



**CellPress**  
Science that inspires

# Diversity, Equity and Inclusion at Cell Press

*Isabel Goldman, M.D.*

*Inclusion & Diversity Officer, Cell Press*

*Leading Edge editor, Cell*

*October 19, 2023*

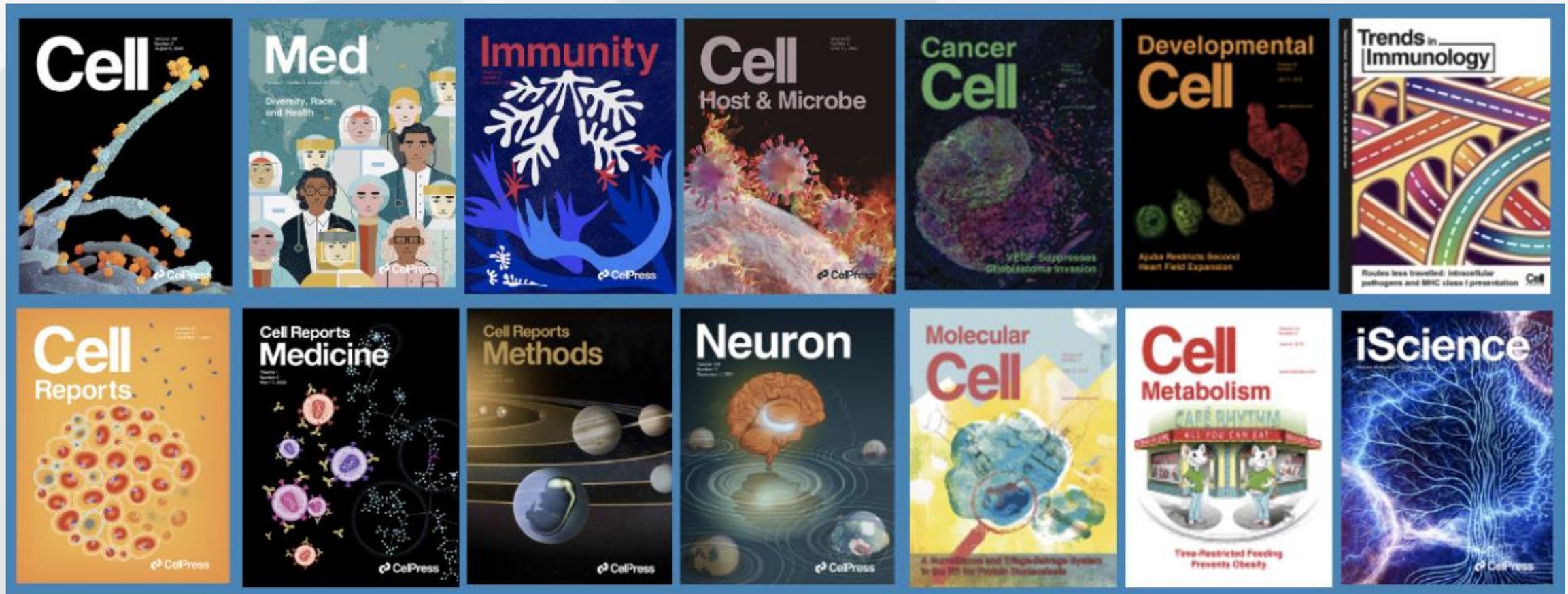
# What is Cell Press?



**CellPress**

Science that inspires

- 30 primary research journals  
biological, translational/clinical, physical, data, and environmental sciences
- 16 Trends review journals covering a range of topics



# Who am I?

- Inclusion & Diversity Officer, Cell Press
- Leading Edge editor, *Cell*

# Table of Contents

- Introduction
- Two Common Myths
- Cell Press Initiatives

# “Inclusion & Diversity”

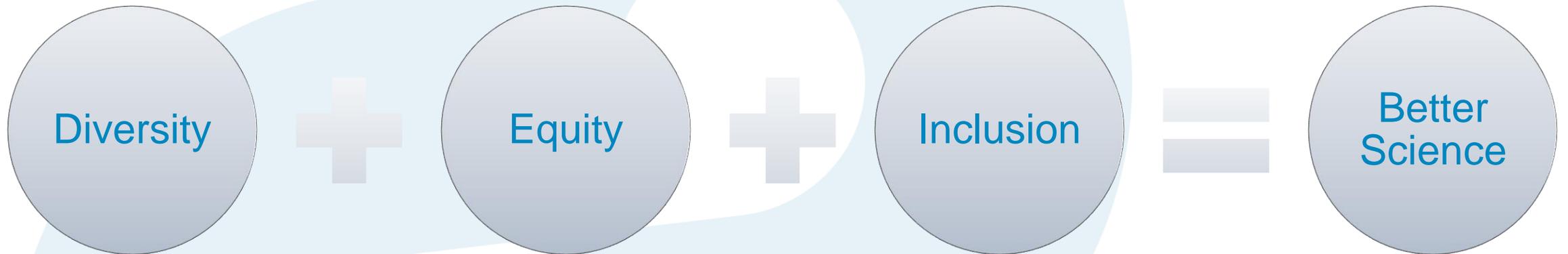
# Inclusion & Diversity



# What about Equity?



# DEI





## Commentary

**Juneteenth in STEM and the barriers to equitable science**

Alfred Mays,<sup>1,62</sup> Angela Byars-Winston,<sup>2,62</sup> Antontor Hinton Jr.,<sup>3,62,\*</sup> Andrea G. Marshall,<sup>3,62</sup> Annet Kirabo,<sup>3,4,62</sup> Avery August,<sup>5,62</sup> Bianca J. Marlin,<sup>6,7,8,62</sup> Blake Riggs,<sup>9,62</sup> Blanton Tolbert,<sup>10,62</sup> Celestine Wanjalla,<sup>11,62</sup> Chad Womack,<sup>12,62</sup> Chantell S. Evans,<sup>13,62</sup> Christopher Barnes,<sup>14,62</sup> Chrystal Starbird,<sup>15,62</sup> Clintoria Williams,<sup>16,62</sup> Corey Reynolds,<sup>17,18,62</sup> Cornelius Taabazuung,<sup>19,62</sup> Craig E. Cameron,<sup>20,62</sup> Debra D. Murray,<sup>21,62</sup> Derek Applewhite,<sup>22,62</sup> Derrick J. Morton,<sup>23,62</sup> Dexter Lee,<sup>24,62</sup> Dionna W. Williams,<sup>25,62</sup> Donald Lynch,<sup>26,62</sup> Donita Brady,<sup>27,28,29,62,\*</sup> Erin Lynch,<sup>30,62</sup> Florentine U.N. Rutaganira,<sup>31,32,62</sup> Gustavo M. Silva,<sup>33,62</sup> Haysetta Shuler,<sup>34,62</sup> Ishmail Abdus Saboor,<sup>5,35,62,\*</sup> Jamaine Davis,<sup>36,37,62</sup> Kafui Dzirasa,<sup>38,39,40,62,\*</sup> Latanya Hammonds-Odie,<sup>41,62</sup> Loretta Reyes,<sup>42,62</sup>

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**Introduction**

June 19, 1865, independence day, commonly referred to as Juneteenth, celebrates freedom of the last large body of enslaved Black Americans following the American Civil War. Although the Emancipation Proclamation, which declared free

those slaves residing in states in open rebellion against the United States, took effect more than 2 years prior, it was not until Union troops liberated Texas that more than 250,000 slaves gained their freedom. However, some in the United States remained enslaved

through convict leasing and sharecropping. Following Juneteenth came the Reconstruction Era (1865–1877) in the United States, a tumultuous time when the North and South began reunification and ideologies of freedom and equality clashed, leading to the ratification of the

# Centering Equity

While DEI is important, it places diversity at the forefront rather than equity. Diversity is only transformative when the underlying institutions are inclusive and equitable. Notably, this requires equity that embraces and inclusion that does not require assimilation but rather a coexistent harmony

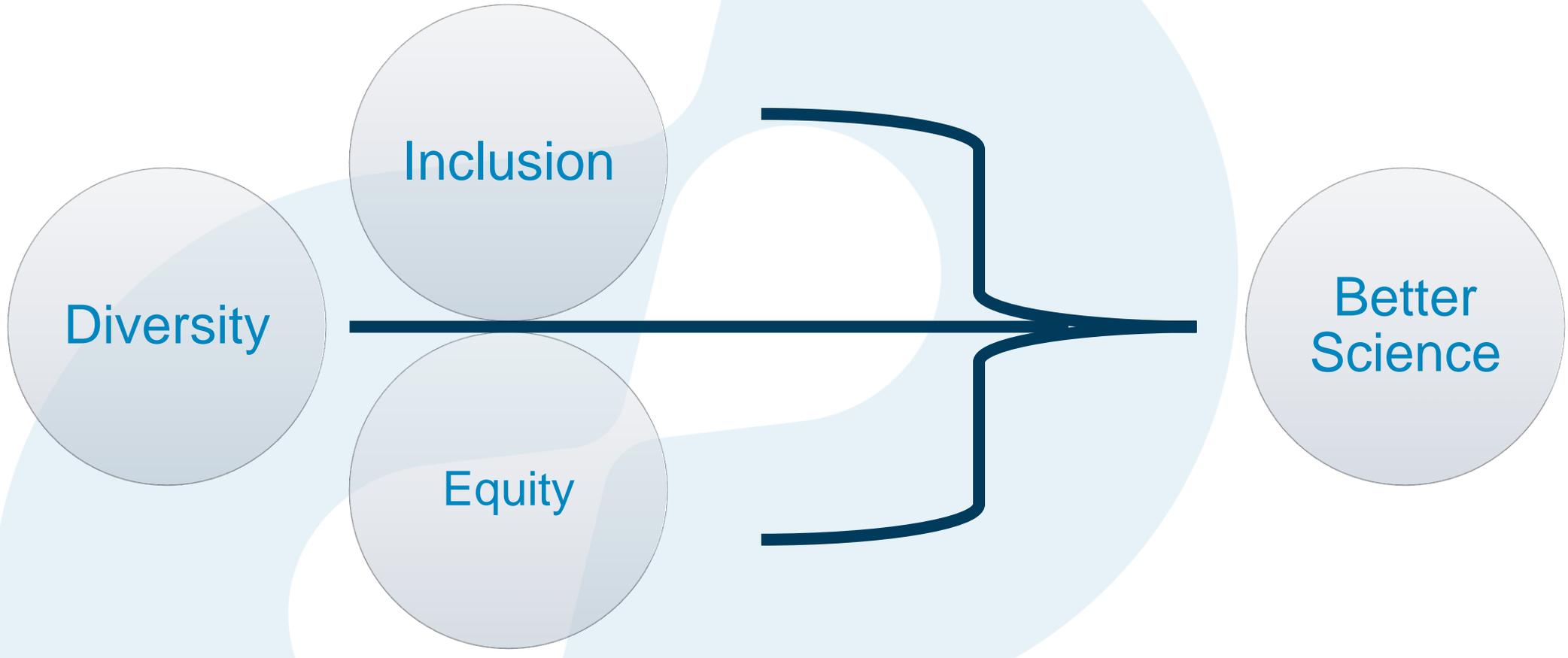
Juneteenth in STEM and the Barrier...  
Alfred Mays et al.



Mays A, Byars-Winston A, Hinton A Jr, et al. Juneteenth in STEM and the barriers to equitable science. *Cell*. 2023;186(12):2510-2517. doi:10.1016/j.cell.2023.05.016



I&D → DEI → EDI



**“Stick to the science”**

# “Stick to the Science”

Inclusion

Equity

Diversity

Justice

Science

# “Stick to the Science”

Society

Science

## Voices

**How do DEI initiatives impact STEM, and why do we still need them?**

The number of diversity, equity, and inclusion (DEI) initiatives in science, technology, engineering, mathematics, and medicine (STEMM) have grown over the last few years. We asked several Black scientists what impact they have and why STEMM still needs them. They answer these questions and describe how DEI initiatives should evolve.



Ismail Ahmed  
NYU School of Medicine

**Image of success in academia**

Reshaping the image of success in academia by highlighting the achievements of scientists from marginalized backgrounds is an essential step toward creating a more inclusive and diverse academic community. The current definition of success in academia is often narrow and does not fully capture the contributions of scientists from underrepresented groups, which perpetuates the systemic barriers that have excluded these groups from academic careers.

To address this issue, initiatives that increase the visibility and recognition of scientists from marginalized backgrounds are crucial and an area where diversity, equity, and inclusion (DEI) initiatives can potentially have a huge impact. By showcasing the excellent work and personal journeys of underrepresented researchers, these initiatives can help to inspire and motivate the next generation of diverse scientists and change the conversation around what merit and success look like in academia.

