate gender inequities. However, with the high prevalence of sexual harassment in STEMM workplaces and other gender-related problems, this opportunity often remains untaken.

Another interview-based study considered potential barriers to women's advancement to higher-level positions in academic medicine in the United Kingdom. Although roughly equal numbers of women and men attain lower-level faculty positions as medical clinical academics in the U.K., fewer women than men obtain more senior positions and professorships. Thus, Diane Trusson, Ph.D., and Emma Rowley, Ph.D., interviewed 13 women clinical medical faculty members from two major universities in England. Interviewees reported that gender role stereotypes influenced barriers to professional advancement at all levels—individual, interpersonal, institutional, procedural, and societal. Those interviewed mentioned difficulties navigating clinical, academic, and caregiving duties (including increased caregiving responsibilities associated with the COVID-19 pandemic); a lack of self-confidence to apply for higher positions; discouragement from colleagues; a lack of time to apply for fellowships; an academic culture and promotion practices that tend to be competitive and masculine rather than nurturing; and a reluctance to take advantage of family-

friendly policies. However, interviewees also identified several factors that facilitated women's advancement. Individual and interpersonal facilitating factors included a "sense of self-belief," encouragement from colleagues, and coaching from mentors. Interviewees also indicated that some institutional and procedural initiatives—such as efforts to increase the number of women in leadership positions, to improve work-life balance for women and men with caregiving responsibilities, and to implement leadership development courses—served to facilitate women's advancement and to enable the possibility of gender-equitable cultural change. Interviewees also mentioned that some systemic changes—notably, Athena SWAN initiatives—had facilitated women's advancement. (See *In Focus 2.1* for more information on Athena SWAN, a U.K.-based program that aims to advance women in STEMM and other academic fields by certifying higher-education institutions that adopt equity-based standards and practices.)

## Study Examines Retention of Black Women in STEMM

*(Original article by Sendze. 2022. J. Career Assessment DOI:10.1177/10690727221118696.)*

A recent interview-based study identified reasons Black women remain in STEMM, fields in which they are dramatically underrepresented in the United States. Black women face professional challenges related to race and gender—sometimes referred to as "double jeopardy"—and the intersection of the two. To understand the workplace forces and other factors contributing to retention, Margery S. Sendze, Ph.D., interviewed 13 Black women with degrees and professional experience in STEMM. Informing Dr. Sendze's research was "job embeddedness theory," a model that posits that numerous factors influence an individual's decisions to remain in a job, such as her fitness for the position, her links to people and activities associated with the job, and the sacrifices she would make by leaving the job. Interpreting the interview data through this embeddedness lens, Dr. Sendze identified many reasons for Black women's retention in STEMM, including a desire to bring a unique perspectives to their work, a sense of duty to represent their race, and the value they place on their relationships in their communities and workplaces. Interviewees also described the sacrifices they would make by leaving their jobs, such as missing opportunities for challenging and engaging work, losing a sense of belonging in a professional community, and assuming some financial insecurity. Although the job embeddedness lens highlighted many reasons Black women remain in STEMM positions, the study also found that other forces discourage retention—notably, how dual-minority identities can result in isolation, tokenism, and invisibility.

## SCIENTIST SPOTLIGHT

**Arghavan Salles, M.D., Ph.D.**

Arghavan Salles, M.D., Ph.D., is a Clinical Associate Professor of gastroenterology and hepatology at Stanford Medicine as well as a minimally invasive and bariatric surgeon. She completed medical school and residency in general surgery at Stanford, where she also earned a Ph.D. in education. Later, she completed a fellowship in minimally invasive surgery at Washington University in St. Louis, where she joined the faculty for 3 years before returning to Stanford in 2019. In the early part of the COVID-19 pandemic, Dr. Salles served as a physician in an intensive care unit. Her research focuses on gender equity, implicit bias, diversity, inclusion, and physician well-being. She received an R01 grant through a mechanism developed by ORWH's careers team (NOT-OD-21-150). This grant, the only one of its kind at NIH, supports research on interventions to mitigate or eliminate sexual harassment through cultural change in the biomedical research workplace.

