2022

diversity, equity & inclusion report

AAAS

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

AAAS

American Association for the Advancement of Science

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A Message from the CEO

Sudip S. Parikh, Ph.D.
Chief Executive Officer, AAAS
Executive Publisher,
Science Family of Journals

In 2020, we debuted an action plan, "**Addressing Systemic Racism in the Sciences**," as part of an intentional strategy to not let the momentous events of that year go by without committing ourselves to driving more transformational change by ingraining diversity, equity and inclusion (DEI) across the scientific enterprise in the decades ahead. Part of that plan outlined steps to hold ourselves accountable and strengthen advocacy on behalf of DEI across the scientific ecosystem.

The third annual AAAS DEI Report demonstrates our commitment to sharing data on career-enabling functions we help propel, our efforts to drive change within and beyond our organization, and our new goals for the years ahead. This year's report reveals an overall increase in data coverage from 2021 to 2022 as part of our effort to hold up a mirror so we can explore methods to increase demographic representation within AAAS and the programs we administer. It also reflects our belief that our efforts must work on behalf of systemic change, building the capacity of organizations and institutions to prioritize DEI in their work in science, technology, engineering, mathematics and medicine (STEMM). During this year's passage of the CHIPS and Science Act, for example, our advocacy aided the inclusion of DEI as a critical component of the final bill. We believe this focus will have the greatest positive impact on the scientific enterprise and our collective ability to address critical global challenges.

In the fall of 2022, AAAS adopted **a strategic vision** for the next three to five years that codifies and elevates DEI as a sustainable organizational priority. One of the vision's new strategic goals is to "foster the diverse, equitable, open and inclusive scientific enterprise that is essential for scientific excellence." It truly is a pillar in the sense that it helps enable our other strategic aims related to scientific achievement, policy development and building community trust.

We hope these annual reports can serve as a rich resource for those who want to do more to make DEI central to their own work in science and engineering. This year, we'll continue our introspection by undergoing a self-assessment inspired and informed by SEA Change — a commitment we made when we first started advising the higher education community on how to advance institutional transformation in support of DEI. We also launched the STEMM Opportunity Alliance, in partnership with the Doris Duke Charitable Foundation, to develop a national strategy for achieving equity and inclusion in the STEMM ecosystem. Over the long term, we have plans to expand our membership model to become more inclusive and to build internal resources to support our staff as they embrace a DEI mindset in our workplace.

I hope you will find something in the programs and people — especially the people — included within these pages that inspires you and strengthens your own commitment to a more equitable world for science and engineering.

Defining Success

The complex challenges we are grappling with as a society require multifaceted, creative and innovative solutions — in which science and engineering often have a central role to play.

We would argue that scientific excellence and DEI are intrinsically linked. Look no further than the teams behind mRNA vaccine technology and NASA's latest space telescope for the most recent examples of advancements powered by diverse, global teams.

To unlock the STEMM workforce's full potential in the face of global challenges, we must assemble teams that can provide a diversity of experience, thought and geography. Doing so requires that we revisit the systems that underpin these fields. There are deeply embedded challenges that impact our ability to broaden who is participating and leading in science and engineering.

To fulfill our mission to advance science and serve society, AAAS has an obligation to ensure that everyone can participate in and benefit from science without leaving anyone behind. Not all solutions work the same for all communities, and it is important to build teams that represent a variety of cultures and communities.

Because our global membership touches all scientific disciplines, our actions matter in moving the scientific enterprise forward. Publishing in our journals, earning an award or fellowship, or serving on our governing bodies provides credibility and stature to accomplished members of our community. These impacts on career-enabling functions add to our obligation to transform STEMM systems to become more diverse, equitable and inclusive.

Our DEI strategy includes three tracks to monitor our progress. These tracks are not separate from one another; we feel that successes in one track can fuel beneficial change in the others. We also know progress along each track is essential to transformational change throughout the scientific enterprise.

Holding Up a Mirror

Collecting and sharing data on career-enabling functions at AAAS/*Science* to hold ourselves accountable and increase demographic representation within AAAS and the programs we influence and support

Driving an Internal DEI Mindset and Intention

Nurturing a staff culture of equity and inclusion and increasing diversity among our workforce, leadership, fellows, committee members, nominees and awardees

Affecting Change Across the Scientific Enterprise

Making the case that DEI is essential to achieve scientific excellence while building the DEI capacity of organizations and institutions and supporting individuals

Tracking Progress

Holding Up a Mirror

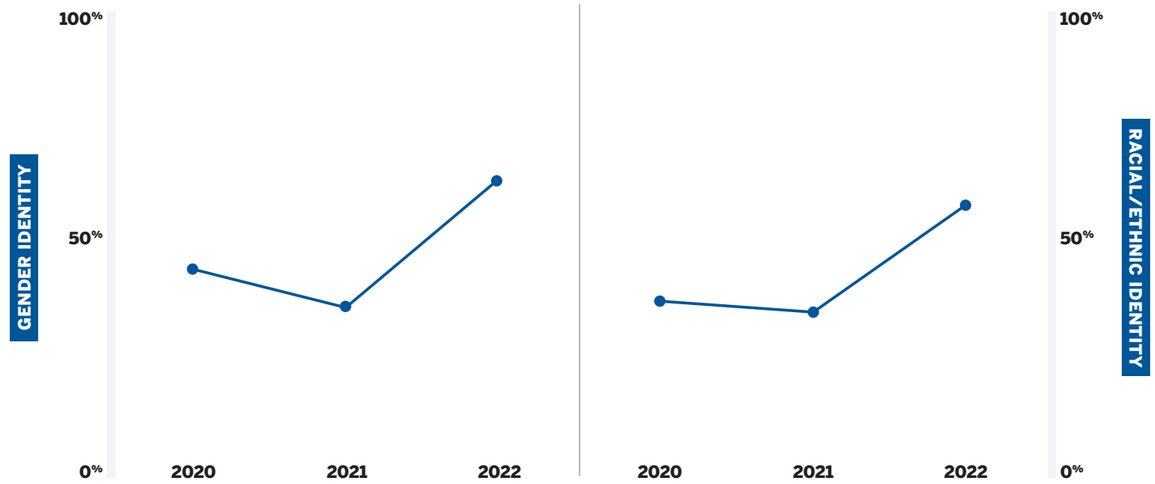
The first strategic track focuses on collecting the data necessary to ensure accountability for increasing demographic representation throughout the scientific enterprise, focusing on the career-enabling functions over which AAAS/*Science* has direct influence.

This year marks a **substantial leap forward in data coverage** across all AAAS/*Science* Functions. Data coverage increased 78% (from 37% in 2021 to 66% in 2022) for gender identity and 66% for racial/ethnic identity (from 36% in 2021 to 60% in 2022) across all AAAS/*Science* Functions.

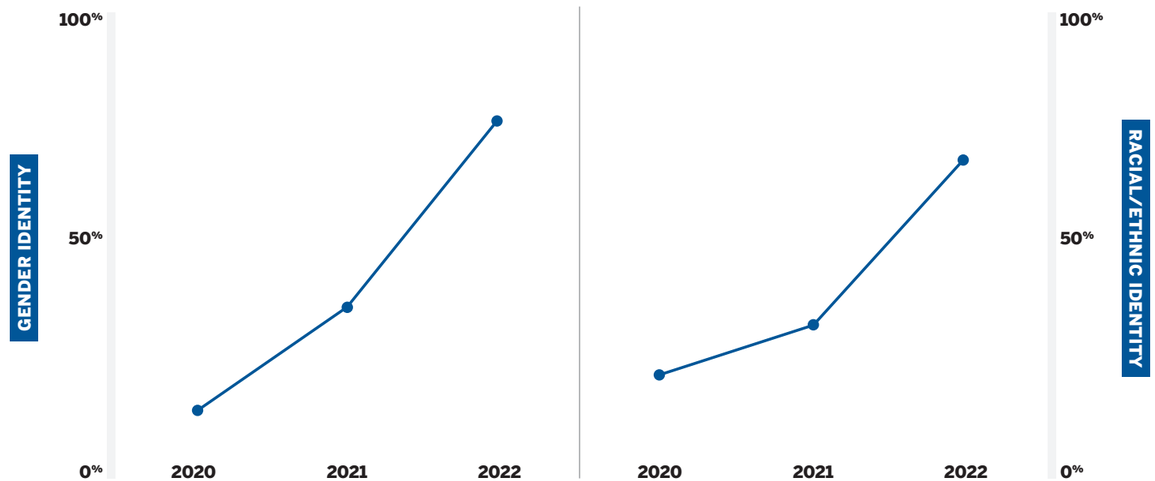
For *Science* Family of Journals Authors and Reviewers, data coverage for gender identity increased 110% (from 37% in 2021 to 78% in 2022) and for racial/ethnic identity increased 109% (from 33% in 2021 to 69% in 2022).