One such initiative I am working on is the BioDiverseStories seminar series at NYU Langone, supported by NYU's Neuroscience and Skirball Institutes. This series focuses on highlighting the phenomenal work of underrepresented researchers and their personal journeys to success in academia. It not only provides a platform for underrepresented minority scientists to share their work with the broader academic community but also serves as a model for other institutions to follow. Through this type of initiative, academia can work toward creating a more diverse and inclusive environment that truly values the contributions of scientists from all backgrounds.

**Freedom to focus on our research**

As a Black woman in academia, impactful initiatives signify a true commitment from colleagues, administration, educational institutions, and funding bodies to support diversity, equity, and inclusion in science. When these programs really achieve what they intend—i.e., recruit, retain, support, and promote scientists of color—they create spaces where Black and Brown scientists are no longer the “only ones” or in a small minority. Having a research community in which you can see yourself in others and connect with colleagues through shared experiences removes the energy drain that comes from conscious and sub-conscious code-switching (alterations in language, behavior, and appearance to fit in with the majority).

When Black and Brown scientists can bring our authentic and full selves to their research, we are free to use our brainpower for more creative thinking. In turn, this allows for more innovative approaches to tackle complex biological questions. A wide range of DEI initiatives have been and are currently being implemented, including summer undergraduate research experiences, post-baccalaureate programs for graduate and medical school preparation, and bridges to independent research careers programs. The pace at which these initiatives have improved the current landscape, however, has not resulted in the above-mentioned research communities where scientists of color can thrive without social and cultural restrictions. We need brave leaders who develop, support, and champion new and/or revitalized programs that are bolder and more immediately impactful. Ultimately, this will create environments that attract and



Alissa Armstrong  
University of South Carolina, Columbia



# “Stick to the science”

Science and medicine cannot and should not be isolated from the society in which they are created and function. One need only look to the history of scientific racism or contemporary differences in rates of Black gestational mortality and morbidity for evidence of this. And our society is not one which is, substantively, socially just.

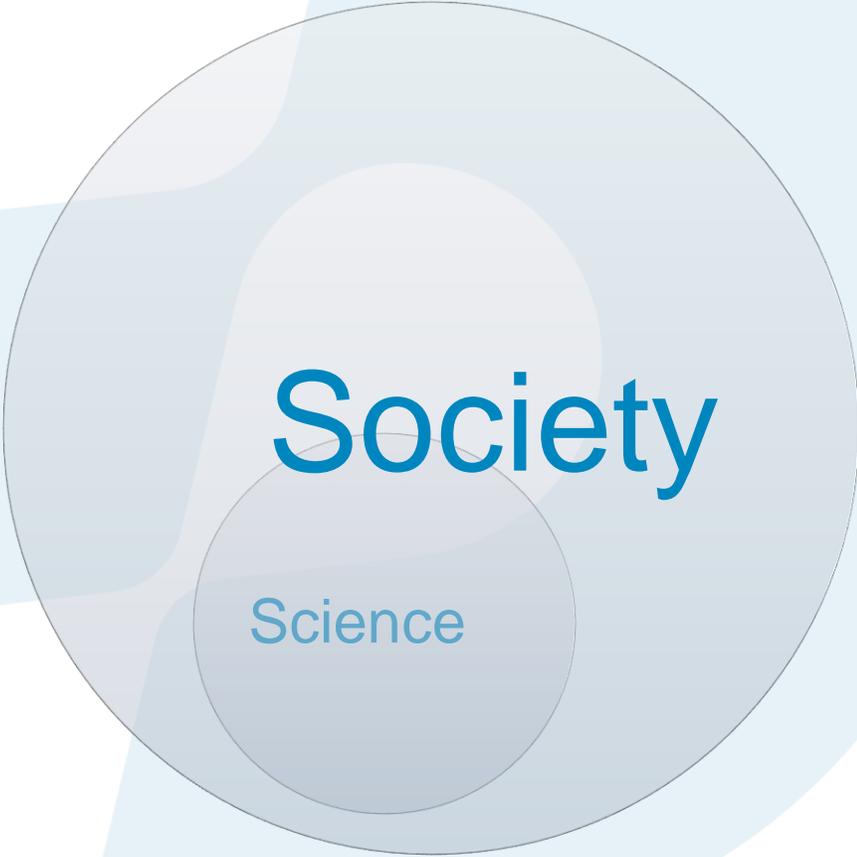
How Do DEI Initiatives Impact STEMM...

Catherine Clune-Taylor



Ahmed I, Armstrong A, Clemons TA, et al. How do DEI initiatives impact STEMM, and why do we still need them?. *Cell*. 2023;186(12):2506-2509. doi:10.1016/j.cell.2023.05.015

# “Stick to the Science”



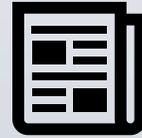
A Venn diagram consisting of two overlapping circles. The larger, outer circle is light blue and contains the word "Society". The smaller, inner circle is a darker shade of blue and contains the word "Science". The "Science" circle is positioned at the bottom of the "Society" circle, and they overlap significantly.

Society

Science

# “Stick to the Science”

Science



Society



## Q&amp;A

## Hannah A. Valantine, M.D., Stanford University School of Medicine

Dr. Hannah Valantine is renowned for her work in transplantation medicine, leadership, and mentoring as well as her efforts to improve scientific workforce diversity. In this interview with *Cell*, she discusses her research; what Juneteenth means to her; the persistent gender, race, and ethnicity leadership gaps that exist in academic medicine; and the importance of equitable, inclusive, and diverse science.

## Biography

Hannah A. Valantine, M.D., is currently a professor of medicine at the Stanford University School of Medicine and Senior Advisor, Team Science, to the chair of the department of medicine. She is a nationally recognized pioneer in both transplantation medicine and scientific workforce diversity, with more than 200 peer-reviewed publications and patents and sustained funding from the National Institutes of Health. In 2014, Francis Collins, M.D., Ph.D., then the NIH director, recruited Valantine to be the inaugural NIH Chief Officer for Scientific Workforce diversity and a tenured investigator in the National Heart, Lung, and Blood Institute's intramural research program, where she established the laboratory of transplantation genomics. She was elected to the National Academy of Medicine in 2020. Valantine received her M.B.B.S. and M.D. degrees from London University in 1978 and 1987, respectively, then conducted a cardiology fellowship at Stanford, later rising from assistant professor of medicine to full professor in 2000. In 2004, Valantine was named Stanford's inaugural Senior Associate Dean for Diversity and Leadership.

### Could you tell us about your research?

I am a cardiologist interested in understanding the mechanisms of rejection of a transplanted heart. I've spent my whole career in clinical research trying to figure out non-invasive ways to monitor impending rejection in patients. I think my most important work has been the application of genomics to monitor and detect rejection after heart transplantation.

A major breakthrough in this journey resulted from a fruitful, interdisciplinary



Hannah A. Valantine, Stanford University School of Medicine

collaboration with Stanford colleagues, specifically Steve Quake, a pioneer in single-molecule DNA sequencing and non-invasive prenatal diagnostics to replace amniocentesis. We worked together to develop cell-free DNA sequencing technologies to monitor heart transplant rejection. That test is now widely used in the clinic. I am currently laser-focused on trying to understand what's going on at the molecular level when a heart is rejected. While heart transplantation is a life-saving procedure, not all people benefit equally. I am particularly interested in mechanisms that underlie poor clinical outcomes in transplantation patients of African ancestry. My research has uncovered some really interesting hints about biological determinants of this disparity that accompany, and likely synergize with, social and environmental factors. We have highly sophisticated tools now that we can use to identify rejection mechanisms and move toward developing new therapies and diagnostics. I am convinced that this new under-

standing will benefit all transplant recipients, not just those of African ancestry.

### What are your thoughts on team building in science and medicine? How do you build a team?

Team science is critically important for solving the big problems that remain in biomedicine. When you bring together multiple disciplines and multiple ways of thinking—true diversity of thought—you're much more likely to come up with creative and productive solutions. Organ transplantation is a really good example of why we need diverse teams, such as those with immunologists, human geneticists, clinical transplant scientists, pharmacogenomics experts, and cutting-edge data scientists. But we also need researchers who study health disparities as well as scientists who are using newly available molecular tools so that we can uncover and fix the causes of poor transplantation outcomes in certain populations such as people of African ancestry.

### What are the challenges or exciting questions in your field?

One of the key challenges the transplant community must solve is to understand in detail how various factors combine to create greater risk for acute and chronic rejection (and poorer outcomes) in patients of African ancestry. Both social and biological contributing factors are thought to contribute to this health disparity, but none alone or in combination fully explain the inferior clinical outcomes these individuals experience. Understanding the basis of this risk will uncover new mechanisms to lead us to a whole new era of diagnostics and therapies to prevent and treat acute rejection.

# “Stick to the science”

I would say that's a misguided and uninformed view. There are many examples in the literature showing that a broader, more diverse approach to science leads to better solutions. How can we have good science with only part of the story?...having special journal issues dedicated to diversity, equity, and inclusion is important. It's also valuable to publish articles that visit the intersection of science, health disparities, and the social determinants of health

Hannah A. Valantine, M.D., Stanford...

Hannah A. Valantine



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## What are you building in a team?

How do you solve the problem of multiple disciplines of thinking—you're much more creative and you're much more interested in why we fail as those with geneticists, clinicians, pharmacogeneticists, cutting-edge data scientists, and need research partnerships as well as newly available technologies can uncover transplantation solutions such as

## What are the questions in your field?

One of the key questions in the community is in detail how we create greater rejection (and better outcomes) in patients of African and biological ancestry. I thought to this disparity, but I don't think we fully explain it. How does it come these things? Understanding the basic biology to uncover new mechanisms and move toward a whole new era of diagnostics and therapies to prevent and treat acute rejection.

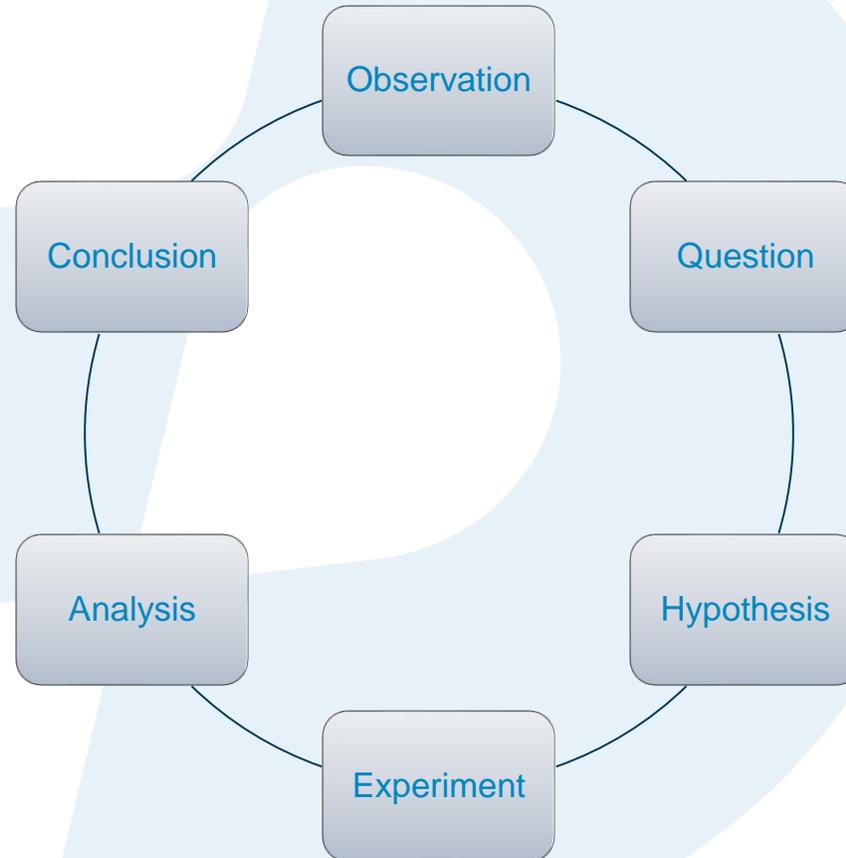
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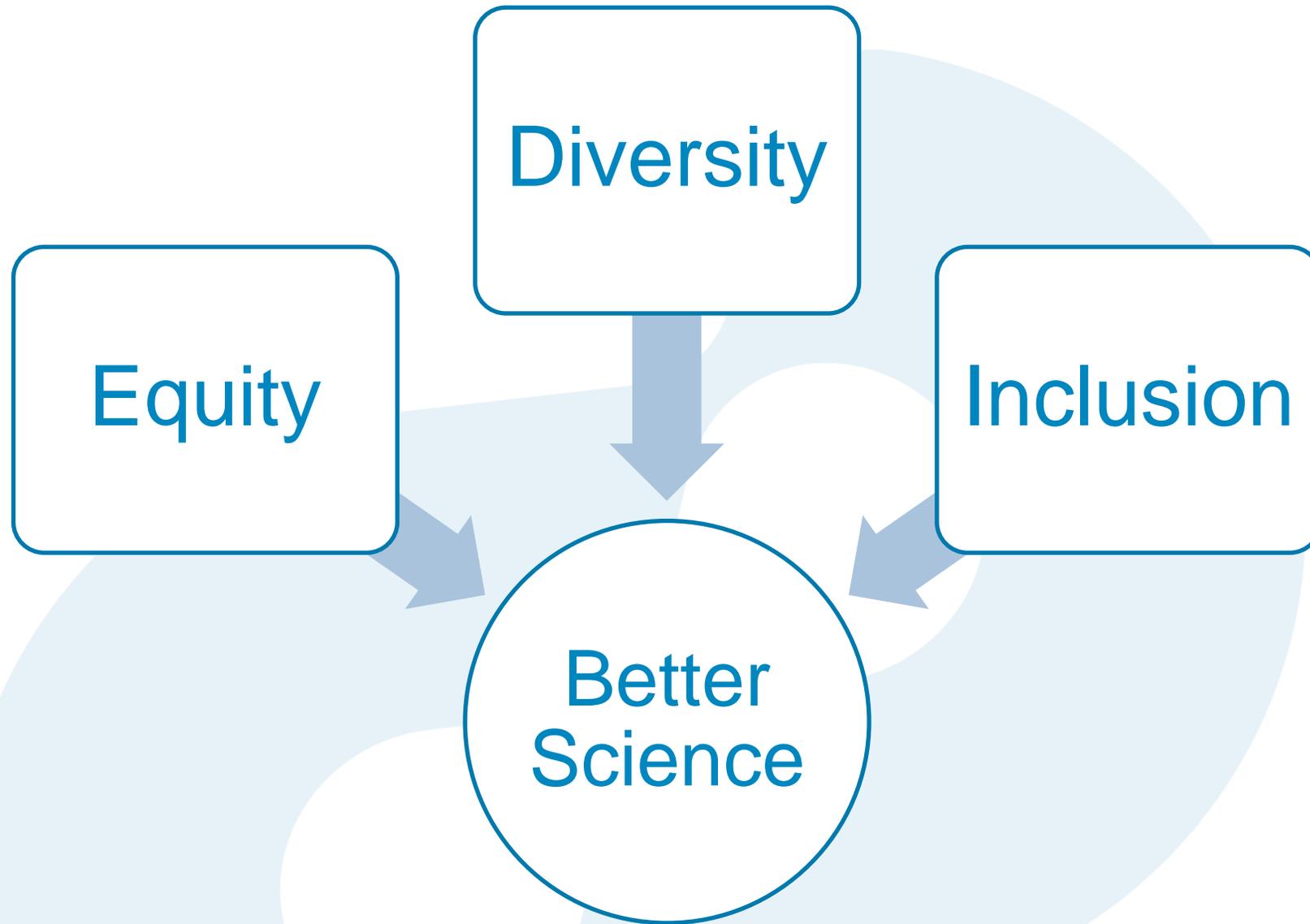