### *What are some barriers for women in science?*

There are numerous barriers in science for women and other marginalized people—notably, implicit bias and overt discrimination. Women, as well as sexual and gender minorities, often experience sexual harassment in the scientific workplace. Women also receive fewer opportunities for advancement and leadership, less support for conducting their work, and less sponsorship than men. The work of women in science tends to be valued less highly than that of men. Pervasive "benevolent" sexism can result in situations in which people avoid giving a woman an opportunity because they think she won't have time for it (usually because of other responsibilities, such as caregiving). All of these things contribute to an environment in which women are made to feel as though they do not belong.

### *What are some highlights of your career so far?*

When I was a fellow, I was featured in an article in *Time* magazine that discussed challenges related to physician well-being and burnout. Other highlights for me include my publications in mainstream media outlets, such as an article in *USA Today* that described the way women's anger is perceived in the workplace; an article in *Time* magazine that discussed fertility challenges for professional women; and a piece in *The Washington Post* that enumerated challenges faced by women physicians.

However, the career highlight at the top of my list is being funded by NIH and ORWH to implement an intervention to decrease sexual harassment. Our team is excited to do this work and test a multimodal intervention that incorporates education about implicit bias, microaggressions, civility, and sexual harassment. We hope this educational intervention can improve the environment for biomedical research trainees. In this longitudinal study, we will collect data from principal investigators, mentors of T32 grantees, and trainees.

***What are some other career goals you hope to achieve?***

I hope to help create the type of work environment I have always wanted—one where people's ideas are valued, their efforts are supported, people are held accountable with grace, and everyone has opportunities to thrive. I also hope to work toward increased transparency in terms of pay equity, promotions, and awards.

***What advice do you have for young women in science?***

Find mentors and sponsors who understand your goals and help you achieve them, even if your path is not the same as theirs. No one person can provide all the support you need. Seek out multiple people, each of whom can help with one or two aspects of your career. Most importantly, don't let life pass you by while you're working on your career. Make time for the people who really matter: your family, friends, and partner. You can always advance your career later, but the same is not always true for family.

## IN CASE YOU MISSED IT

### Science Research Portal Names Top 1,000 Women Scientists of 2022

Research.com—a web-based research portal that disseminates information on the achievements of leading scientists and maintains a large database of information on scientists, conferences, and journal articles—has ranked the best female scientists in the world in 2022. Among the top 25 were NIH's Tamara B. Harris, M.D., M.S., of the National Institute on Aging (NIA); Nora D. Volkow, M.D., Director of the National Institute on Drug Abuse (NIDA); Caroline S. Fox, M.D., M.P.H., of the National Heart, Lung, and Blood Institute (NHLBI); and Elaine S. Jaffe, M.D., of the National Cancer Institute (NCI). ORWH congratulates all the scientists named to this prestigious list.

# NOTEWORTHY

### Annual SCORE Meeting Features Keynote Address on Next Generation Sex and Gender Science

ORWH hosted the annual meeting of the Specialized Centers of Research Excellence on Sex Differences (SCORE) program on November 1, 2022. SCORE is the only NIH cooperative agreement program supporting disease-agnostic research on sex differences. Each center serves as a national resource for translational research to identify the role of biological sex differences in the health of women. At this year's SCORE meeting, Cara Tannenbaum, M.D., M.Sc., who was the Scientific Director of the Institute of Gender and Health at the Canadian Institutes of Health Research, presented the keynote address, titled "Next Generation Sex and Gender Science." A recording of the lecture is available on the NIH VideoCast website.

### ORWH Hosts 2022 Annual BIRCWH Meeting

On November 2, 2022, ORWH hosted a virtual meeting of the Building Interdisciplinary Research Careers in Women's Health (BIRCWH) program. Katherine E. Hartmann, M.D., Ph.D., of Vanderbilt University delivered the Ruth L. Kirschstein Memorial Lecture, titled "Whitewater Skills." Dr. Hartmann—an epidemiologist, BIRCWH principal investigator, and former BIRCWH Scholar—discussed her career-long involvement with the BIRCWH program; her role in Right from the Start, a study of early pregnancy health; and her survey of hundreds of early-career faculty members who responded to questions about the "whitewater skills" that BIRCWH Scholars and other young researchers need to learn to navigate the "category 6 rapids" of academic and personal life.