As data coverage improved, giving us a more complete picture of our population, it seemed likely that diversity of demographic representation would decline. Instead, it has **held steady or improved** across AAAS/*Science* career-enabling functions and *Science* Family of Journals Authors and Reviewers.

TRENDS IN DATA COVERAGE ACROSS ALL AAAS/*SCIENCE* FUNCTIONS



TRENDS IN DATA COVERAGE ACROSS ALL *SCIENCE* FAMILY OF JOURNALS AUTHORS AND REVIEWERS



Over the past three years, we have made strides to standardize data collection to ensure consistency and provide year-over-year comparisons to measure our progress. In 2022, we developed standardized demographic data collection items and messaging to use across AAAS and *Science* and started updating our outward-facing data collection systems accordingly. Additionally, we continued to improve and streamline our processes for data collection, storage, management and analysis. An additional goal has been to shrink our missing data to obtain a more complete picture of representation that can better inform decision-making.

METHODOLOGY AND CHANGES FROM PREVIOUS YEARS

As in the previous two years, in 2022 we continued showing demographic representation for the current or most recent class of participants across 10 AAAS/*Science* career-enabling functions, with special emphasis on three subgroups as well as *Science* Family of Journals Authors and Reviewers.

Generally, we followed a process similar to the one used in 2021, which included the following characteristics:

- We assembled data for all functions, using only self-reported data from the current or most recent class of participants in each function.
- We assessed the data for consistency to determine if the same person was represented in multiple functions. Any inconsistent demographic data were set to missing (less than five individuals).
- We filled in missing demographic data from the AAAS Membership database and across subgroups. New in 2022, we also used data from prior years, if available, to fill in missing demographic data.
- We used one category, called "Missing," to represent missing data, such as truly missing or "prefer not to answer."
- In cases where race and ethnicity are asked separately, if Hispanic or Latino/a/x was selected, this designation superseded the response to the second race/ethnicity question.
- Individuals in multiple subgroups within a function were counted once per function; individuals in multiple functions were counted in each function but counted once in overall results.

In 2022, we continued to review the subgroups included in each function. This year, we added 15 new subgroups across all functions and removed six due to the conclusion of programs or efforts. Three subgroups were unable to provide data for this report due to inactivity within the report time frame. Specific changes to function composition are detailed in the Appendix.

Finally, after we published the 2021 report, it was brought to our attention that one subgroup in 2020 included all years of participants, which was inconsistent with our general rule of including the current or most recent class of participants. As a result, we corrected the 2020 data such that *all* subgroups for all years included only the current or most recent class of participants. This caused the number of participants in our "Program Volunteers" Function to be lower and data coverage to be higher than was originally presented in the 2020 and 2021 reports.

TRENDS IN DEMOGRAPHIC REPRESENTATION

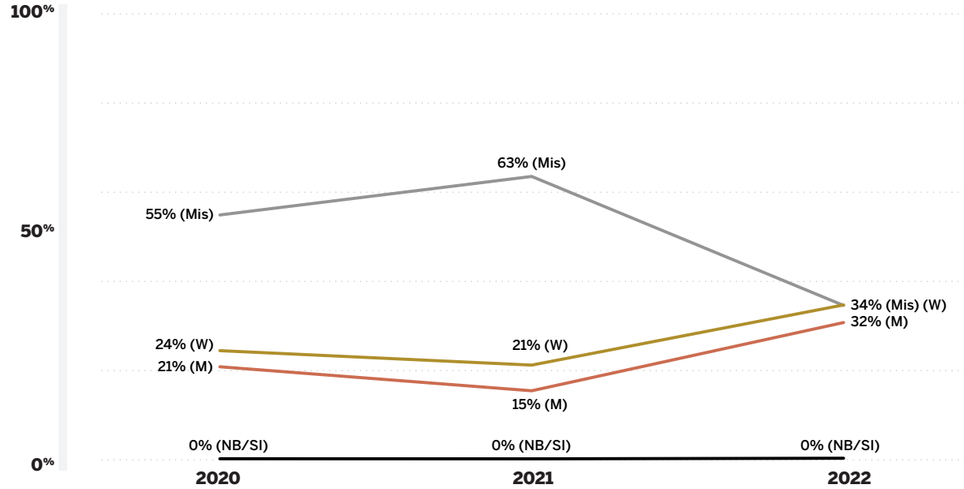
While data coverage improved from 2021 to 2022, representation for gender identity stayed the same for AAAS/*Science* Functions and improved for *Science* Family of Journals Authors and Reviewers. Additionally, diversity of representation for racial/ethnic identities appears to have improved across AAAS/*Science* Functions as well as *Science* Family of Journals Authors and Reviewers.

It is important to note that the following factors are occurring simultaneously:

- Improvements in data coverage.
- Major changes to the composition of functions, with the addition and removal of several subgroups.
- Intentional efforts to improve demographic representation.

It is difficult at this point to determine which factors are influencing changes in demographic representation year over year. Until our data coverage becomes high and stable and the composition of our functions stabilizes, it will be challenging to ascribe meaning to apparent changes or trends with much certainty.

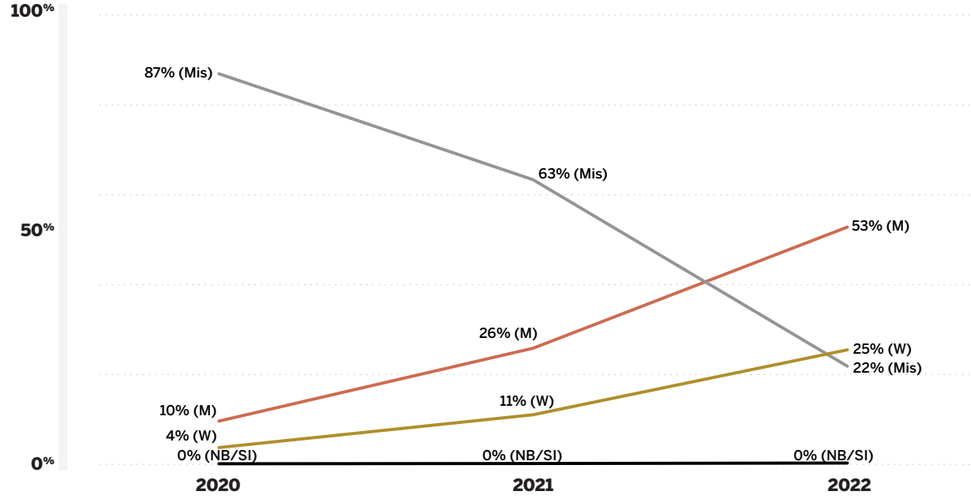
TRENDS IN GENDER IDENTITY ACROSS AAAS/*SCIENCE* FUNCTIONS



Across all AAAS/*Science* Functions, women slightly outnumber men, but the ratio of women to men remained about 1:1[1] across all three years despite changes in data coverage.