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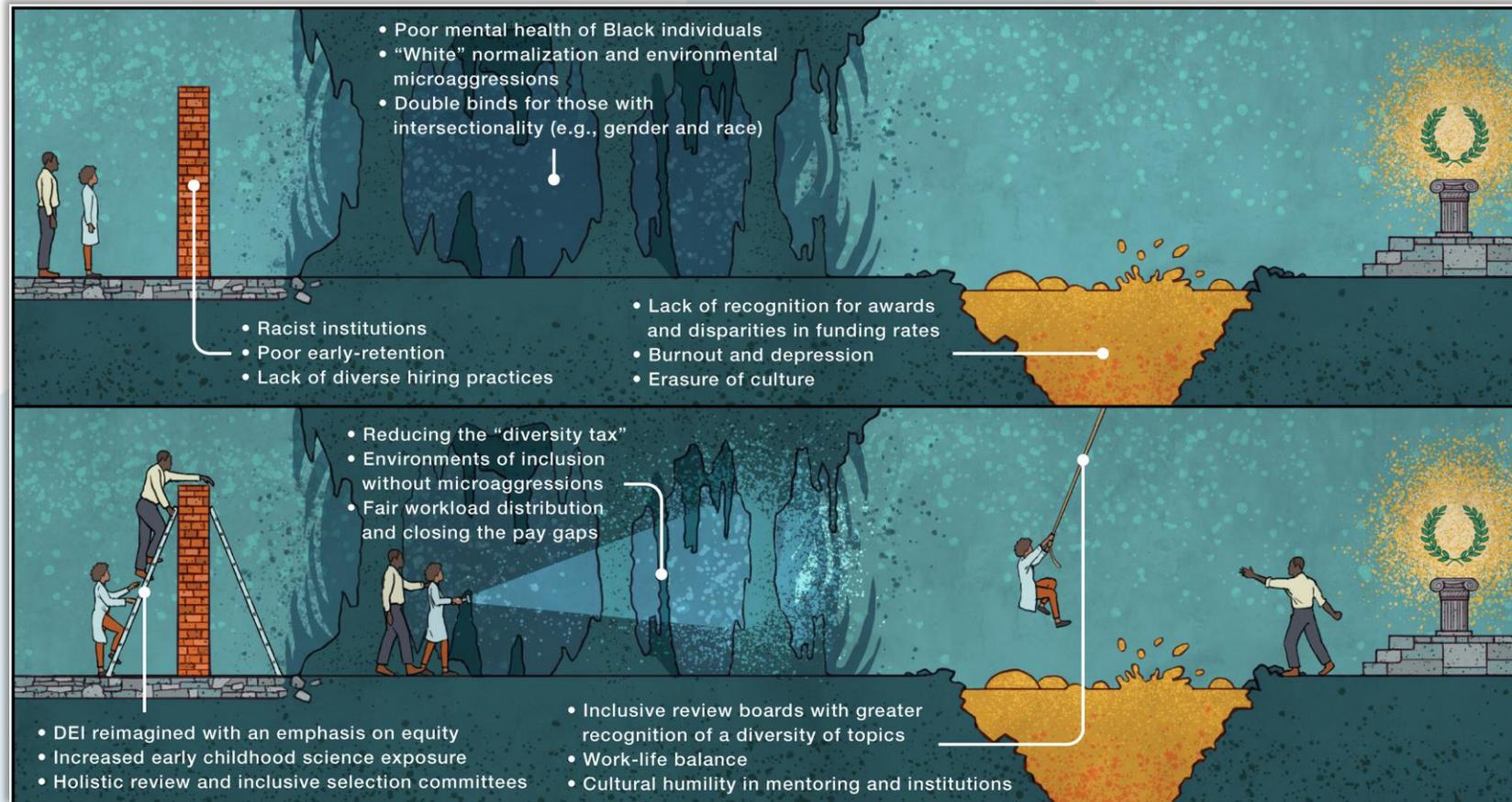


**“Stick to  
the  
Science”**



**“Science is a meritocracy”**

# Not a level playing field



Mays A, Byars-Winston A, Hinton A Jr, et al. Juneteenth in STEMM and the barriers to equitable science. *Cell*. 2023;186(12):2510-2517. doi:10.1016/j.cell.2023.05.016

## Commentary

**Juneteenth in STEM  
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# The Meritocracy Myth

we must come to terms with the reality that only certain groups of people were historically allowed to do science and given the resources that facilitated their achievements. It is comparable to only celebrating the winning sports team while all their competitors played the games blindfolded with their hands tied behind their backs.

Juneteenth in STEM and the Barrier...  
Alfred Mays et al.



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## Commentary

**Juneteenth in STEM and the barriers to equitable science**

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**We are 52 Black scientists. Here, we establish the context of Juneteenth in STEM and discuss the challenges Black scientists face, the struggles they endure, and the lack of recognition they receive. We provide a historical context for Juneteenth and provide institutional-level solutions to reduce the burdens on Black scientists.**

**Introduction**

June 19, 1865, independence day, commonly referred to as Juneteenth, celebrates freedom of the last large body of enslaved Black Americans following the American Civil War. Although the Emancipation Proclamation, which declared free

those slaves residing in states in open rebellion against the United States, took effect more than 2 years prior, it was not until Union troops liberated Texas that more than 250,000 slaves gained their freedom. However, some in the United States remained enslaved

through convict leasing and Jim Crow laws. Following Juneteenth, Reconstruction Era (1865–1877) in the United States, a tumultuous period in which the North and South began reunification, and ideologies of freedom and equality clashed, leading to the ratification of the

# The Meritocracy Myth

“[Some] played the games blindfolded with their hands tied behind their backs.”



Mays A, Byars-Winston A, Hinton A Jr, et al. Juneteenth in STEM and the barriers to equitable science. *Cell*. 2023;186(12):2510-2517. doi:10.1016/j.cell.2023.05.016



## Stories

**Awakening: Losing then finding myself in STEMM**Elsie Calderón-Spencer<sup>1,2,\*</sup>

For over 25 years, Dr. Elsie Calderón-Spencer has witnessed the effects of DEI initiatives in STEMM. She shares her story, centered on her experiences as an Afro-Latina woman navigating STEMM higher education and how they reflect the challenges Black and Indigenous people of color face.

As a higher education administrator at Ivy League institutions for more than 25 years, I have witnessed firsthand many diversity, equity, and inclusion (DEI) initiatives in science, technology, engineering, mathematics, and medicine (STEMM). I have also seen how institutions often use these initiatives to check off boxes but fail to be intentional in their delivery and execution. Many agree that improving DEI in STEMM is the right thing to do, but there is more to it than just one's moral compass. It is the only way to remain innovative and prevent Black and Indigenous people of color (BIPOCs) from falling out of the STEMM pipeline.

Many forces seek to dismantle DEI programs at public institutions of higher learning, denying their effectiveness and decreasing or removing their budgets. Yet, what will happen if DEI is removed from the table? Our ability to foster different learning styles, problem-solve, and think critically will suffer, challenging the progress we have made in STEMM. The best approach to thwart this impending trajectory is to prevent BIPOCs from falling out of the pipeline, revitalize our existing pipelines, and realign our mentoring efforts so that environments for BIPOCs are supportive, welcoming, and inclusive.

BIPOCs who aspire to become professionals or academicians in STEMM are faced with unique barriers in society and higher education. These challenges turn institutions of higher learning into jagged mountains that BIPOCs must scale to reach the acme. Surviving at these institutions is not for the faint of heart, and most BIPOCs do not begin at the same starting point as their white counterparts. The tales of the tape for those BIPOCs who make it to the finish line are stamped with grit and resilience—the armor needed to channel through the warzone-like pipelines of undergraduate, graduate, and postgraduate environments.

When I entered the higher education sector in the mid-90s after graduating from college, I worked for an Ivy League medical school in New York City as a student services administrator, and my attention was always drawn to the BIPOCs accepted into each cohort. I pondered their narratives. What made these individuals special enough to gain a coveted golden ticket to one of the premier medical schools in the world? How did they beat out hundreds of other applicants for that one spot? What did the overwhelmingly white and male admissions committee see in their applications to grant them entrance into the brotherhood of white coats?

I was not surprised to hear discriminatory chatter from faculty about some of the BIPOCs. A few of these insensitive remarks occurred when the faculty would have difficulty pronouncing BIPOC names. Often faculty would ask BIPOC students if they had a nickname they could use to make it easier for the faculty when communicating, giving rise to the "difficult name penalty."<sup>1</sup>

A name is an identity. Being forced to assimilate to fit the status quo robs BIPOCs of their individuality, tradition, and culture. Your name means you are someone unique and it is one of our basic

*The tales of the tape for those BIPOCs who make it to the finish line are stamped with grit and resilience—the armor needed to channel through the warzone-like pipelines of undergraduate, graduate, and postgraduate environments.*

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Above image: Elsie Calderón-Spencer

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# The Meritocracy Myth

It is easy to believe that at institutions of higher learning, meritocracy guides admission decisions and provides an unbiased measure of success. However, the meritocracy notion, despite appearing incentivizing, is completely out of touch with reality. **Not everyone begins at the same starting point.** Many BIPOCs have to struggle even to make it to a point where they are still faced with challenges that contribute to the unbalanced scales in STEMM...**Some people are privileged to traverse paths uncluttered with such obstacles.**

Awakening: Losing Then Finding Myself in ST...  
 Elsie Calderón-Spencer

Calderón-Spencer E. Awakening: Losing then finding myself in STEMM. *Cell*. 2023;186(12):2496-2500. doi:10.1016/j.cell.2023.05.010

# EDI Initiatives at Cell Press

# Rising Black Scientists Awards (RBSA)

## 4<sup>th</sup> Annual Rising Black Scientists Awards

Presented by Cell Press, Cell Signaling Technology, and the Elsevier Foundation

- Started in 2020
- Goal is to support talented and motivated young Black scientists on their journey
- RBSA are meant to break down barriers and create opportunities by providing funds to support professional development.
- Open to aspiring scientists or active researchers from undergraduate students to those training at the postgraduate level at American institutions within the United States.