Judith A. James, M.D., Ph.D., of the Oklahoma Medical Research Foundation and the University of Oklahoma Health Sciences Center delivered the Legacy of Leadership Lecture, titled "The Winding Road of Research and the Lessons Along the Way," in which she shared her own winding career path and research, the value of team science and mentorship, and her roles as an institutional leader.

Other topics discussed by meeting participants included women in bioengineering, technology, and data science; new BIRCWH, ORWH, and NIAMS programs; gender differences in caring for older adults with dementia;

pregnancy and hypertension; and sex differences in cardiovascular disease risk and diabetes. BIRCWH Scholars shared their research through a poster gallery on a virtual meeting platform, and meeting abstracts were published in the October issue of the *Journal of Women's Health*. A recording of the BIRCWH meeting is available on the NIH VideoCast website.

## ORWH Gender and Health Workshop Examines Structural Sexism and Health-Related Gender Issues

ORWH hosted a workshop focused on gender and health titled "Gender and Health: Impacts of Structural Sexism, Gender Norms, Relational Power Dynamics, and Gender Inequities" on October 26, 2022. The workshop reviewed definitions and concepts used to study gender inequities in health, examined related issues associated with research methods and measures, identified areas for improvement and intervention, and highlighted programs, evidence-based practices, and other interventions aimed at mitigating health disparities stemming from structural sexism, gender norms, relational power dynamics, and gender inequities. The workshop also identified potential partnerships and collaborations to address these issues further, such as the recent *Notice of Special Interest (NOSI): Research on Gender Measurement* (NOT-OD-23-029; see p. 16 for more details on this NOSI). This workshop won the 2023 vFairs Eventeer Award for Best Virtual Education Fair. Recordings of the main session and concurrent sessions 1, 2, and 3 are available on the NIH VideoCast website.

## Women and Underrepresented Minorities Apply for NIH Grants as Early-Stage Investigators in Increasing Proportions

In a recent "Open Mike" blog post, NIH Deputy Director for Extramural Research Michael Lauer, M.D., commented on the increasing proportions of early-stage investigator (ESI) application submissions for R01 grants and Research Project Grants with women or underrepresented minorities listed as principal investigators (PIs). The NIH Office of Extramural Research (OER) tracks the gender, race, and other demographics of extramural grant applicants. OER has identified little change overall in the distributions of different genders and races among grant applicants over the past 6 years. However, the proportion of R01-equivalent applications designating an ESI as the PI trended upward from 2017 to 2022, and the percentage of those PIs who were women or underrepresented minorities increased during that time. For more information and detailed data from OER's Division of Statistical Analysis and Reporting, see Dr. Lauer's blog post.

## NASEM Publishes Report on Improving Representation of Women and Underrepresented Minorities in Clinical Research

In late 2022, the National Academies of Sciences, Engineering, and Medicine (NASEM), sponsored by the U.S. Department of Health and Human Services (HHS), published *Improving Representation in Clinical Trials and Research: Building Research Equity for Women and Underrepresented Groups*. This report addresses the problem in clinical research of inadequately representing minoritized racial and ethnic populations. Although the field has realized considerable progress in including representative populations of White women in clinical trials and research, continued underrepresentation of other minoritized populations has serious implications for public and individual health.

The report discusses the economic and health benefits of more equitable inclusion, reviews the scientific literature on factors influencing inclusion, examines model programs currently succeeding in increasing participation in clinical research, and recommends new national, institutional, and informational policies and procedures at all levels to improve health outcomes. More information on the report is available here.

## Drs. Rutter and Schor Begin New Leadership Positions at NCATS and the NIH Office of Intramural Research

ORWH congratulates Joni L. Rutter, Ph.D., on her new position as Director of the National Center for Advancing Translational Sciences (NCATS). Dr. Rutter will oversee a diverse portfolio of research activities focused on improving the translational process of turning scientific discoveries into health interventions. This portfolio includes the Clinical and Translational Science Awards (CTSA) Program, which played an important role in the agency's COVID-19 response. Dr. Rutter joined NCATS in 2019 as its Deputy Director and began serving as its Acting Director in April 2021. Her earlier work at NIH involved establishing the scientific programs within NIH's *All of Us* Research Program and serving as the Director of the Division of Neuroscience and Behavior at the National Institute on Drug Abuse (NIDA).