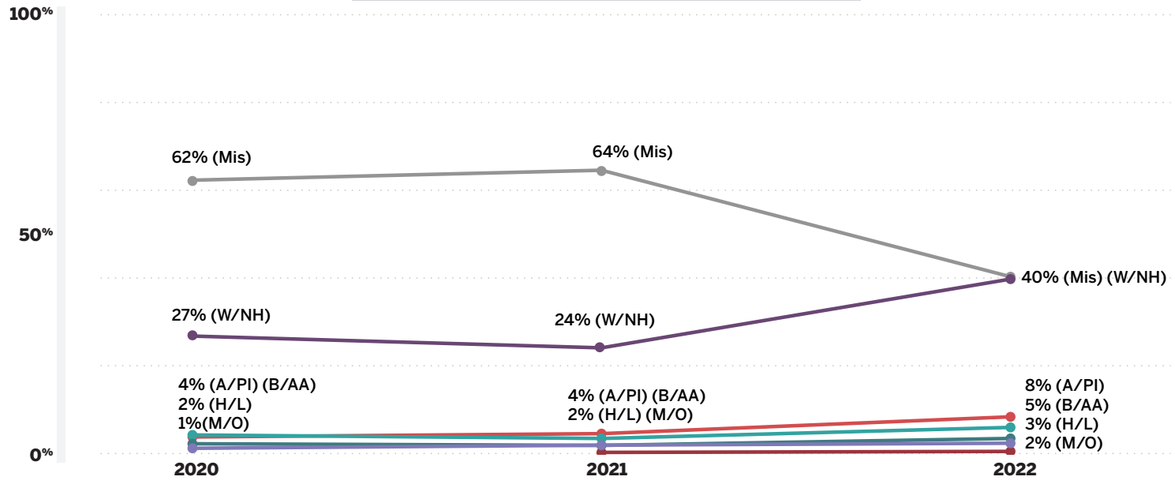
[1] Ratios are calculated by dividing the percentage of the most prominent identity by the second-most prominent identity. For example, women comprised 35% of AAAS/*Science* Functions and men comprised 31% (35/31=1.1, which is close to a ratio of 1:1 women:men).

TRENDS IN GENDER IDENTITY ACROSS *SCIENCE* FAMILY OF JOURNALS AUTHORS AND REVIEWERS



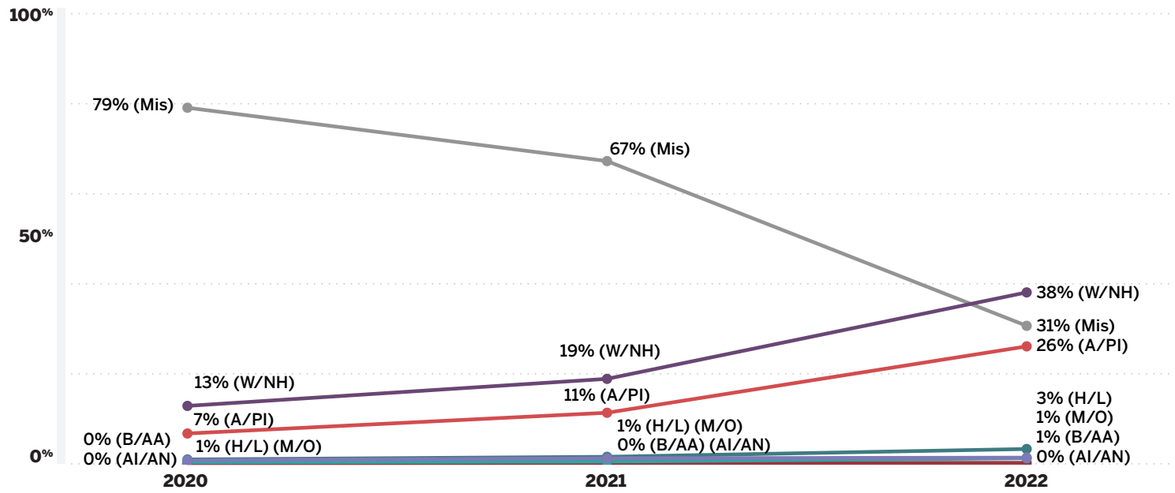
For *Science* Family of Journals Authors and Reviewers, men outnumbered women 3:1 in 2020. The ratio evened out to 2:1 in 2021 and 2022, even with improved data coverage.

TRENDS IN RACIAL/ETHNIC IDENTITY ACROSS AAAS/*SCIENCE* FUNCTIONS



Across all AAAS/*Science* Functions, the proportion of people who identified as white (non-Hispanic) relative to people who identified as Black or African American (the second-most prominent racial/ethnic identity in 2020) or Asian or Pacific Islander (the second-most prominent racial/ethnic identity in 2021 and 2022) has declined with improved data coverage such that historically underrepresented groups seem to represent a higher proportion in these functions in 2022 relative to 2020 and 2021.

TRENDS IN RACIAL/ETHNIC IDENTITY ACROSS *SCIENCE* FAMILY OF JOURNALS AUTHORS AND REVIEWERS



For *Science* Family of Journals Authors and Reviewers, people who identified as white (non-Hispanic) outnumbered people who identified as Asian or Pacific Islander (the second-most prominent racial/ethnic identity) by 2:1 in 2020 and 2021. The ratio approached 1:1 in 2022.

- American Indian or Alaska Native (AI/AN)
- Asian or Pacific Islander (A/PI)
- Black or African American (B/AA)
- Hispanic or Latino/a/x (H/L)
- Multiracial or other (M/O)
- White (non-Hispanic) (W/NH)
- Missing (Mis)

For complete data, visit aaas.org/DEI.

TRENDS FOR CAREER-ENABLING FUNCTIONS AND HIGHLIGHTED SUBGROUPS

Data coverage stayed the same or improved for most career-enabling functions from 2021 to 2022. It decreased for Career Development Fellowship Selection Committees, which added a subgroup with a high level of missingness this year.

Due to the changes in data coverage and the addition of several subgroups across our career-enabling functions, it is difficult to discern why representation changed. However, we can see that despite improved data coverage, the ratio of men to women stayed about the same in most career-enabling functions. Exceptions include:

- **Advisory Committees saw an increased ratio of women to men in 2022:**
  We shifted from an equal balance of men and women in 2021 among the Advisory Committee members to an increased ratio of women to men in 2022, such that a historically underrepresented group is now slightly overrepresented in this area.

- **Speakers and Presenters became equally balanced between men and women:**
  We shifted from men outnumbering women among Speakers and Presenters in 2021 to an equal balance of men and women in 2022.

Go to page 16 for the summary chart.

Most AAAS/*Science* career-enabling functions appear to include more women than men. Among *Science* Family of Journals Editors and Advisors as well as Authors and Reviewers, however, men appear to outnumber women. These patterns remained consistent over time despite changes in data coverage.

This year we found the following among three important subgroups, the Board of Directors, AAAS Honorary Fellows, and Science & Technology (S&T) Policy Fellows:

- **Board of Directors** saw an increase of men, which brought us to a more balanced proportion, although women still slightly outnumber men.

- **AAAS Honorary Fellows** remained consistent, with men outnumbering women both years.

- **S&T Policy Fellows** remained consistent, with women outnumbering men both years.

Due to the changes in data coverage and the addition of several subgroups across our career-enabling functions, it is not possible to know why representation may have changed. However, we can see that despite increased data coverage, representation for racial/ethnic identity remained the same (favoring people who identify as white, non-Hispanic) for most career-enabling functions.

We saw an increase in diversity for racial/ethnic identity for the following career-enabling functions when comparing 2021 to 2022:

- **Advisory Committees:** This function went from a ratio of 8:1 people who identified as white (non-Hispanic) for every person who identified as Black or African American or as Asian or Pacific Islander in 2021 to a ratio of 1:1 in 2022. Additionally, in 2022, the second-most prominent racial/ethnic identity was Black or African American.
- **Elected Leadership:** This function went from a ratio of 11:1 people who identified as white (non-Hispanic) for every person who identified as Asian or Pacific Islander in 2021 to a ratio of 10:1 in 2022.
- ***Science* Family of Journals Authors and Reviewers:** This function went from a ratio of 2:1 people who identified as white (non-Hispanic) for every person who identified as Asian or Pacific Islander in 2021 to a ratio of 1:1 in 2022.