# RBSA

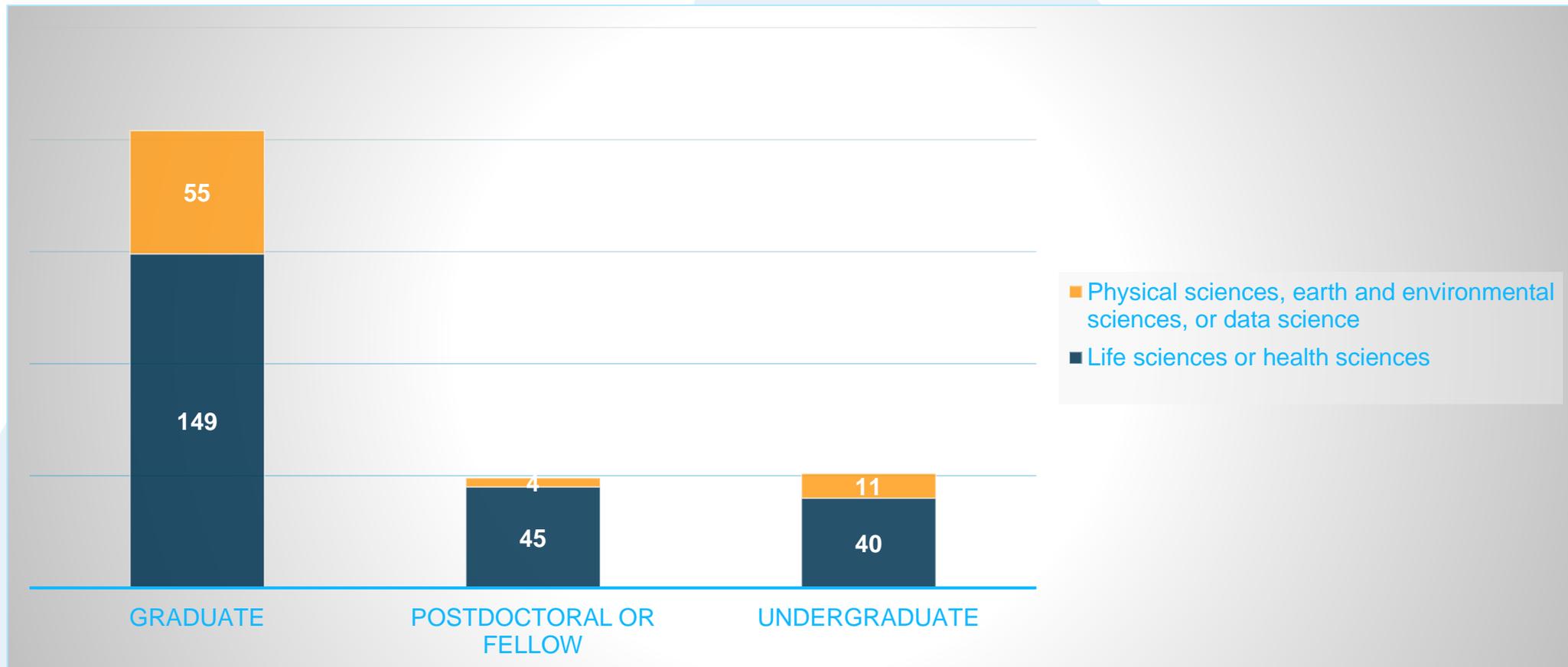
- 2020-21: Life & health sciences
  - two winners – undergraduate/graduate – essays published in *Cell*
- 2021-22: Honorable mentions published in *Med*
- 2022-23: Expansion to earth and environmental, data, and physical sciences
  - Four winners published in *Cell*
  - Four honorable mentions published in *iScience*
- 2023-24: Expansion to include post-baccalaureate students

# RBSA

“The RBSAs are an initiative meant to move beyond signaling empty promises of caring about a community that is underrepresented and towards making strides to support them on their journey as scientists. This support comes by way of a cash prize as well as visibility through the publishing of their essay in a premier journal like *Cell* with a broad readership.”

- Sarah Geisler, PhD  
Scientific Editor, *Cell*  
Project Lead

# RBSA



## Cell

Leading Edge

### Stories

## Achieving diversity and equity through inclusion

Elijah Malik Persad-Paisley<sup>1,\*</sup>

Elijah Malik Persad-Paisley is the winner of the third annual Rising Black Scientist Award for a graduate/postdoctoral scholar in the life and health sciences. For this award, we asked emerging Black scientists to tell us about their scientific vision and goals, experiences that sparked their interest in science, how they want to contribute to a more inclusive scientific community, and how these all fit together on their journey. This is his story.

I was adopted when I was ten. I'm pursuing a medical education and plan for a surgical career. These are not uncommon stories, but as a Black man, my personal journey is an underrepresented one in medicine. My biological Indian family resented my birth because my non-Indian, African American biological father left my mother after she became pregnant with me. I was conditioned to believe that the cold and distant way my family treated me was nothing more than tough love. My biological mother was not able to fully care for me, and as a result, I was adopted. Initially unaware of the negative consequences that came with moving from my low-income neighborhood to a predominantly White, higher socioeconomic status one, I felt joy from finally feeling the sense of familial acceptance of which I was deprived for many years. However, despite this new essential support at home, I continued to experience outward rejection from my peers and local community. Even in my new environment, I suspected that racism lay at the root of this lack of acceptance.

I have always been fascinated by science, but my passion for it grew as I came to appreciate its unbiased nature. The pursuit of scientific knowledge seemed to offer greater independence from race-based discrimination than other fields of study and perhaps even an opportunity to understand the human phenomena underlying my experiences. Upon entering college, I realized my calling for medicine specifically after engaging in a medical immersion program at Yale for underrepresented minorities (URM). Being mentored by physicians who were also URM exposed me to the possibility and underscored the importance of equitable representation in a historically predominantly White profession that paradoxically must deliver healthcare to diverse populations. It was through this program that I began to appreciate medicine as a tool to enact change, a way I might use my identity to exert a uniquely positive impact. I became more acutely aware of racial disparities in medicine when I started medical school in 2020. My class of 144 students contained only three Black men, a alarming figure that is unfortunately unsurprising given the well-documented diminishing representation of Black men in medicine.<sup>1</sup> Starting medical school with these observations marked the origin of my diversity, equity, and inclusion (DEI)-focused efforts as a medical student researcher.

My DEI-focused scholarship and research are natural extensions of my personal experiences. As a medical student investigator, I have initiated studies examining nationwide racial and gender disparities among medical students and resident physicians, an under-discussed area that negatively and disproportionately impacts minority patients. Non-White patients treated by racially discordant physicians have been shown to have higher rates of mortality following surgical procedures,<sup>2</sup> endure longer and more costly hospital stays,<sup>3,4</sup> and be less likely to receive optimal treatment for brain tumors.<sup>5</sup> These outcomes are a disservice to my future patients, who stand to benefit from greater representation among the doctors who treat them.<sup>6–10</sup> With the use of biostatistical methods, I have recently highlighted the underrepresentation of racial minority physicians throughout the neurosurgical educational pipeline<sup>11</sup> and begun investigating similar trends in other medical specialties (E.M.P.-P., unpublished data).<sup>12</sup> To better capture minority representation gaps at early stages of medical training, I adapted ecology-inspired statistical models to quantify diversity across several attributes into a global measure that can be used to represent diversity for each medical school.

Above image: Elijah Malik Persad-Paisley  
Photo credit: Christopher Chang



Cell 186, February 16,

## Cell

Leading Edge

### Stories

## The coyote in the mirror: Embracing intersectionality to improve human-wildlife interactions

Christine E. Wilkinson<sup>1,\*</sup>

Christine E. Wilkinson is the winner of the third annual Rising Black Scientists Award for a graduate/postdoctoral scholar in the physical, data, earth, and environmental sciences. For this award, we asked emerging Black scientists to tell us about their scientific vision and goals, experiences that sparked their interest in science, how they want to contribute to a more inclusive scientific community, and how these all fit together on their journey. This is her story.

From my roots as a young, queer biracial kid chasing urban wildlife in Queens, New York, grown into a broadly trained conservation scientist who considers ethics, justice, and equity as community voices to be critical for affecting comprehensive conservation change. In my my troubled upbringing compelled me to escape people by seeking out wildlife; at that couldn't imagine ever wanting to work with people. My mind changed during my undergrad years at Cornell, while studying abroad in what would turn out to be my first of many field seasons working on human-wildlife conflict in Kenya. One day early in the semester, a person I met who has turned into a lifelong friend said to me (in Kiswahili), "*We are losing both ~~it~~ and our livelihood—our cows. If we kill a lion in retaliation, the government will be here in to arrest us. If a lion kills a person, we will never see any compensation or pity.*" It was that field season that I began to understand the complexity of conservation and the importance of communities for solving conservation challenges.

Over the past decade, my intersectional background has been foundational to my ability to a wide variety of stakeholders as I have facilitated workshops, mentored and taught student working groups, and engaged diverse communities in participatory methodologies aimed at addressing human-carnivore conflict in East Africa and the United States. My first experience as a mentor was in my role as assistant manager of the Kasokwa Forest Field near Masindi, Uganda. During that time, I developed locally focused conservation curriculum the community and schools in the region and mentored the Ugandan field assistants who the life force of the project. For my dissertation research in Nakuru, Kenya, I conducted participatory mapping sessions with 400 community members from numerous sociocultural backgrounds to elevate their experiences with human-carnivore interactions and have also been fortunate to mentor two Kenyan master's students on their theses. With my concurrent work in California, I have had the opportunity to serve as a holder of traditional ecological knowledge while working with my own community to understand the impacts of systemic injustices—such as redlining, discriminatory practice that prioritizes potential homeowners who are Black or from other minorities), gentrification, and racism more generally—on ecology, wildlife landscape navigation and human-wildlife interactions in Los Angeles and the Bay Area. It is clear from this work, applied and participatory ecology were more widely accessible, and if people's public health livelihoods were truly prioritized, communities who are historically underrepresented in conservation would be better equipped to make impactful and ecologically sound decisions based on their personal experiences and needs.

Through all of this, I have recognized my own positionality—not just as a researcher or a non-holder of knowledge, but as a Black, biracial, queer, and gender-queer kaleidoscopic who can deeply relate to the wildlife that I study. Across my research career, I have studied adaptations, behaviors, and ecology of animals that are widely misunderstood and often view from herring gulls (*Larus argentatus*) to olive baboons (*Papio anubis*) to spotted hyenas (*Crocuta*) to coyotes (*Canis latrans*), my research species have reflected my own intersectionality.

Above image: Christine E. Wilkinson (photo courtesy of Jessica Ortiz)



Cell 186, February 16,

## Cell

Leading Edge

### Stories

## One less weary smile

Camryn Carter<sup>1,\*</sup>

Camryn Carter is the winner of the third annual Rising Black Scientists Award undergraduate scholar in the physical, data, earth, and environmental sciences. For this award, we asked emerging Black scientists to tell us about their scientific vision and goals, experiences that sparked their interest in science, how they want to contribute to a more inclusive scientific community, and how these all fit together on their journey. This is her story.

For most of my life, I've struggled with the isolating feeling of being the only person of color in my classroom. As a young student, this negatively impacted my self-confidence. I survived, but a weary smile when my ambiguous skin color would make people guess or assume my race in this point in my life, I can confidently say that I am a proud Black woman. I couldn't always so, fearing that societal pressures and questioning stares would cause me to sink back into my shell. When I accepted admission to a predominantly white institution, I thought I would not have to prove that I belonged, remind myself that I was worthy of this opportunity, and wear my smile. I never expected to find a community that would strengthen my self-awareness and enhance my interest in STEM, and allow me to be so civically engaged. I was supported by intelligent women and people of color, future scientists, and mathematicians who helped me define my passion: creating solutions for climate change.

In the summer before my first year of college, I participated in the University of Rhode Island's Integrated Science Experience (URISE), a pre-first year program intended to expose groups of underrepresented in STEM to authentic research experiences. During URISE, I was surrounded by a cohort from diverse backgrounds with various scientific interests. I was initially intimidated by everyone who was smart and experienced, while I thought, "what's an Eppendorf pipette?" Until meeting members of Professor Carol A. Parish's computational chemistry lab that I belonged to—behind a computer. Meeting her diverse group and seeing other women of color in a scientific environment inspired me to pursue chemistry. URISE also gave me the opportunity to take an interdisciplinary class that combined introductory STEM courses addressing the climate crisis. I learned how to use my interest in computational chemistry to develop solutions to climate change, but another pressing matter needed solution: COVID-19 pandemic.

Since I started my research, equity and education have always been at the forefront of my scientific interests. I began my first project during the beginning of the COVID-19 pandemic working to develop SARS-CoV-2 inhibitors. This project has been a meaningful opportunity for me to provide solutions to a global crisis and simultaneously educate my community members. While conducting research over the summer, I wrote a blog sharing information about the pandemic with my community. From this experience, I developed a deep understanding of how urban racism and redlining have detrimental effects on health conditions in our communities. Redlining is the act of denying resources and services to neighborhoods based on their racial, ethnic, and socioeconomic status. The pandemic highlighted systemic issues, yet little has changed. I want to ensure change. An inclusive scientific community not only has more representation but also gives voices to the community and the lessons they need solved. I want to be a voice for my community, for all underrepresented communities.