ORWH also congratulates Nina F. Schor, M.D., Ph.D., on her new role as NIH Deputy Director for Intramural Research in the NIH Office of the Director. Dr. Schor, who began serving in this role in an acting capacity on August 1, 2022, will lead the Intramural Research Program and facilitate coordination and collaboration among the 27 NIH institutes and centers. She joined NIH in January 2018 as Deputy Director of the National Institute of Neurological Disorders and Stroke (NINDS), and in May 2021, she also assumed the role of Acting Scientific Director of NINDS. Prior to joining NIH, Dr. Schor worked at the University of Rochester, where she held the positions of Chair of the Department of Pediatrics and Pediatrician-in-Chief of the Golisano Children's Hospital, and at the University of Pittsburgh, where she held many positions, including Associate Dean for Medical Student Research and Chief of the Division of Child Neurology in the departments of Pediatrics and Neurology.

# UPCOMING EVENTS

**58th Meeting of the NIH Advisory Committee on Research on Women's Health**
April 12, 2023
8:00 a.m. – 5:00 p.m. EDT

**7th Annual Vivian W. Pinn Symposium**
May 16, 2023
8:00 a.m. – 5:00 p.m. EDT

**Diverse Voices: Intersectional Approaches to Substance Use and Misuse**
July 27, 2023
3:00 p.m. – 4:00 p.m. EDT

**Diverse Voices: Social Determinants and Uptake of Infectious Disease Control Measures**
September 28, 2023
3:00 p.m. – 4:00 p.m. EDT

**59th Meeting of the NIH Advisory Committee on Research on Women's Health**
October 18, 2023
8:00 a.m. – 5:00 p.m. EDT

**Specialized Centers of Research Excellence on Sex Differences (SCORE) 2023 Annual Meeting Keynote Address**
November 3, 2023
10:00 a.m. – 11:00 a.m. EDT

**Building Interdisciplinary Research Careers in Women's Health (BIRCWH) 2023 Annual Meeting**
December 5, 2023
8:00 a.m. – 5:00 p.m. EST

For up-to-date information, visit www.nih.gov/women.

# FUNDING OPPORTUNITIES

**Notice of Special Interest (NOSI): Research on Gender Measurement (Admin Supp Clinical Trial Optional) (NOT-OD-23-029).** ORWH announces the availability of administrative supplements to support research that tests gender-related terminology (e.g., "woman," "man," and "nonbinary") used in measuring current gender identity as part of a two-step method of data collection (sex assigned at birth and current gender identity). Structural gender inequalities limit girls' and women's access to health services and contribute to health inequities. Other social variables—including race, ethnicity, socioeconomic status, and State and Federal policies—may additionally interact with gender to influence health, highlighting the importance of an intersectional approach to health research. Disaggregation of research data on sex and gender enables identification of and responses to how sex differences and gender inequalities affect health. The two-step method of collecting data on sex assigned at birth and current gender identity—considering them distinct, independent variables—is widely utilized in clinical and health care settings. A 2022 report from the National Academies of Sciences, Engineering, and Medicine reviewed evidence related to measuring sex, gender, and sexual orientation. That report called for continued utilization of the two-step method and recommended that additional research aimed at improving the quality and inclusivity of the recommended gender measure be conducted by testing gender terminology for the current gender question.

**Notice of Special Interest (NOSI): Primary Caregiver Technical Assistance Supplements (PCTAS) (Admin Supp Clinical Trial Optional) (NOT-AI-21-074).** This program will help eligible postdoctoral scientists engaging in primary caregiver responsibilities maintain high productivity in a laboratory funded by the National Institute of Allergy and Infectious Diseases (NIAID). NIAID recognizes that postdoctoral scientists with young children or ailing relatives are sometimes unable to focus completely on their research activities because of caregiving responsibilities. As a result, these circumstances may delay an individual's transition to an independent career or reduce the person's scientific productivity at critical periods. Principal investigators may request additional funds to hire a mid-to-senior-level technician at a full-time or part-time level of effort to fill in for the postdoctoral scientists when they are required to be away from the lab to fulfill their caregiver responsibilities. Administrative supplements must support work within the scope of the original project.

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