We saw a decrease in diversity for racial/ethnic identity for the following career-enabling functions when comparing 2021 to 2022:

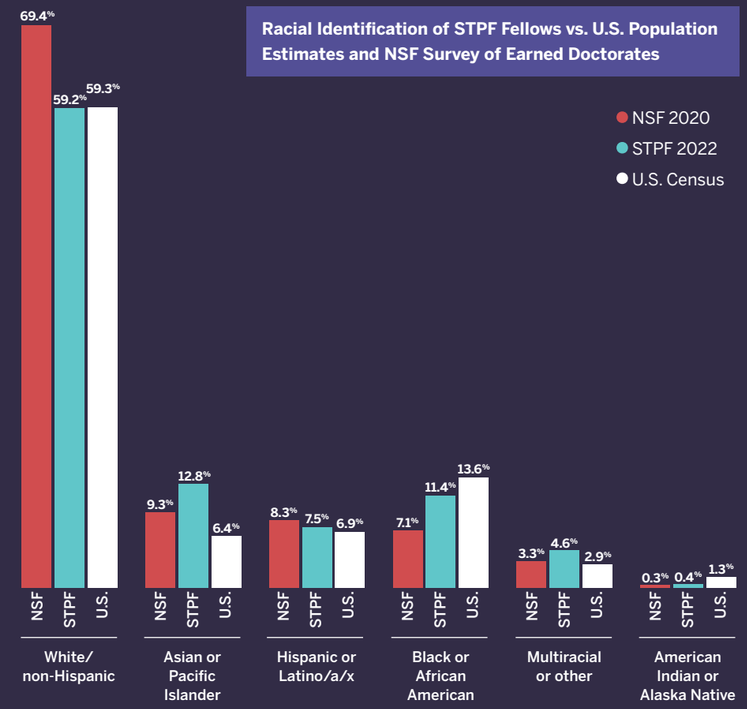
- **Honors and Awards Selection Committees:** This function went from a ratio of 3:1 people who identified as white (non-Hispanic) for every one person who identified as Black or African American in 2021 to a ratio of 5:1 in 2022.
- **Career Development Fellowship Participants:** This function went from a ratio of 4:1 people who identified as white (non-Hispanic) for every person who identified as Black or African American in 2021 to a ratio of 5:1 in 2022.

Among our highlighted subgroups:

- **Board of Directors:** The ratio of the most prominent racial/ethnic identity to the second-most prominent racial/ethnic identity remained consistent at 5:1, in favor of people who identified as white (non-Hispanic), for 2021 and 2022. However, the second-most prominent racial/ethnic identity shifted from Black or African American in 2021 to people who identified as Asian or Pacific Islander in 2022.
- **AAAS Honorary Fellows:** This ratio remained consistent, with a ratio of 4:1 people who identified as white (non-Hispanic) for every person who identified as Asian or Pacific Islander for both 2021 and 2022.
- **S&T Policy Fellows:** This category remained consistent, with a ratio of 5:1 people who identified as white (non-Hispanic) for every person who identified as Asian or Pacific Islander in 2021 and 2022. One of the hallmarks of this program is that the leaders pay close attention to demographic representation in selecting participants, and it is known for its emphasis on DEI.

One additional trend of note is that in some functions and subgroups, the second-most prominent racial/ethnic identity shifted over the past three years between these two groups: Black or African American and Asian or Pacific Islander. Given the changes to function composition and data coverage over the past three years, it is difficult to ascertain the meaning behind this shift in the second-most prominent racial/ethnic identity, but it does warrant monitoring.

Our Science & Technology Policy Fellowship (STPF) Program strives to reflect the U.S. population. That goal can be a bit challenging to track given that only around 13% of U.S. citizens have the advanced degrees necessary to apply to the program. When compared to the 2020 NSF Survey of Earned Doctorates, the 2022-2023 Class of S&T Policy Fellows overrepresents people who identify as Asian or Pacific Islander, Black or African American, or American Indian or Alaska Native. Meanwhile, Fellows who identify as Hispanic or Latino/a/x are comparably represented and those who identify as white (non-Hispanic) are underrepresented relative to the 2020 NSF survey data.



MOST- AND SECOND-MOST PROMINENT IDENTITIES

FUNCTIONS	2020	2021	2022
Advisory Committees	• White (non-Hispanic) • Black or African American	• White (non-Hispanic) • Black or African American • Asian or Pacific Islander	• White (non-Hispanic) • Black or African American
Board of Directors	• White (non-Hispanic) • Black or African American	• White (non-Hispanic) • Black or African American	• White (non-Hispanic) • Black or African American • Asian or Pacific Islander
Staff Leadership	• White (non-Hispanic) • Black or African American • Asian or Pacific Islander	• White (non-Hispanic) • Asian or Pacific Islander	• White (non-Hispanic) • Asian or Pacific Islander
Career Development Fellowship Selection Committees	• White (non-Hispanic) • Black or African American	• White (non-Hispanic) • Black or African American	• White (non-Hispanic) • Black or African American • Asian or Pacific Islander
Speakers and Presenters	• White (non-Hispanic) • Black or African American	• White (non-Hispanic) • Asian or Pacific Islander	• White (non-Hispanic) • Black or African American

The above is a selection of identities. For complete data, visit aaas.org/DEI.

SUMMARY CHART: OVERALL TRENDS 2021-2022

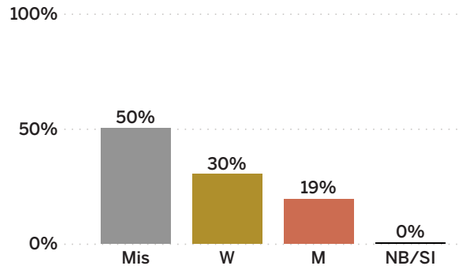
The following chart outlines changes in representation of historically underrepresented groups.

FUNCTIONS	DATA COVERAGE	GENDER REPRESENTATION	RACIAL/ETHNIC IDENTITY REPRESENTATION	CHANGES TO SUBGROUPS
Advisory Committees	**INCREASE**	**INCREASE** *Favoring women*	**INCREASE**	**ADDED 7** **DROPPED 1**
Elected Leadership	**INCREASE**	**SAME**	**INCREASE**	**NO CHANGE**
Board of Directors	**SAME** *100% all years*	**INCREASE**	**SAME**	**N/A**
Staff Leadership	Gender: **SAME** *100% all years* Ethnicity: **INCREASE**	**SAME**	**SAME**	**NO CHANGE**
Honors and Awards Selection Committees	**INCREASE**	**SAME**	**DECREASE** *Improved coverage likely caused representation to appear to decline*	**DROPPED 1**
Honors and Awards Recipients	Gender: **INCREASE** Ethnicity: **SAME**	**SAME**	**SAME**	**NO CHANGE**
AAAS Honorary Fellows	**INCREASE**	**SAME**	**SAME**	**N/A**
Career Development Fellowship Selection Committees	**DECREASE** *Added a new subgroup with insufficient data coverage*	**SAME**	**SAME**	**ADDED 3** **DROPPED 3**
Career Development Fellowship Participants	**INCREASE**	**SAME**	**SAME**	**ADDED 1**
S&T Policy Fellows	**INCREASE**	**SAME**	**SAME**	**N/A**
Speakers and Presenters	**INCREASE**	**INCREASE**	**SAME**	**ADDED 3**
Program Volunteers	**INCREASE**	**SAME**	**SAME**	**NO CHANGE**
***Science* Family of Journals Editors and Advisors**	**INCREASE**	**SAME**	**SAME**	**NO CHANGE**
***Science* Family of Journals Authors and Reviewers**	**INCREASE**	**SAME**	**INCREASE**	**NO CHANGE**

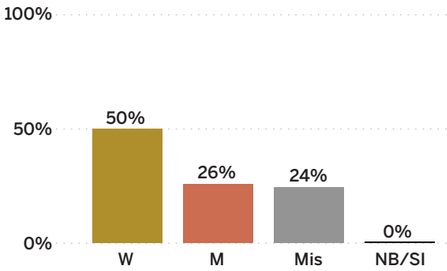
Gender Identity

2022 AT A GLANCE

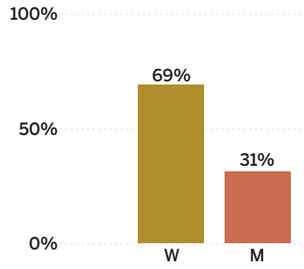
- Women (W)
- Men (M)
- Nonbinary/Self-identify (N/SI)
- Missing (Mis)