I've been working in Professor Parish's lab for over three years, which I couldn't have done without the guidance of my mentors and labmates. With their echoing support, I published my first research paper, which sought to compare the Omicron variant and wild-type SARS-CoV-2 receptor binding domain (RBD) interaction with the human angiotensin-converting enzyme (hACE2) receptor molecular dynamic simulations.<sup>1</sup> My first author manuscript, "Atomistic Insights into the Effect of Omicron Variant on SARS-CoV-2 Receptor Binding," was published in *ACS Omega*.

Above image: Camryn Carter. Photo credit: Jamie Betts



Cell 186, February 16,

## Cell

Leading Edge

### Stories

## My Christmas holidays

Admirabilis Kalolella Jr.<sup>1,\*</sup>

Admirabilis Kalolella Jr. is the winner of the third annual Rising Black Scientists Award for an undergraduate scholar in the life and health sciences. For this award, we asked emerging Black scientists to tell us about their scientific vision and goals, experiences that sparked their interest in science, how they want to contribute to a more inclusive scientific community, and how these all fit together on their journey. This is his story.

I have always enjoyed the Christmas holidays. Not for their grandeur or Christmas decorations, but because after every stressful school year, my family would travel to Mngeta, Tanzania, our home village. Life in rural Mngeta was a mixture of the old and the new. The old was the subsistence way of life, seeing my grandmother carry her hoe to her farm. The new were the technological transformations, such as the recently installed solar panel she used when darkness descended. At this interface was me—a boy who wanted to celebrate Christmas. Yet every year, as per tradition, my father, a physician, set up a mini-clinic and absorbed me in his work. People would come in from afar; some had never seen a doctor in their lives. I took blood pressure and temperature readings and rode my bicycle to deliver medicines. This Christmas tradition brought a powerful revelation; it revealed how important giving back is. It formed the basis of who I am, wanting to use science to reach many. In Mngeta, I recognized the privilege of having my father as a doctor, a need many lack. Even as I returned to school after every Christmas break, my mind wandered back to Mngeta. How could I use my knowledge to benefit my community?

Answering this question has led me across oceans from Tanzania to New London, USA, where I attend Connecticut College as a biochemistry major in the Science Leaders Program. I've continued to look for opportunities to apply my knowledge while acquiring new skills. In my sophomore year, I worked in an organic synthesis laboratory, the Ovaska lab, synthesizing Fronosin D. Fronosin D is a natural product initially isolated from the marine sponge in Miconesia, *Dysidea frondosa*. It garnered interest for its potential anti-tumor and HIV properties. Throughout the summer, my labmates and I used tandem cyclization/Claisen rearrangement reaction sequences to enable this synthesis. While working on this synthesis in the sweltering summer sun, I learned the art of drug discovery and development: not all experiments work, and the practice of science, unlike what is taught in class, is free-spirited, creative, and explorative. Although it is frustrating sometimes, curiosity and creativity keep me going, knowing that one day I could discover something that benefits society.

To apply my scientific understanding to a global context, I was selected as a scholar at the Tor Cummings Center for International Studies and the Liberal Arts (CISLA). CISLA is an interdisciplinary scholarly center at Connecticut College that encourages students to think about their major in a global context. I wanted to continue my drug discovery research in a way that mattered to me—specifically, looking at infectious and neglected tropical diseases. During the summer of my junior year, I traveled to Cape Town, South Africa, to work at the Holistic Drug Discovery and Development (H3D) Centre. There, I worked on repurposing and repositioning a compound known as AZD0156 from an anti-cancer to anti-malarial drug therapy. Drug repositioning is a strategy that optimizes existing drugs as potential therapies for other diseases. AZD0156 works by blocking the active site of the PfPI4 kinase, an important drug target in the Malaria parasite life cycle. I also used innovative approaches in computational chemistry to build algorithms to prioritize potential inhibitors for synthesis. In addition to increasing my scientific knowledge, I was inspired by the tireless efforts of African scientists to change the narrative of a helpless Africa to one of innovation and scientific discoveries, despite the challenges it faces. Professor Kelly Chibale, the founder of the H3D Centre, was one of them. He described H3D's efforts perfectly: putting an end to African pessimism.

Above image: Admirabilis Kalolella Jr. Photo credit: Emmanuel Yeboah



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# Rising Black Scientists Awards

## Post-Graduate Winner

Physical, earth and environmental, or data sciences

“From herring gulls to olive baboons to spotted hyenas to coyotes, my research species have reflected my own intersectionality, the blurring of boundaries, and the resulting experiences of struggling to navigate interactions with people.”



Dr. Christine Wilkinson  
University of California - Berkeley

# RBSA



## Rising Black Scientists Awards Undergraduate Winner

Physical, earth and environmental, or data sciences

“I developed a deep understanding of how urban racism and redlining have detrimental effects on health conditions in frontline communities. Redlining is the act of denying resources and services to neighborhoods based on their racial, ethnic, and socioeconomic status... The pandemic highlighted these systemic issues, yet little has changed. I want to ensure change.”

Camryn Carter

University of Richmond



scientists to change the narrative of a helpless Africa to one of innovation and scientific discoveries.”

Admirabilis Kalolella

Connecticut College

to diverse populations.”

Elijah Malik Persad-Paisley

Brown University



# RBSA

“By being selected for this award, I hope to inspire other Black scientists to continue pursuing their dreams and not giving up on their passions. I have often doubted myself, but this award has made me confident in my skills and abilities as a scientist.”

- Camryn Carter

“Across my research career, I have studied the adaptations, behaviors, and ecology of animals that are widely misunderstood and often vilified. Like me, all of these species fail to fit into many of western science's rigid boxes and are thus misunderstood, yet have developed adaptations, strategies, and resilience to navigate their worlds. We are cut of the same cloth.”

- Christine Wilkinson

“This award validates and affirms the importance of my diversity-related research. Furthermore, it legitimizes me as the physician-scientist that I aspire to be... it reminds us that we are also deservedly recognized as researchers alongside our scientist-trained colleagues.”

- Elijah Malik Persad-Paisley

“I dedicate this award to every Black person and anyone who had been marginalized in the world that is working hard to be the best version of themselves against all odds. Keep doing your thing and stay true to yourself.”

- Admirabilis Kalolella

# RBSA

## Rising Black Scientists Awards 2020 Undergraduate Winner

“

There were so many amazing things that came out of winning this award, especially being published in *Cell*, but the most rewarding aspect was the connections I was able to make with other amazing Black scientists who enjoyed my essay. Their kind words reaffirmed my decision to pursue science.

”



**Olufolakemi "Fola" Olusanya**

Howard University



## Rising Black Scientists Awards 2020 Post-Graduate Winner

“

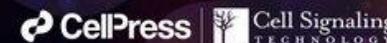
Speak your truth. Quite frankly, when I wrote my essay I thought it was a bit too honest, but I also thought these were some of the experiences I most wanted to speak about. I was encouraged that I won not just because it's a wonderful award, but because it signified to me that *Cell* was ready and willing to listen to our stories.

”



**Chrystal Starbird, Ph.D.**

Department of Pharmacology, Yale University



# Inclusion & Diversity Statement

## Editorial

## New at Cell Press: The Inclusion and Diversity Statement

Recent events around the world have confronted many of us, in science and beyond, with the stark realities of systemic inequality. At Cell Press, they prompted us to look inside ourselves and ask what more we can do to fight prejudice and promote social justice. The challenges are large, and although we have made a start through articles we have published and authors we have highlighted, we see room to do more.

We know how important justice and equality are to the communities we serve. In an ideal world, science would cover and be conducted by as broad a range of individuals as exist in global society, with everyone who wants to participate being and feeling welcomed as part of the overall scientific community. Currently, however, the scientific enterprise is a long way from such inclusion and diversity. We want to find ways to push for positive change through the platform of our journals. As part of that, we see an opportunity to give authors a forum to share information about themselves and about the efforts they are making. With that in mind, we will soon launch a new initiative across the majority of the primary research journals at Cell Press designed to give authors a mechanism to share with us information related to inclusion and diversity that is relevant for their paper. In tandem, they will also have the option to highlight this information to readers of the paper itself by adding a dedicated statement, which we have termed the Inclusion and Diversity statement.

The concept underlying this initiative is similar to existing statements about Declarations of Interest, Author Contributions, and Data and Code Availability but focusing on highlighting aspects of the paper that are relevant for inclusion and diversity. It is purposely multifunctional and designed to give authors a venue to share ways in which their work or their research group, or both, are contributing to help science become more inclusive and diverse overall. For example, authors can include information about efforts to ensure diversity in cell lines or genomic datasets used for a study, efforts to ensure sex/gender balance in research subjects, efforts to ensure that any study questionnaires are prepared in an inclusive way, self-identification of authors as members minority groups, support that any authors have received from programs designed to advance minority scientists, and efforts made to promote gender balance in citation lists. We also included an opportunity to highlight efforts to avoid the concept of “helicopter science,” in which authors, generally from a high-income country or non-indigenous group, rely on people and resources from a lower-income or indigenous group but then analyze and publish the data without appropriate involvement or recognition.

To simplify the process of reporting information, we have prepared a [dedicated form](#) for authors to use, with a series of discrete and standardized options to indicate via simple check boxes. We will ask a/the corresponding author for each paper to complete and provide this form on behalf of all authors on

the paper at the point of acceptance. Our expectation is that the corresponding author will share the form with all co-authors when also sharing the final version of the paper with them for review and ask at that time if they would like to provide information by checking the relevant answer. We will not ask or expect authors to provide this form with initial submissions or revisions. Importantly, the presence or contents of this form will not have any impact on scientific consideration of articles. As always, during the review process we will continue to focus on the scientific content alone and without any consideration of the characteristics of the authors involved. We also continue to expect authors to cite the references that are scientifically relevant for their work, and then we encourage them to layer considerations about gender balance on top of that.

Author teams who prefer not to participate in this initiative will have the option to indicate this choice when completing the Inclusion and Diversity form. We appreciate that there are limitations and even risks associated with asking one author to complete this form on behalf of all others, particularly because of the potential for discomfort about revealing personal information to colleagues or supervisors. We want to emphasize that any authors who feel uncomfortable about sharing information should not in any way feel pressurized to do so. We do also see some advantages of this approach in terms of the consistency with other forms that we ask authors to complete and the relative degree of anonymity achieved by having this information be gathered at a team rather than an individual level.

We will keep the information that we gather in these forms private and secure and will only use it for aggregated reporting. We will also not share it with any external parties. We hope to be able to use it to report at a general level about the types of inclusion and diversity efforts that Cell Press authors are making. As the *New York Times* recently pointed out, we need to have data to help us monitor progress. For example, we would like to be able to report how many of the studies we publish actively worked on diversity in the selection of experimental materials or samples. We are also well aware of how important role models are for encouraging people of diverse backgrounds to pursue science, and hope that if we can report on, for instance, how many of our papers include at least one minority scientist among the author group that could help to encourage more minority young people to pursue science as a career.

At a more specific level, we will also give authors the opportunity to use the information from the form as the basis of an Inclusion and Diversity statement that will appear in the published paper. The statement will consist of standardized sentences that correspond to the checked items on the form itself, to ensure consistency and avoid the need to spend time on composing or editing. Inclusion of a statement in the published paper is entirely optional, but we want to encourage

# Inclusion & Diversity Statement

- Launched in January 2021 for primary research articles
- To allow authors to share information related to inclusion and diversity relevant to their paper
- Option to highlight this information by adding a “Inclusion and Diversity statement”
- Plant the seeds for future research team composition and design

## Editorial

## New at Cell Press: The Inclusion and Diversity Statement

Recent events around the world have confronted many of us, in science and beyond, with the stark realities of systemic inequality. At Cell Press, they prompted us to look inside ourselves and ask what more we can do to fight prejudice and promote social justice. The challenges are large, and although we have made a start through articles we have published and authors we have highlighted, we see room to do more.

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the paper at the point of acceptance. Our expectation is that the corresponding author will share the form with all co-authors when also sharing the final version of the paper with them for review and ask at that time if they would like to provide information by checking the relevant answer. We will not ask or expect authors to provide this form with initial submissions or revisions. Importantly, the presence or contents of this form will not have any impact on scientific consideration of articles. As always, during the review process we will continue to focus on the scientific content alone and without any consideration of the characteristics of the authors involved. We also continue to expect authors to cite the references that are scientifically relevant for their work, and then we encourage them to layer considerations about gender balance on top of that.

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# Inclusion & Diversity Statement

- Initially, 10% of authors published statements
- Form updated in September 2022

**PAGE 2: INCLUSION AND DIVERSITY QUESTIONNAIRE**

In the questionnaire below, our aim is to capture how authors are implementing inclusion and diversity efforts. We understand that these are not comprehensive and apologize in advance if an effort that you would like to highlight is not included as an option.

Please check any/all sentences that apply to your paper. If you do not wish to provide information about inclusion and diversity, please proceed to page 4.

<i>Inclusion and diversity relating to the scientific content of the paper:</i>	Yes	No	n/a
<i>For studies involving human subjects, whether recruited (e.g. clinical analyses) or enrolled spontaneously (e.g. online surveys):</i>			
We worked to ensure gender balance in the recruitment of human subjects.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We worked to ensure ethnic or other types of diversity in the recruitment of human subjects.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We worked to ensure that the study questionnaires were prepared in an inclusive way.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>For studies involving non-human subjects or material:</i>			
We worked to ensure sex balance in the selection of non-human subjects.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We worked to ensure diversity in experimental samples through the selection of the cell lines.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We worked to ensure diversity in experimental samples through the selection of the genomic datasets.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Inclusion and diversity relating to authorship and attribution:</i>	Yes	No	Prefer not to disclose
One or more of the authors of this paper self-identifies as an underrepresented ethnic minority in their field of research or within their geographical location.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
One or more of the authors of this paper self-identifies as a gender minority in their field of research.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
One or more of the authors of this paper self-identifies as a member of the LGBTQIA+ community.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
One or more of the authors of this paper self-identifies as living with a disability.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
One or more of the authors of this paper received support from a program designed to increase minority representation in their field of research.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
While citing references scientifically relevant for this work, we also actively worked to promote gender balance in our reference list.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The following sentence relates specifically to "helicopter science", in which authors, generally from a high-income country or non-indigenous group, rely on people and resources from a lower-income or indigenous group, but then analyze and publish the data without appropriate involvement or recognition. If this situation applies to the research presented in your paper, and you actively avoided "helicopter science", please check this box:			
We avoided "helicopter science" practices by including the participating local contributors from the region where we conducted the research as authors on the paper.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Inclusion & Diversity Statement

- the addition of a new statement to reflect gender identity
- the addition of “n/a” and “prefer not to disclose” options when selecting what information to include with the statements.
- the option of adding a general statement: “We support inclusive, diverse, and equitable conduct of research”

# Inclusion & Diversity Statement

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Please check any/all sentences that apply to your paper. If you do not wish to provide information about inclusion and diversity, please proceed to page 4.

*Inclusion and diversity relating to the scientific content of the paper:*

*For studies involving human subjects, whether recruited (e.g. clinical analyses) or enrolled spontaneously (e.g. online surveys):*

We worked to ensure gender balance in the recruitment of human subjects.

We worked to ensure ethnic or other types of diversity in the recruitment of human subjects.

We worked to ensure that the study questionnaires were prepared in an inclusive way.

*For studies involving non-human subjects or material:*

We worked to ensure sex balance in the selection of non-human subjects.

We worked to ensure diversity in experimental samples through the selection of the cell lines.

We worked to ensure diversity in experimental samples through the selection of the genomic datasets.

*Inclusion and diversity relating to authorship and attribution:*

One or more of the authors of this paper self-identifies as an underrepresented group in their field of research or within their geographical location.

One or more of the authors of this paper self-identifies as a gender minority.

One or more of the authors of this paper self-identifies as a member of a racial or ethnic minority.

One or more of the authors of this paper self-identifies as living with a disability.

One or more of the authors of this paper received support from a minority representation in their field of research.

While citing references scientifically relevant for this work, we also actively sought to ensure a balance in our reference list.

The following sentence relates specifically to "helicopter science", in which authors, generally from a high-income country or non-indigenous group, rely on people and resources from a lower-income or indigenous group, but then analyze and publish the data without appropriate involvement or recognition. If this situation applies to the research presented in your paper, and you actively avoided "helicopter science", please check this box:

We avoided "helicopter science" practices by including the participating local contributors from the region where we conducted the research as authors on the paper.

**Inclusion and diversity relating to the scientific content of the paper:**

**Yes No n/a**

**For studies involving human subjects, whether recruited (e.g. clinical analyses) or enrolled spontaneously (e.g. online surveys):**

**We worked to ensure gender balance in the recruitment of human subjects.**

**We worked to ensure ethnic or other types of diversity in the recruitment of human subjects.**

**We worked to ensure that the study questionnaires were prepared in an inclusive way.**

**For studies involving non-human subjects or material:**

**We worked to ensure sex balance in the selection of non-human subjects.**

**We worked to ensure diversity in experimental samples through the selection of the cell lines.**

**We worked to ensure diversity in experimental samples through the selection of the genomic datasets.**



# Inclusion & Diversity Statement

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Please check any/all sentences that apply to your paper. If you do not wish to provide information about inclusion and diversity, please proceed to page 4.

*Inclusion and diversity relating to the scientific content of the paper*

*For studies involving human subjects, whether recruited (e.g. clinical trials)*

We worked to ensure gender balance in the recruitment of human subjects

We worked to ensure ethnic or other types of diversity in the recruitment of human subjects

We worked to ensure that the study questionnaires were prepared in an accessible format

*For studies involving non-human subjects or material:*

We worked to ensure sex balance in the selection of non-human subjects

We worked to ensure diversity in experimental samples through the use of different strains

We worked to ensure diversity in experimental samples through the use of different geographical locations

*Inclusion and diversity relating to authorship and attribution:*

One or more of the authors of this paper self-identifies as an underrepresented ethnic minority in their field of research or within their geographical location.

One or more of the authors of this paper self-identifies as a gender minority

One or more of the authors of this paper self-identifies as a member of the LGBTQIA+ community

One or more of the authors of this paper self-identifies as living with a disability

One or more of the authors of this paper received support from a program designed to increase minority representation in their field of research.

While citing references scientifically relevant for this work, we also actively worked to promote gender balance in our reference list.

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**Inclusion and diversity relating to authorship and attribution:**

Yes No Prefer not to disclose

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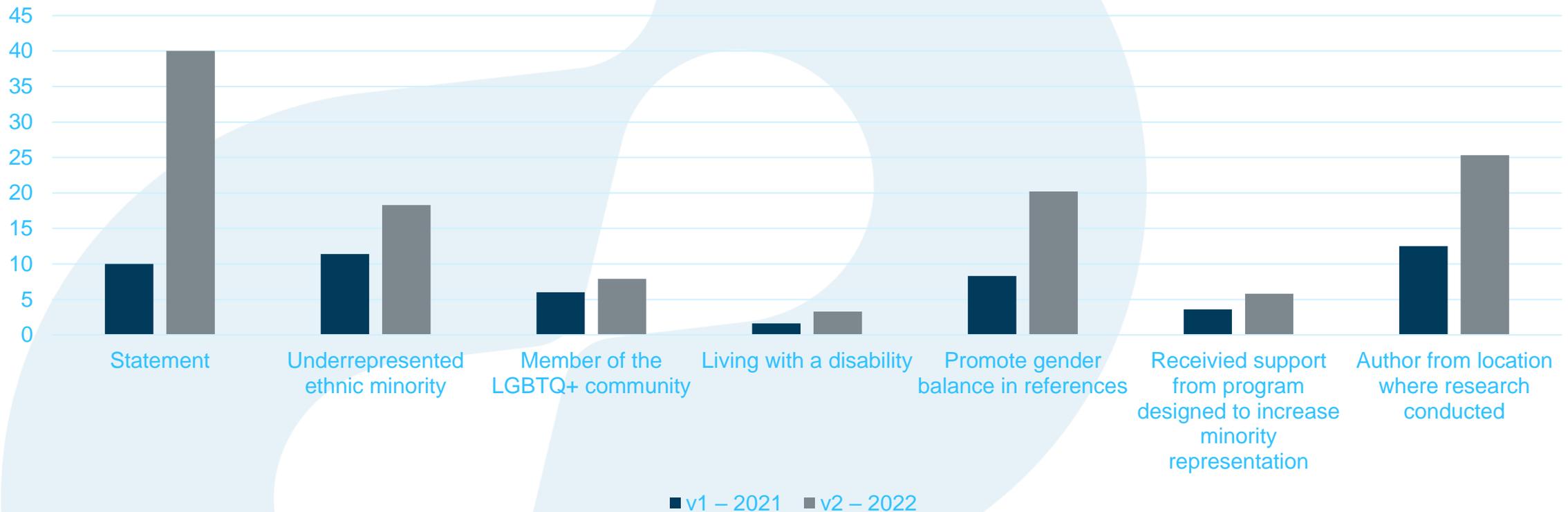
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# Inclusion & Diversity Statement

- 40% of authors now include I&D Statement
- Growth in author groups answering "yes" to questions about underrepresented groups

# Inclusion & Diversity Statement

Percent Increases from v1 to v2 of Inclusion and Diversity Form



# Inclusion & Diversity Statement

“We hope that this initiative continues to encourage research teams to reflect on their own diversity and its importance to science. The uptake so far reflects that authors are having these important conversations with their teams, and we’re here to support our authors in this however we can.”

- Benedicte Babayan, PhD  
Scientific Editor, *Neuron*  
Project Co-Lead

“We want to emphasize that recognition of minority status in research is not creating boundaries but increasing equity in a system that can be inherently biased already.”

- Sheba Agarwal-Jans, PhD  
Scientific Editor, *iScience*  
Project Co-Lead

<https://www.cell.com/news-do/inclusion-diversity-statement-2023>

# Update to IFA on Reporting Sex- and Gender-Based Analyses (SGBA)

# Reporting Sex- and Gender-Based Analyses (SGBA)

## Reporting sex- and gender-based analyses (SGBA)

### Reporting guidance

For research involving or pertaining to humans, animals, model organisms, or eukaryotic cells, investigators should integrate sex- and gender-based analyses (SGBA) into their research design according to funder/sponsor requirements and best practices within a field. Authors should address their research's sex and/or gender dimensions in their manuscript. In cases where they cannot, they should discuss this as a limitation to their research's generalizability. With research involving cells and model organisms, researchers should use the term "sex." With research involving humans, researchers should consider which terms best describe their data (see "definitions" section below). Authors can refer to the [Sex and Gender Equity in Research \(SAGER\) Guidelines](#) and the [SAGER guidelines checklist](#). They offer systematic approaches to the use and editorial review of sex and gender information in study design, data analysis, outcome reporting, and research interpretation. However, there is no single, universally agreed-upon set of guidelines for defining sex and gender or reporting SGBA.

### Definitions

In human research, the term "sex" carries multiple definitions. It often refers to an umbrella term for a set of biological attributes associated with physical and physiological features (e.g., chromosomal genotype, hormonal levels, or internal and external anatomy). It can also signify a sex categorization, most often designated at birth ("sex assigned at birth") based on a newborn's visible external anatomy. The term "gender" generally refers to socially constructed roles, behaviors, and identities of women, men, and gender-diverse people that occur in a historical and cultural context and might vary across societies and over time. Gender influences how people view themselves and each other, how they behave and interact, and how power is distributed in society. Sex and gender are often incorrectly portrayed as binary (female or male; woman or man), concordant, and static. However, these constructs exist along a spectrum that includes additional sex categorizations and gender identities, such as people who are intersex/have differences of sex development (DSD) or identify as non-binary. In any given person, sex and gender might not align, and both can change. Sex and gender are not entirely discrete concepts, and their definitions continue to evolve. Biology and society influence both, and many languages do not distinguish between them. Since the terms "sex" and "gender" can be ambiguous, authors should describe the methods they use to gather and report sex- and/or gender-related data (e.g., self or physician report, specific biological attributes, current sex or gender, sex assigned at birth, etc.) and discuss the potential limitations of those methods. This will enhance the research's precision, rigor, and reproducibility and help to avoid ambiguity or conflation of terms and the constructs to which they refer. Authors should use the term "sex assigned at birth" rather than "biological sex," "birth sex," or "natal sex," as it is more accurate and inclusive. When asking about gender and sex, researchers should use a two-step process: (1) ask for gender identity allowing for multiple options and (2) if relevant to the research question, ask for sex assigned at birth. In addition to this defining guidance and the SAGER guidelines, you can find further information about reporting sex and gender in research studies in Elsevier's diversity, equity, and inclusion in publishing author guide available [here](#).