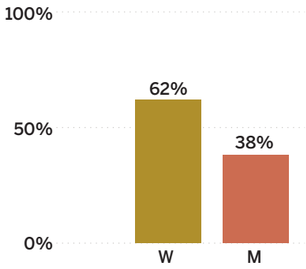
Advisory Committee



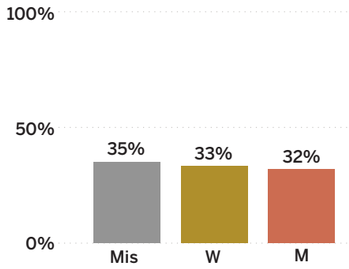
Elected Leadership



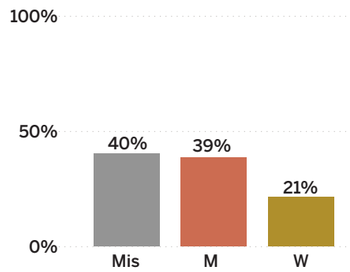
Board of Directors



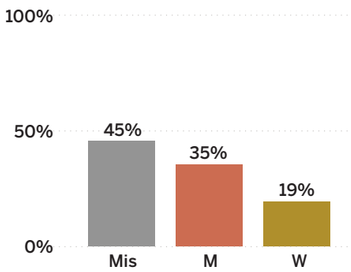
Staff Leadership



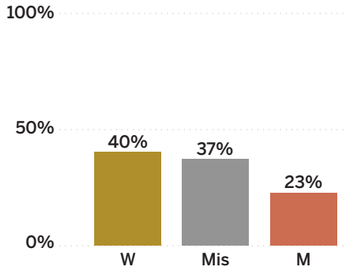
Honors and Awards Selection Committees



AAAS Honorary Fellows



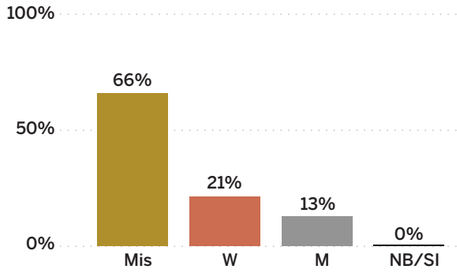
Honors and Awards Recipients



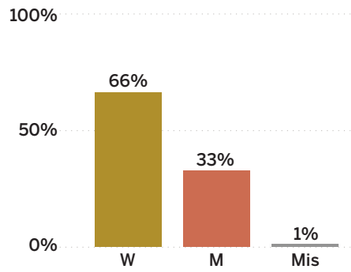
Career Development Fellowship Selection Committees

GENDER IDENTITY CONTINUED

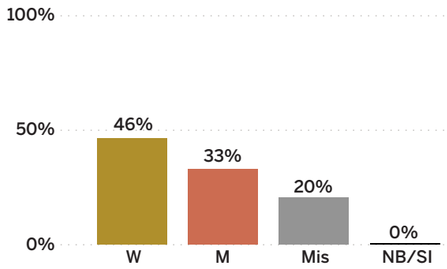
- Women (W)
- Men (M)
- Nonbinary/Self-identify (N/SI)
- Missing (Mis)



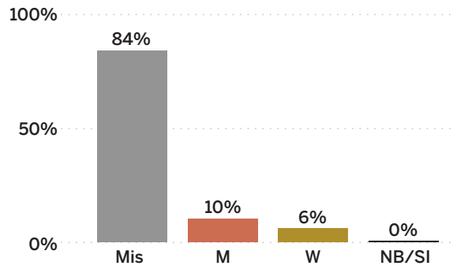
Career Development Fellowship Participants



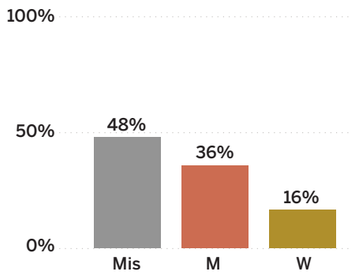
S&T Policy Fellows



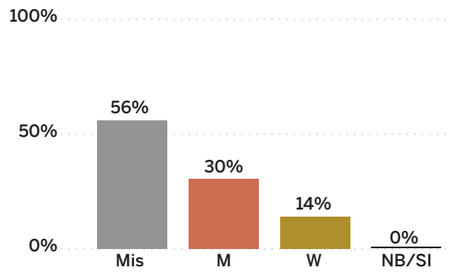
Speakers and Presenters



Program Volunteers



***Science* Family of Journals Editors and Advisors**



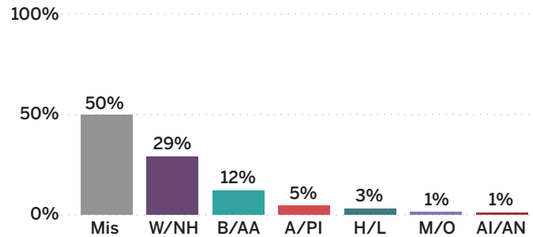
***Science* Family of Journals Authors and Reviewers**

For complete data, visit aaas.org/DEI.

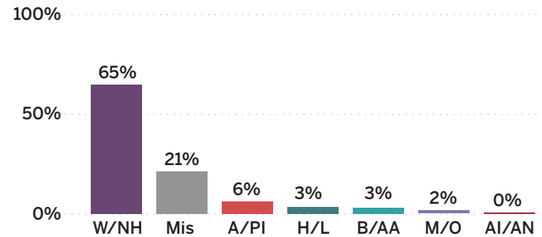
Racial/Ethnicity Identity

2022 AT A GLANCE

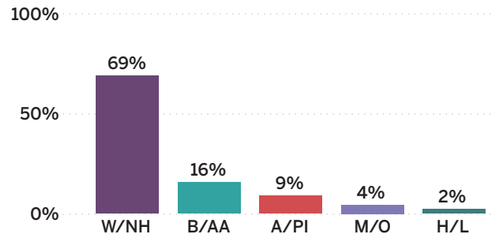
- American Indian or Alaska Native (AI/AN)
- Asian or Pacific Islander (A/PI)
- Black or African American (B/AA)
- Hispanic or Latino/a/x (H/L)
- Multiracial or other (M/O)
- White (non-Hispanic) (W/NH)
- Missing (Mis)



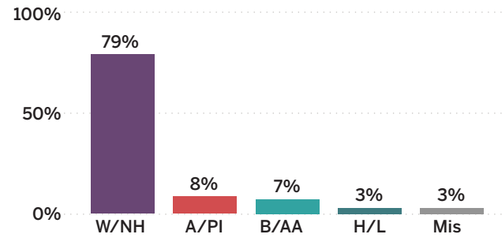
Advisory Committee



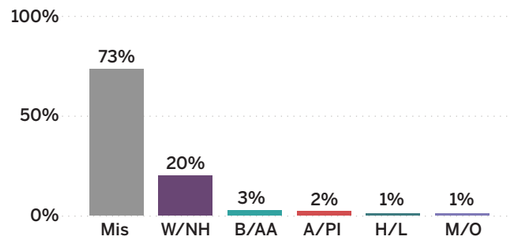
Elected Leadership



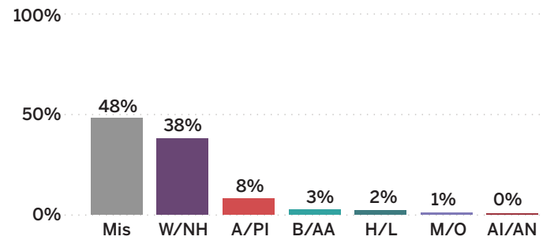
Board of Directors



Staff Leadership



Honors and Awards Selection Committees

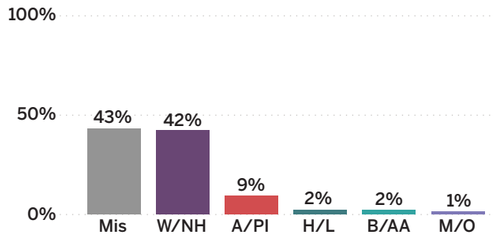


Honors and Awards Recipients

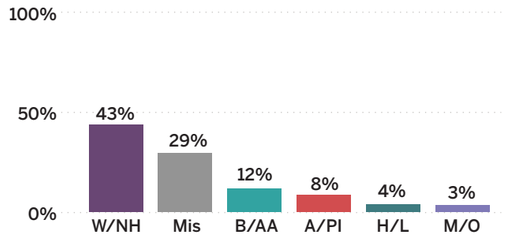
For complete data, visit aaas.org/DEI.

RACIAL/ETHNICITY IDENTITY CONTINUED

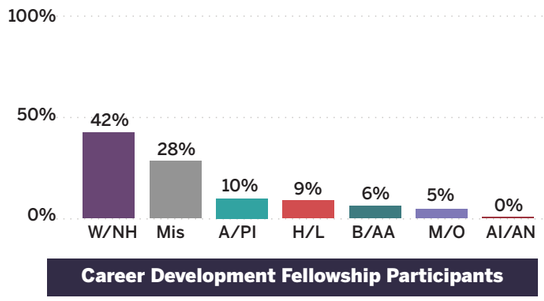
- American Indian or Alaska Native (AI/AN)
- Asian or Pacific Islander (A/PI)
- Black or African American (B/AA)
- Hispanic or Latino/a/x (H/L)
- Multiracial or other (M/O)
- White (non-Hispanic) (W/NH)
- Missing (Mis)



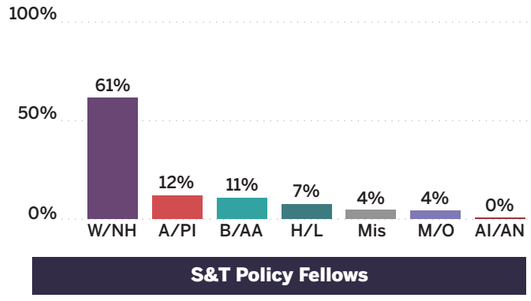
AAAS Honorary Fellows



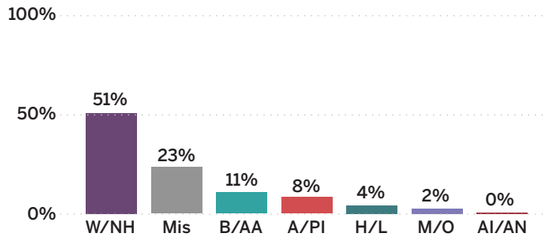
Career Development Fellowship Selection Committees



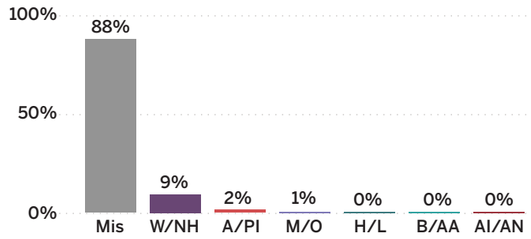
Career Development Fellowship Participants



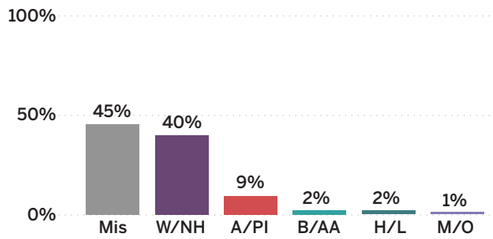
S&T Policy Fellows



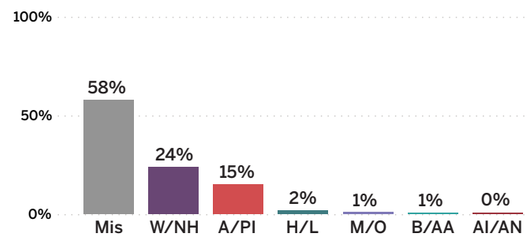
Speakers and Presenters



Program Volunteers



***Science* Family of Journals Editors and Advisors**



***Science* Family of Journals Authors and Reviewers**

For complete data, visit aaas.org/DEI.

Driving an Internal DEI Mindset and Intention

This strategic track begins with **nurturing a culture of equity and inclusion** at AAAS and in the programs we oversee. **Training and equipping our staff to embrace a DEI mindset and recruiting a more diverse workforce**, along with modernizing our governance to encourage diversity and inclusion in AAAS elected leadership, are the main drivers of this goal. We also oversee and influence a variety of programs, initiatives and services outside the immediate AAAS staff. **Recruiting more diverse elected leaders, Fellows, committee and board members, nominees, and awardees** helps us be intentional about creating a DEI mindset that allows these programs to succeed.

NURTURING A CULTURE OF EQUITY AND INCLUSION

Nurturing a culture of equity and inclusion at AAAS involves educational efforts and structural changes to staff organization and compensation. AAAS' Human Resources team offers monthly DEI-themed LinkedIn Learning courses and resources for all staff, which this year covered Black History Month, Women's History Month, International Women's Day, Pride Month, Asian American and Pacific Islander Heritage Month, and National Disability Employment Awareness Month, among others. In January 2022, we introduced the Staff Advisory Council to improve communication between junior and mid-level employees and our CEO in order to encourage broader perspectives in leadership decision-making.

TRAINING AND EQUIPPING OUR STAFF TO EMBRACE A DEI MINDSET AND RECRUITING A MORE DIVERSE WORKFORCE

Along with these efforts to improve the culture at AAAS, we are investing in specific training to equip our staff to fully embrace a DEI mindset. To better understand our current DEI capacity and resource needs, Human Resources surveyed staff about these needs, and the Research & Data Analytics team developed standardized demographic data collection items and provided guidance to employees on how to collect demographic data.

New employees receive specific DEI training through Human Resources, including quarterly DEI training and a mandatory LinkedIn Learning course on cultural competency. Human Resources also created a video training series titled DEI Skills for Effective Management for the New Manager Orientation to help managers create a culture of inclusion within their teams and to identify and eradicate white supremacy culture. In November 2022, Human Resources launched a new training effort for employees on how to better communicate with colleagues and work more inclusively so that all individuals will have a safe place for their respective voices to be heard.

New training and procedures for staff at the *Science* family of journals are part of a more inclusive approach to news and editorial coverage. For instance, the News staff at *Science* is tracking the gender, ethnicity and international diversity of the sources quoted in its print magazine stories (with a pilot program for online stories), which has led to increases in the percentage of women sources and is establishing a baseline for other DEI efforts. The News, Editorial and Insight teams also started using external sensitivity readers on any topics that require a nuanced perspective on how individuals or groups of people are referenced.

RECRUITING MORE DIVERSE ELECTED LEADERS, FELLOWS, COMMITTEE AND BOARD MEMBERS, NOMINEES, AND AWARDEES

We recognize that increasing representational diversity among our workforce, elected leaders, Fellows, committee and board members, and awardees will bring the widest possible pool of talent and perspective to the programs and services we offer. These efforts help us reach groups that have been underrepresented due to race, ethnicity or gender, but they also ensure that our programs are geographically and institutionally representative — bringing in excellent colleagues from regions other than coastal cities, for instance.

We've kept the focus on diversity in hiring and recruitment for AAAS staff this year through the selective use of career fairs, including the Equal Opportunity Publications STEM Diversity Virtual Career Fair and the Veteran's National Virtual Career Fair. We advertised all 2022 internships with the Society for Advancing Chicanos/Hispanics and Native Americans in Science (SACNAS) and conducted direct outreach for the Diverse Voices in Science Journalism Internship that focused on historically Black colleges and universities (HBCUs), Hispanic-serving institutions (HSIs), and journalism associations for underrepresented students.

Support from the Heising-Simons Foundation helped the News team at *Science* hire a deputy editor in May 2022 to oversee coverage in the many areas where science intersects with diversity and social justice. The new editor is expanding the diversity of the team's freelance writers and managing a diversity reporter and the magazine's Diverse Voices summer internships, which are supported by generous contributions from AAAS Mass Media Fellowships alumnus and well-known TV writer, executive producer and showrunner Neal Baer, M.D. The editor is working with staff writers and freelancers to produce stories on topics such as public health and equity, the decolonization of science, how geneticists can move beyond racial categories, and efforts to diversify the scientific workforce. This year also saw an increase over 2021 numbers in women and those identifying as Asian or Pacific Islander represented among *Science* Family of Journals Authors and Reviewers.

At the leadership level, approved recommendations for the AAAS Governance Modernization Project include prioritizing elected leadership positions for underrepresented groups. In 2022, we saw an increase in Asian or Pacific Islander representation in our elected leadership along with increases in women, Black, and Asian or Pacific Islander representation on our Advisory Committees. The *Science* Editorial group has actively encouraged editors to select more diverse members for the *Science* Board of Reviewing Editors, in particular women, people of color, individuals earlier in their careers, and institutionally diverse members.

The AAAS STPF program pays close attention to demographic representation throughout the application and selection process. Recruitment efforts include annually sourcing a minimum of 2,000 new applicant leads from engagements with 20 to 30 scientific and academic communities, with a focus on diversity of discipline, race, gender, ethnicity and career stage. The fellowships use implicit bias training, scoring rubrics and ample review time to minimize reviewer bias when selecting among these applicants.

Expanding the purview of existing groups is another way that AAAS is increasing representation in our programs. This year, we assembled and convened a new DEI advisory committee of the AAAS Science and Human Rights Coalition to advance the coalition's commitment to DEI and accessibility within the group.

Rodrigo Pérez Ortega

PHOTO CREDIT: LISA STRONG

Lizzie Wade

PHOTO CREDIT: DAVID SHARPE INC.