- Updated our Information for Authors across all Cell Press, all Lancet and ~2300 Elsevier journals

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- Describe sex and gender
- Delineate “sex” as in sex-related characteristics from “sex” as a categorization
- Urge authors to consider terms, describe how they operationalize them
- Suggest how to ask about sex and gender

# Define “woman”

X chromosomes, no tallywhacker. It's so simple

Someone who can give birth to a child, a mother, is a woman. Someone who has a uterus is a woman. It doesn't seem that complicated to me.

we are the weaker sex

Females are the sex that have the capacity to bear children and produce eggs...Women have two X chromosomes and are born with a uterus and ovaries.

an adult female of the human species

someone who is biologically a woman

I have more of a traditional view of what a woman is: my wife

A woman is born with two X-chromosomes



# Increasing Accuracy

- Authors write, “Females are nearly twice as likely to develop adverse drug events, some requiring hospitalization, likely due to sex differences in drug pharmacokinetics. This suggests that a better understanding of basic biological differences is key for both understanding disease and developing efficacious and safe therapies for all.”
- Problem: Gender norms influence adverse event reporting too! Sex- *and* gender-related differences are therefore *both* relevant.
- Solution: “Females are nearly twice as likely to develop adverse drug events, some requiring hospitalization, likely due to sex differences in drug pharmacokinetics. In addition to biological differences in drug pharmacokinetics, social and cultural norms around reporting adverse events also play a role in these disparities. For example, women were more likely to report adverse events related to drug treatments than men. Thus, it is important to distinguish between sex and gender when considering what effects they might have in adverse event reporting. This suggests that a better understanding of basic biological differences, as well as gendered environmental differences, is key for both understanding disease and developing efficacious and safe therapies for all.”

# Increasing Accuracy

- Authors: “Our study is on prostate cancer. Prostate cancer only affects men.”
- Problem: Prostate cancer also affects transgender women.
- Solution:
  - “Our results might not be generalizable to transgender women who are also at risk for prostate cancer.”

# **STAR Methods Update: Experimental Model And Study Participant Details**

# Experimental Model And Study Participant Details

- *For studies involving human participants, the age/developmental stage, sex, gender, ancestry, race, ethnicity, and socioeconomic status of the participants must be provided.* For sex and gender, researchers should consider which terms best describe their data and should refer to the Information for Authors guide on Reporting Sex- and Gender-Based Analyses for the provided definitional guidance. If there are technical or scientific reasons why the sex and/or gender of the subjects cannot be reported, a statement must be provided to disclose this and the reasons why. Additionally, authors should discuss the absence of sex- and gender-based analyses as a limitation to their research's generalizability.

# Are Researchers Using the Right Terms?

- Ancestry, Race and Ethnicity are different concepts
- **Race** “race refers to one’s identification with a group or identity ascribed on the basis of physical characteristics and skin color”
- **Ethnicity** “captures the common values, cultural norms, and behaviors of people who are linked by shared culture and language”
- **Ancestry** captures the “genetic origin of one’s population”

Source: Borrell LN, Elhawary JR, Fuentes-Afflick E, Witonsky J, Bhakta N, Wu AHB, Bibbins-Domingo K, Rodríguez-Santana JR, Lenoir MA, Gavin JR 3rd, Kittles RA, Zaitlen NA, Wilkes DS, Powe NR, Ziv E, Burchard EG. [Race and Genetic Ancestry in Medicine - A Time for Reckoning with Racism](#). N Engl J Med. 2021 Feb 4;384(5):474-480. doi: 10.1056/NEJMms2029562. Epub 2021 Jan 6. PMID: 33406325; PMCID: PMC8979367.

# Are Researchers Using the Right Terms?

- Race & ethnicity may correlate with genetic ancestry but capture different information
- Race & ethnicity are not proxies for genetic ancestry
- Race & ethnicity are not biological variables
- However, race & ethnicity “capture important epidemiologic information, including social determinants of health such as racism and discrimination, socioeconomic position, and environmental exposures”

## Sources:

- [From Evolutionary History to the Concepts of Race and Ancestry: Shifting Our Perspective in Clinical Research](#)
- [Precision medicine in 2030—seven ways to transform healthcare](#)
- [Structural Racism And Rigorous Models Of Social Inequity](#)
- [Advancing Antiracism, Diversity, Equity, and Inclusion in STEMM Organizations](#)

# Example

- Authors write, “These pathway differences between PTSD cases and controls persisted after adjusting for BMI, age, race/ancestry...”
- Problem: authors only assessed self-reported race, not ancestry
- Solution:
  1. eliminate the “/ancestry” because the authors did not actually assess genetic ancestry and therefore cannot say that the pathway differences persisted when controlling for ancestry
  2. Include in the Limitations section a discussion on how the confounder analysis was limited to self-reported race and that genetic ancestry was not assessed – therefore, the authors cannot be sure that genetic ancestry was not a confounder.

# Inclusive Language Speaker Series



# Inclusive Language Speaker Series

- Launched in 2022
- Goal: bring together researchers with various perspectives on language in science that are needed to make the language of scientific publishing more accurate and inclusive

# Inclusive Language Speaker Series

- Language of sex and gender ✓
- Visual Communication ✓
- Race, ethnicity and ancestry
- Health and disability
- Neurodiversity

# Journal Content



# Journal Content: Collections

## Collections



### Building inclusivity in science

A collection of recommendations for building a more equitable and inclusive scientific community.



### Women in science

A collection focused on the voices and experiences of women in science.



### LGBTQ+ in science

A collection focused on experiences and issues connected to the LGBTQ+ communities.



### Black in science

A collection of voices and perspectives on being Black in science.

## Trends Voices

Amplifying research and perspectives on important topics to drive science forward.

Cell Press Inclusion & Diversity page: <https://www.cell.com/diversity>

## Science Has a Racism Problem

We are the editors of a science journal, committed to and disseminating exciting work across the biological sciences. We are 13 scientists. Not one of us is Black. Underrepresentation of Black scientists goes beyond our team—to our reviewers, and advisory board. And we are not alone to divert blame, to point out that the journal is a member of the scientific establishment, to quote statistics. But the epidemic of denial of the integral role that each and every member of our society plays in supporting the status quo is actively fighting it that has allowed overt and systemic flourish, crippling the lives and livelihoods of Black and including Black scientists.

Science has a racism problem.

Look to the history of human genetics, a field that used repeatedly as scientific rationale for the definition of “races” and to support inherent inequalities. Proponents use the alleles we carry as reason to declare priority, as if expression of a lactase gene has bearing on humanity. Race is not genetic.

Look to the exploitation of Black research subjects edge the sheer volume of past and current scientific made possible by cells stolen decades ago from Lacks, a Black woman with cancer. Remember the syphilis study that intentionally withheld appropriate to hundreds of Black men. Think about the issues of ownership, and of medical ethics and do not our shared role of race in these violations.

Look to the extreme disparity in the genetic and clinical bases scientists have built, with the overwhelming data from white Americans of European descent and increasing death of understanding of health and disease in individuals. Read statistics about morbidity and mortality in hospitals around the country, highlighted by the pandemic—ask why Black women are five times more likely than white women to die during pregnancy, or why Black women are twice as likely to die as white babies born in the health has never been the priority.

Science has a racism problem. And it is not limited to discoveries and their attendant usage. The scientific method, scientific education, and the metrics used to define success have a racism problem as well.

Black Americans face a mountain of challenges butures of systemic structural racism and the United States history of slavery and racial oppression. Educational opportunity, mentorship and representation, and our ingrained, unconscious attitudes all play a role. The gatekeeping in academia, industry, and scientific organizations was designed to correct for centuries of compounded discrimination and oppression. It is time for renovation.

We urge our community members who have the power to enact change to do so. Hiring committees, educators

## Equitable access to reproductive care

In early May 2022, a leaked draft decision indicated that it was poised to be overturned. It was followed, we have seen here in the US. While the Court’s decision into stark focus the countercultural abortion as a federal right. The nations when it comes to maternal health. The consequences in the US, and its effects will be felt for generations.

Safe access to abortion controlling childbearing age live in countries where abortion, although legal, is a significant contributor to the burden of disease. It is a significant contributor to the burden of disease. It is a significant contributor to the burden of disease. It is a significant contributor to the burden of disease.

Global inequities in reproductive health care. The toxic contributions of racial and ethnic disparities to the burden of disease. The toxic contributions of racial and ethnic disparities to the burden of disease. The toxic contributions of racial and ethnic disparities to the burden of disease.

Sadly, states that tend to have higher rates of maternal and infant mortality. They already placed significant restrictions on reproductive freedom. They already placed significant restrictions on reproductive freedom. They already placed significant restrictions on reproductive freedom.

Many of the arguments made for restricting women’s health do not stand up to scrutiny. They have shown that abortions are safe, effective, and do not harm mental health. They have shown that abortions are safe, effective, and do not harm mental health. They have shown that abortions are safe, effective, and do not harm mental health.

## Unequal reproductive health care

The US Supreme Court’s decision to overturn *Roe v. Wade* represents an appalling setback for reproductive health care. It represents an appalling setback for reproductive health care. It represents an appalling setback for reproductive health care. It represents an appalling setback for reproductive health care. It represents an appalling setback for reproductive health care.

## Juneteenth in STEM: Remember, recognize, reflect

Three years ago, following the high-profile murders of George Floyd and other Black Americans, we published an editorial titled, “Science has a racism problem.” In it, we noted the contributions to systemic structural racism in science: the United States’ history of slavery and racial oppression; a lack of educational opportunities, mentorship, and representation; and the gatekeeping systems in academia, industry, and scientific organizations. We lamented that it had taken these murders for us to speak up about a problem we had long known existed. And we committed to using our platform to amplify the voices of Black scientists.

Today, we could write our June 2020 editorial again. Why does science have a racism problem?

In this issue of *Cell*, we present several pieces from more than 70 Black scientists who shed light on the answers to this question within the context of what Juneteenth means in science, technology, engineering, mathematics, and medicine (STEMM).

In 2021, US President Joe Biden proclaimed June 19th as “Juneteenth Day of Observance.” A national holiday, Juneteenth commemorates the freeing of the last large group of enslaved individuals in the United States as the American Civil War ended in 1865, more than 2 years after the Emancipation Proclamation declared free the slaves residing in states that had seceded from the Union.

Juneteenth, as you will read in this issue, is a day that celebrates freedom and signals hope. Yet, it is also a day that reminds us of an ugly American legacy: racism. Almost as soon as the United States ended chattel slavery, it replaced it with an institutional racism that persists to this day, preventing Black Americans from attaining true equality. And this is so within STEM too.

Juneteenth is a day of reflection and recognition. It reminds us as a society of where we have been, where we should be, what we must do to get there, and that while words matter, action is needed.

You will find several pieces inside this issue on the impact of diversity, equity, and inclusion (DEI) initiatives in STEM and why we still need them. You will also read about the infrastructural work required to truly dismantle science’s systemic racism. As our authors remind us, these steps are necessary because science functions best when it springs from a fount of diversity sourced from the entire human experience. And this is true for educational program admissions; lab, research, or editorial team composition; conference speaker or peer reviewer selection; and promotion and leadership choices. As Dr. Hannah Valentine asks us in her Q&A: “How can we have good science with only part of the story?” Systematically excluding groups or causing talented people to leave science because of a lack of support and sense of belonging results in science and society suffering.

The myth persists that increasing inclusion and diversity comes at the expense of decreasing scientific quality. In truth,

centering our science on equity, maximizing its diversity, and making it more inclusive all lead to more accurate and precise science. Equity in science is not a political issue; it’s good science. To center on equity, however, we must first recognize and acknowledge whom our scientific and institutional processes harm and how. Revealing these patterns is the first step toward changing them.

In this issue’s commentary, 51 Black scientists describe the unique and numerous challenges Black scientists face and elucidate the steps institutions and organizations must take to recruit, protect, develop, and foster them toward an equitable scientific future. And, critically, they remind us that the real remaining barrier preventing science from embodying Juneteenth’s ideals is one entirely under our control. The key to removing it lies in the answer to this question: do we have the will to, once and for all, take the actions required to end science’s racism problem?

In two separate Q&As, Drs. Hannah Valentine and E. Dale Abel discuss their research, the importance of mentoring to retain and develop the next generation of Black scientific leaders, what Juneteenth means to them, how racism has impacted them, and the importance of equitable science. They remind us of the critical roles biomedical journals play in centering issues of equity, diversity, and inclusion in STEM. As Dr. Abel puts it, “By openly discussing issues of equity and diversity, scientific journals are an important channel to put the many conversations about the importance of diversity in the life sciences front and center and thereby advance values of which all of us should be aware.”

When *Cell* first unveiled its Leading Edge section in 2005, we introduced several formats “to highlight the social, political, economic, and ethical contexts that surround biomedical research worldwide.” In the United States, since January 2021, 44 states have taken measures that would restrict teachings on racism and sexism, and 18 states have imposed such restrictions. Thus, the role of biomedical journals in highlighting impediments to scientific progress—such as racism, patriarchy, lack of inclusion and diversity, and systemic inequities—has never been more crucial. As we said in 2020, we alone cannot solve science’s racism problem, but we can certainly front and center it.

This issue also includes a Story from Dr. Elsie Calderón-Spencer, a DEI researcher and STEM educator. She recounts 25 years of witnessing academic DEI initiatives and the tightrope Black and indigenous people of color must walk to survive in academia as they fight assimilation while trying to fit into spaces that were not created for and do not support them.