Paul Voosen

PHOTO CREDIT: BESS DOPKEEN

Award-Winning Focus on DEI

The focus on diversity among the *Science* family of journals proved to be award-winning in 2022. Rodrigo Pérez Ortega, a bilingual News writer for *Science* and the journal's first diversity reporter, was the winner of the Schmidt Award for Excellence in Science Communication for his stories on colonial science and disparities in public health. *Science* Contributing Correspondent Lizzie Wade was a finalist in both the Reporting and Feature categories of the National Science Writers' Association Science in Society Award for her stories on anthropology and race. And *Science* News Writer Paul Voosen won "Honorable Mention" in the American Geophysical Union's Walter Sullivan Award for Excellence in Science Writing — Features for his story on Howard University's success in training Black atmospheric scientists.

Affecting Change Across the Scientific Enterprise

Our primary strategic goal is to **build the capacity of organizations and institutions to use a systemic and equity-focused lens across their STEMM efforts.** We believe these efforts allow us to make the greatest impact on DEI within the scientific enterprise. With insight from our long history and broad membership as a scientific society, we **make the case that DEI is critical to achieve scientific excellence**. As we champion examples from our community, we also actively pursue interventions to **help individuals thrive within STEMM** education, research, innovation and the workforce.

BUILD THE CAPACITY OF ORGANIZATIONS AND INSTITUTIONS TO USE A SYSTEMIC AND EQUITY-FOCUSED LENS

PHOTO CREDIT: UCSC

The largest impacts we have on the scientific enterprise come from our efforts to build the capacity of organizations and institutions to use a systemic and equity-focused lens across their activities. In 2021, we had a banner recruiting year for the AAAS SEA Change program, which works with universities and colleges to transform cultures and policies to support DEI in STEMM fields. The program now includes 27 members, with the University of California system becoming the first university system to join the program in May. As part of the ongoing support for institutional change, three sessions of the Data-Driven Decision-Making (D3M) SEA Change Institute courses were held for current members this year. AAAS held presentations on SEA Change at the Gender Summit for Latin America and the Caribbean this year as well, as part of our outreach to help develop similar programs in interested countries. Philanthropic funding for SEA Change is provided by the Burroughs Wellcome Fund, the Carnegie Corporation of New York, the Heising-Simons Foundation, the Robert Wood Johnson Foundation, the Kavli Foundation, the Henry Luce Foundation, the Alfred P. Sloan Foundation, the Vilcek Foundation, the National Science Foundation and the National Institutes of Health. Recently, we received additional support for the pilot of SEA Change Biomedicine from Genentech to continue our focus on cultural transformation within biomedical and health sciences education, research and health care.

In light of the success of SEA Change's transformational approach and with support from the Alfred P. Sloan Foundation, we piloted a self-assessment with five affiliate professional societies. In September 2022, we rolled out the updated Self-Assessment for Associations inspired by SEA Change to the broader scientific society community and kicked off our own self-assessment using this tool.

Systemic DEI change in K-12 education has been a significant goal of the Robert Noyce Teacher Scholarship Program, which AAAS administers with the National Science Foundation. This year, we celebrated the 20th anniversary of this capacity-building program. Approximately 550 K-12 STEM teacher-preparation faculty, 50 K-12 master STEM teachers, and 50 Noyce scholars (undergraduate students) attended the

Carolyn R. Bertozzi

PHOTO CREDIT: LINDA A. CICERO/ TANFORD NEWS SERVICE

Women on the Rise

As a Ph.D. chemist and member of AAAS since 1965, Marion Milligan Tuttle Mason supported the advancement of her fellow women in the chemical sciences. This year, there were a record number of applications for the 2023 Marian Milligan Mason Award, which was funded from a $2.2 million bequest from Mason to AAAS. The biennial award grants $55,000 each to five early-career women conducting basic research in the chemical sciences.

The award is just one of the ways AAAS supports DEI through its own honors program and other awards that it administers. **The AAAS Mentor and Lifetime Mentor awards** both honor individuals who demonstrate extraordinary leadership to increase the participation of underrepresented groups in science and engineering fields and careers. One of our Lifetime Mentor awardees, Carolyn R. Bertozzi, received the **2022 Nobel Prize in Chemistry**. The **Diverse Voices in Science Journalism Internship** trains students with a commitment to expanding science reporting to diverse communities. In partnership with L'Oréal USA, AAAS manages **L'Oréal USA For Women in Science**, which over the past 19 years has awarded 95 postdoctoral women scientists over $5.7 million in grants to advance their research.

2022 Noyce Summit, whose theme was "Celebrating Scholars, Fellows & Researchers Advancing Equity in High-Need School Districts." AAAS also published a new research volume featuring cutting-edge studies from Noyce awardees on the preparation and retention of K-12 STEM teachers in high-need districts.

Change must happen at all levels, so we are committed to building DEI capacity throughout the scientific ecosystem. At the local and regional levels, AAAS' Center for Scientific Evidence in Public Issues (EPI Center) brought together participants from nongovernmental organizations, communities, and state and municipal agencies for two events discussing barriers to equitable implementation of green infrastructure and nature-based solutions. Centering equity and addressing the needs of frontline communities was a key focus of these events. At the international level, AAAS' Inclusive STEMM Ecosystems for Equity & Diversity (ISEED) program and Center for Science Diplomacy partnered with UK Research and Innovation to organize a Fireside Chat Series in 2022 that discussed ways to catalyze and sustain institutional change in matters of equality, equity, diversity and inclusion. The series received such high praise and requests for continuation that four new sessions are now being planned for 2023, including a live fireside chat at AAAS' Annual Meeting.

During the crafting and final passage of the CHIPS and Science Act in the U.S. Congress, AAAS advocated for the inclusion of DEI in STEMM as a critical component to innovation. We also supported provisions to codify a chief diversity officer position at NSF to address harassment and to support women, underrepresented minorities and early career researchers.

One of our newest long-term efforts to drive fundamental, systemic change to ensure equitable outcomes in science and technology is the STEMM Opportunity Alliance, launched in partnership with the Doris Duke Charitable Foundation (DDCF). SOA brings together organizations and entities across sectors and scientific communities that are committed to developing and advancing a national strategy to achieve equity and inclusion in the STEMM ecosystem by 2050. On Dec. 12, 2022, the White House co-hosted a Summit on STEMM Equity and Excellence with AAAS and DDCF to announce the new initiative, which included commitments from more than 80 cross-sector partners with a combined pledge of more than $600 million.

MAKING THE CASE THAT DEI IS CRITICAL TO ACHIEVE SCIENTIFIC EXCELLENCE

As part of its ongoing partnership with the Lyda Hill Foundation to promote and champion women in STEMM, AAAS helped develop #IfThenSheCan — The Exhibit, one of the most visually stunning cases for how critical DEI is for scientific excellence. This exhibit of 120 3D-printed statues of women researchers serving as AAAS IF/THEN© Ambassadors, which appeared in Dallas in 2021 and in Washington, D.C., in 2022, offers a powerful counter-narrative to the prevailing perceptions of the scientific enterprise as white and male.

A diverse scientific community like the one represented by the exhibit keeps the United States economically competitive, as AAAS CEO Sudip S. Parikh, Ph.D. testified before the U.S. Congress Joint Economic Committee in April 2022. "Scientific excellence and achievement are inextricably linked to diversity of thought and experience," he noted. "Insisting on inclusion of underrepresented groups neither sacrifices scientific excellence nor diminishes the accomplishments of those who have historically dominated the sciences."

The AAAS Office of Government Relations, in close collaboration with our subject matter experts across the organization, routinely makes the case for DEI in scientific excellence through testimony, amicus briefs and public comment. In August 2022, AAAS was one of six organizations that filed an amicus brief to the U.S. Supreme Court to provide research on the importance of student body diversity in higher education as the court considers race-conscious admissions policies.

> One of the most visually stunning cases for how critical DEI is for scientific excellence. #IfThenSheCan

#IfThenSheCan — The Exhibit
Smithsonian Institution in Washington, D.C.
PHOTO CREDIT: AAAS

We continued our partnership with Columbia University and the American Educational Research Association (AERA) to submit public comments to federal agencies on the necessity of collecting data on sexual orientation and gender identity (SOGI). That early advocacy also led to the submission of a letter to the White House Office of Science and Technology Policy to support ethical collection and use of SOGI data to support inclusion in STEMM that was co-signed by AAAS, AERA, Columbia University, Federation of Associations in Behavioral & Brain Sciences, Council of Professional Associations on Federal Statistics, and the Consortium of Social Science Associations.

Sessions throughout the October 2021 Science, Technology and Human Rights Conference made a compelling argument for DEI fueling scientific excellence. At the conference, researchers showed how topics like climate change, forensic science and psychiatry can expand their analyses when they work with Indigenous or marginalized groups and approach their research through the lens of social justice.

Science has also published numerous stories that illustrate the expanded view and research insights that come with a DEI focus, including a widely discussed paper that quantifies, for the first time, the loss of land among Indigenous people in the United States. Along with special issues on policing and social justice and environmental justice in 2021, "The Missing Physicists," a six-part series in 2022 on the lack of Black physicists in the United States, was one of the ways our journal "expanded the aperture" to tell new stories. *Science*'s Insights and Working Life sections have also illuminated areas where DEI concerns have affected the impacts of individual scientists. One of those concerns — author name changes on published papers on behalf of transgender authors — was addressed by the journals by implementing an easy, discreet policy for post-publication updates that follow growing industry standards.

"I know I'm making an impact — right here, right now, for the future generation.

Maritza Tavarez-Brown
Forest Ridge School

PHOTO CREDIT: PETER TEMPLIN

"I asked for all the money, on the grounds that we had the best proposal.

Robert Dixon
Retired

PHOTO CREDIT: MATTHEW ODOM

"Black students don't need to be fixed. ... So instead of trying to change them, let's talk about why they are turned off by the environment in physics and work to change that.

Mary James
Reed College

PHOTO CREDIT: REED COLLEGE

The Missing Physicists

Visit the **full series** online.

BUILD THE CAPACITY OF INDIVIDUALS TO ACCESS AND THRIVE WITHIN STEMM

Through our key programs and partnerships, we build the capacity of individuals to access and thrive in STEMM. As part of the AAAS STPF program this year, we brought together 36 fellows for a two-day workshop series — "What are you going to do Monday morning?" — designed to empower policy professionals to create STEMM equity in their real-life work contexts.

Also this year, funding from the Dana Foundation allowed our Scientific Responsibility, Human Rights and Law program to partner with the National Association for Women Judges — an organization dedicated to preserving judicial independence to women, minorities and other historically disfavored groups — to participate in a judicial seminar on emerging issues in neuroscience.

AAAS is the driving force behind two important national meetings that help underrepresented researchers present their work and network with their colleagues. At this year's Emerging Researchers National (ERN) Conference, supported by the National Science Foundation, an **AAAS video** highlighted the impact of the ERN Conference on improving underrepresented minority student science identity. The ERN program also held a February webinar on how to successfully apply for and receive fellowships.

For the first time this year, the 4th Historically Black Colleges and Universities Making and Innovation Showcase was held as a stand-alone showcase meeting outside the ERN Conference. The showcase, also supported by the National Science Foundation, engaged 12 HBCU student/faculty teams from nine HBCUs and included 68 participants who learned about innovation basis, technology transfer and career pathways.

Class of 2022-2023
STPF Fellows

PHOTO CREDIT: AAAS STPF

To broaden its outreach to international authors and strengthen existing partnerships with readers, especially those in developing countries, *Science*'s Institutional Licensing department is holding an author seminar series titled "How to Publish in *Science*," with an early focus in Brazil, and plans to expand to other regions. And in another effort to elevate researcher voices from low- and middle-income countries, the *Science* Press Package team is requesting that authors, including non-corresponding authors, from these countries be identified as media contacts for all *Science* family journal papers.

Science itself is available through progressively priced licenses such that larger, more research-intensive institutions pay more for their subscriptions. In September 2022, AAAS/*Science* announced that it will soon provide immediate public access to all taxpayer-funded research through a "green OA [open access]-zero day" policy, which allows *Science* authors to post a fully peer-reviewed and revised version of their manuscript (referred to as the author accepted manuscript) in a public repository of their choice without delay or additional fees. These efforts address long-standing inequities for authors across race, gender, geographies, disciplines and institutions.

The White House Office of Science and Technology Policy released guidance in August 2022 to federal agencies about making federally funded research and accompanying data publicly available without delay starting in 2025. In response, AAAS issued a **statement** in support of these objectives but shared nuanced considerations to ensure equitable implementation. Additionally, in an editorial in ***Science***, AAAS CEO Sudip S. Parikh, Ph.D., Senior Advisor and SEA Change Director Shirley Malcom, Ph.D.; and *Science* Publisher Bill Moran analyzed several open access models, noting that it will matter greatly which ones become predominant. AAAS believes that it is important to balance equitable access for readers with equitable access for authors. Options that include an article processing charge (APC), for instance, can provide open access to readers but disadvantage **"early career scientists who may be poorly funded, not yet tenured, and much more diverse. Also disadvantaged are scientists at smaller schools, including historically Black colleges and universities, and in underfunded disciplines like math and the social sciences,"** the editorial states. These findings are supported by a recent **AAAS survey** on open access, which shows that most scientists do not budget for and find it difficult to find funds for APCs, and that APCs create significant trade-offs in terms of buying equipment and tools and attending conferences. As federal agencies begin to craft policies around this guidance, AAAS is continuing to advocate for policies that optimize equity for authors and readers.

With an overall **$20+ million investment** from external funders in 2023, we will be helping launch new programs that address inequities in STEMM. A commitment of $2 million from Tiger Global will underwrite an effort to include sexual orientation and gender identity in surveys of the college and university STEMM workforce. A $17 million investment from the National Science Foundation will allow us to begin work in 2023 on the AAAS S-STEM Resources and Evaluation Center. And finally, several existing funders made continuing investments in the work of ISEED, including a new grant from the Alfred P. Sloan Foundation of over $635,000 that will support a graduate program titled STEM Pathways from Minority-Serving Institutions into Research Universities. This next step in the decade-old S-STEM program will cultivate a network of stakeholders and further develop the infrastructure needed to promote the exchange of ideas, resources, opportunities and knowledge related to effective strategies and practices to increase the number of academically talented students with financial need obtaining degrees in STEMM and entering the STEMM workforce.

The Path Forward

Our DEI efforts going forward follow the path laid out by the three tracks described in this report. We will continue to hold up a mirror to our own efforts to keep us accountable as we strive toward more inclusive and equitable representation. With our partners in the scientific enterprise, we will also continue to focus on high-impact programs that build DEI capacity in STEMM. **Here is a snapshot of the efforts we are undertaking in 2023:**

Holding Up a Mirror

- Continue rolling out our updated standardized demographic data collection items and messaging throughout AAAS/*Science*.
- Work with each subgroup to identify ways to improve data collection in order to increase coverage.
- Improve our internal processes for data submission, storage, management and analysis.

Driving an Internal DEI Mindset and Intention

- Undergo an organizational self-assessment inspired by the SEA Change **DEI self-assessment for STEMM professional societies**, and collect, review and analyze data throughout 2023.
- Develop a DEI Resource Center for staff and update our Recruitment Guide, with a focus on mitigating bias and a refreshed interview question bank.
- Evaluate our fall 2022 employee engagement survey on diversity issues in the workplace to inform future initiatives.
- Roll out a career band project for future equity in salary and job descriptions across the organization, beginning the first quarter of 2023.
- Start expanding our engagement model to help broaden and diversify our membership.

Affecting Change Across the Scientific Enterprise

- Continue to advocate for equitable access to federally funded research and data for authors and readers as federal agencies craft public access guidance.
- Make strides to further increase representation of women and other underrepresented groups among our reviewers and invited authors for the *Science* family of journals.
- Continue commitment from the *Science* journals to publish research that raises awareness of how bias is unintentionally impacting scientific progress in fields such as artificial intelligence, medical device development and climate mitigation strategies.
- Advocate for increased salaries and employee-like benefits, such as parental leave, for STEMM graduate students and postdocs.
- Build on the momentum provided by significant investments in 2022 to expand and implement ISEED programs supporting students from low-income backgrounds, LGBTQ+ scientists' educational and career trajectories, and students from minority-serving institutions earning graduate STEMM degrees.
- Garner additional commitments across industry and organizations and co-construct a national strategic action plan for achieving equity in STEMM through the **STEMM Opportunity Alliance**.