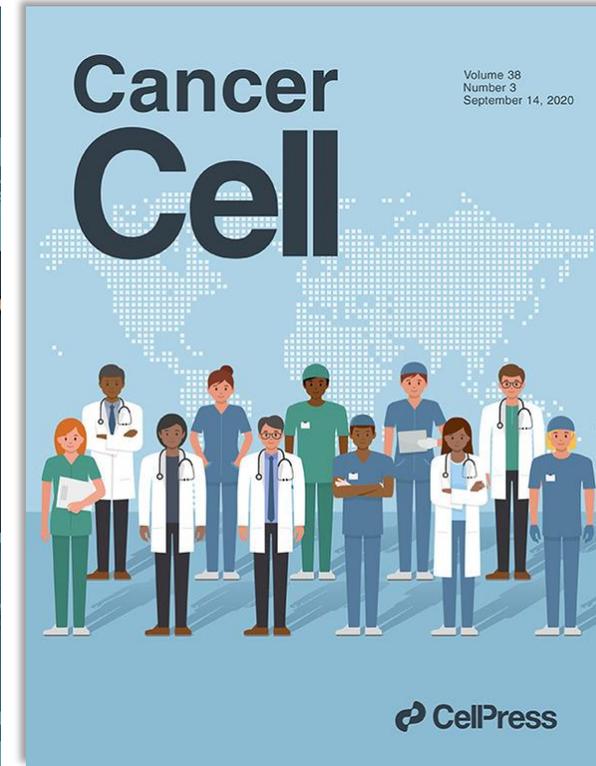
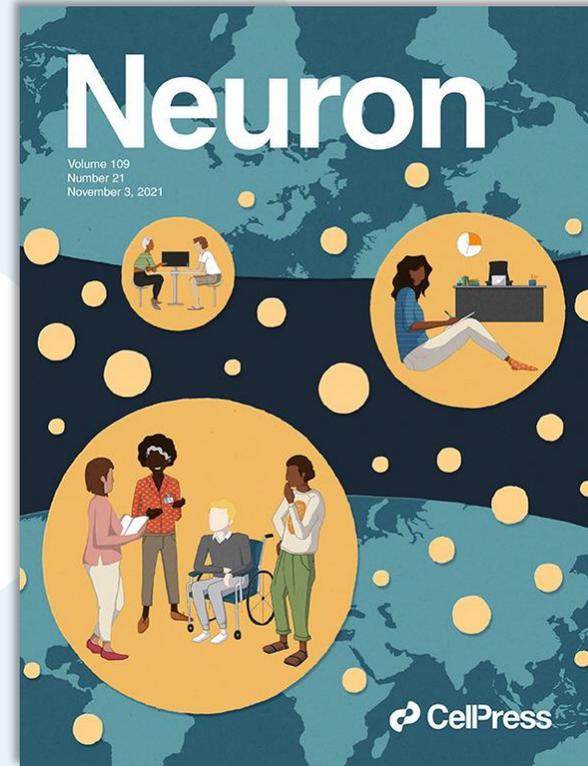
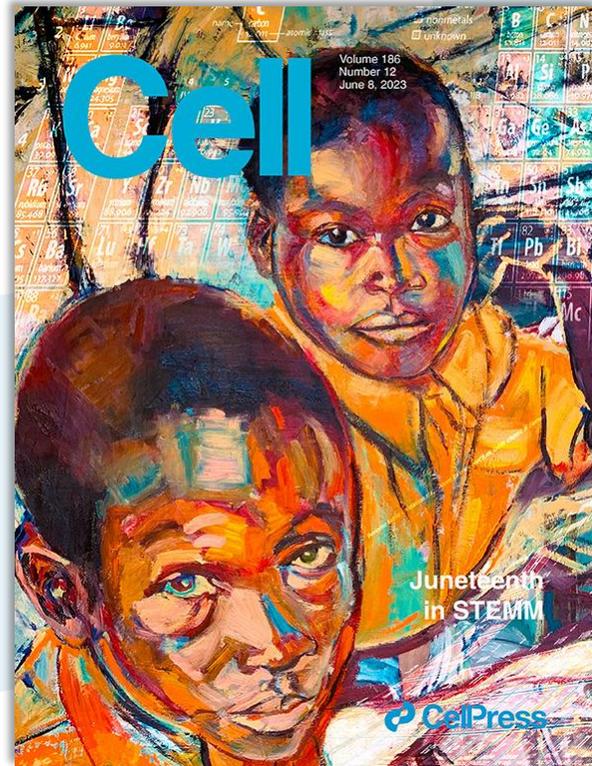
In our two Voices pieces, we asked Black scientists these questions: “What does Juneteenth mean in STEM?” and “How do DEI initiatives impact science and medicine, and why do we still need them?” Their answers spotlight several themes, including how vital representation (seeing one’s self) is to a sense of belonging; how DEI initiatives without impact create a spinning

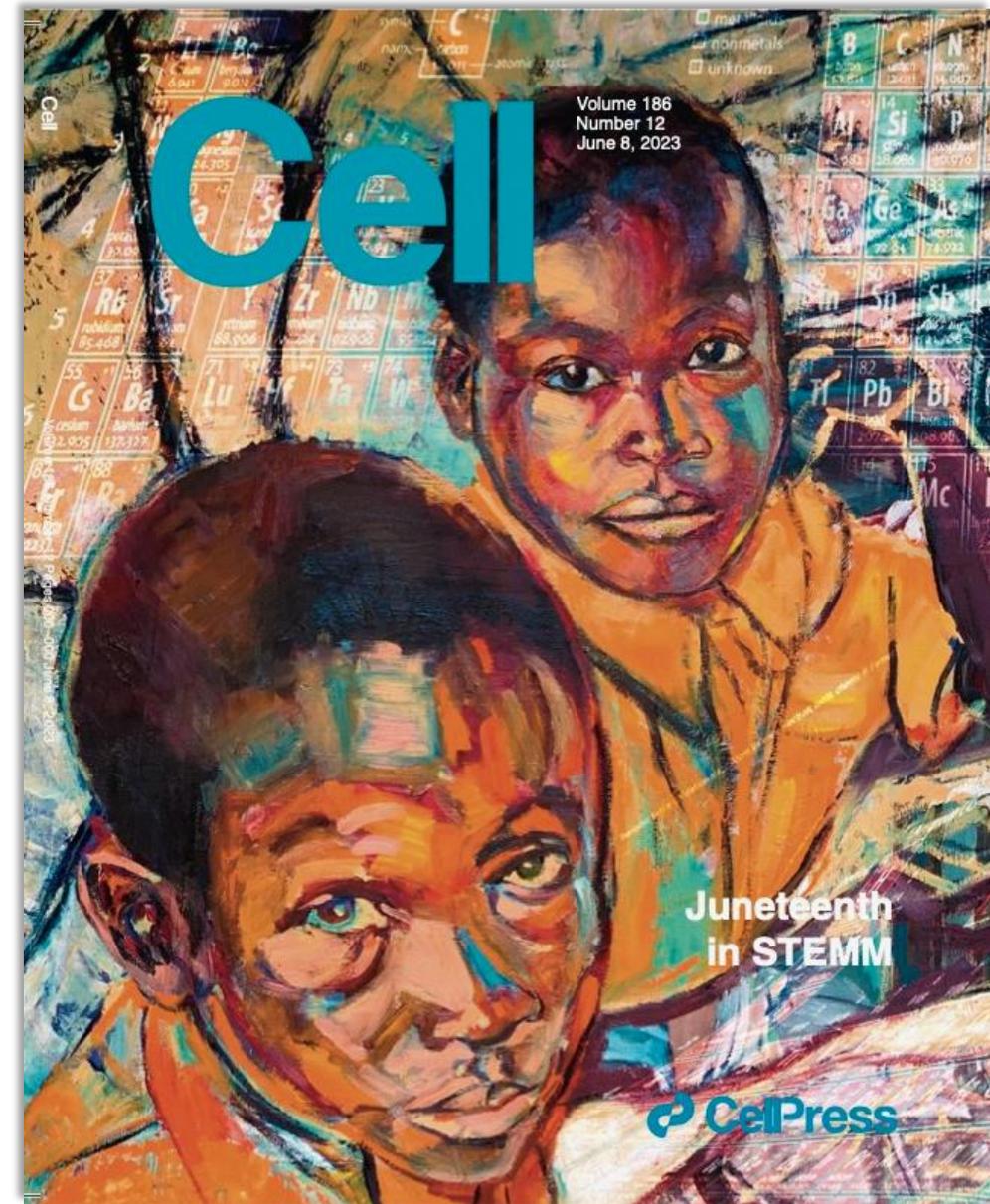
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## Editorials

# Special Issues!





# Juneteenth in STEMM



Commentary  
Juneteenth and the

Alfred Mays,<sup>1,62</sup>  
Avery August,<sup>5,63</sup>  
Chantell S. Evans,  
Cornelius Taabaz  
Dexter Lee,<sup>24,64</sup>  
Florentine U.N. R  
Jamaine Davis,<sup>28</sup>

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<sup>29</sup>Perleman School

We are 52 Black  
Black scientists  
history in science

Introduction  
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American Civil War  
pation Proclamation

Q&A  
Hannah A. Valantine  
of Medicine

Dr. Hannah Valantine  
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Biography

Hannah A. Valantine,  
professor of medicine  
University School of M  
Advisor, Team Scienc  
distinction from the University  
indies School of Medicine;  
DPhil from Oxford University  
Scholar; trained in internal  
Northwestern University, w  
chief resident; and trained  
nology at Beth Israel Deacon  
Center, Harvard Medical Sch  
was Chair of the Department  
and Director of the Fraternal  
gles Diabetes Research Cent  
University of Iowa, holding the  
Abboud Chair of Medicine, a  
B. Stokes III Chair in Diabete  
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past President of the Endoc

Could you tell us ab  
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Q&A  
E. Dale Abel  
Medicine, U

Dr. E. Dale Abel is recog  
metabolic and cardiova  
sion in science. In this  
critical role mentorship

Biography

Dale Abel is the William S. A  
guished Professor and Chair  
of Medicine, David Geffen Sc  
icine and UCLA Health. He gr  
distinction from the University  
indies School of Medicine;  
DPhil from Oxford University  
Scholar; trained in internal  
Northwestern University, w  
chief resident; and trained  
nology at Beth Israel Deacon  
Center, Harvard Medical Sch  
was Chair of the Department  
and Director of the Fraternal  
gles Diabetes Research Cent  
University of Iowa, holding the  
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Stories  
Awakening:  
in STEMM

Elsie Calderón-Spencer  
For over 25 years, Dr. r  
tives in STEMM. She s  
woman navigating ST  
Black and Indigenous

Biography

As a higher education ad  
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Voices  
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Heather K. Beasley  
Vanderbilt University



Alexandra L. Clark  
Department of Psychology, T  
Texas at Austin

Voices  
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and why do we

The number of diversity, ec  
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scientists what impact they  
and describe how DEI initi



Imail Ahmed  
NYU School of Medicine



Alissa Armstrong  
University of South Carolina, Columbia

Editorial  
Juneteenth in STEMM: Remember, recognize, reflect

Three years ago, following the high-profile murders of George Floyd and other Black Americans, we published an editorial titled, "Science has a racism problem." In it, we noted the contributions to systemic structural racism in science: the United States' history of slavery and racial oppression; a lack of educational opportunities, mentorship, and representation; and the gatekeeping systems in academia, industry, and scientific organizations. We lamented that it had taken these murders for us to speak up about a problem we had long known existed. And we committed to using our platform to amplify the voices of Black scientists.

Today, we could write our June 2020 editorial again. Why does science have a racism problem? In this issue of Cell, we present several pieces from more than 70 Black scientists who shed light on the answers to this question within the context of what Juneteenth means in science, technology, engineering, mathematics, and medicine (STEMM).

In 2021, US President Joe Biden proclaimed June 19th as "Juneteenth Day of Observance." A national holiday, Juneteenth commemorates the freeing of the last large group of enslaved individuals in the United States as the American Civil War ended in 1865, more than 2 years after the Emancipation Proclamation declared free the slaves residing in states that had seceded from the Union.

Juneteenth, as you will read in this issue, is a day that celebrates freedom and signals hope. Yet, it is also a day that reminds us of an ugly American legacy: racism. Almost as soon as the United States ended chattel slavery, it replaced it with an institutional racism that persists to this day, preventing Black Americans from attaining true equality. And this is so within STEMM too.

Juneteenth is a day of reflection and recognition. It reminds us as a society of where we have been, where we should be, what we must do to get there, and that while words matter, action is needed.

You will find several pieces inside this issue on the impact of diversity, equity, and inclusion (DEI) initiatives in STEMM and why we still need them. You will also read about the infrastructural work required to truly dismantle science's systemic racism. As our authors remind us, these steps are necessary because science functions best when it springs from a fount of diversity sourced from the entire human experience. And this is true for educational program admissions; lab, research, or editorial team composition; conference speaker or peer reviewer selection; and promotion and leadership choices. As Dr. Hannah Valantine asks us in her Q&A: "How can we have good science with only part of the story?" Systematically excluding groups or causing talented people to leave science because of a lack of support and sense of belonging results in science and society suffering.

The myth persists that increasing inclusion and diversity comes at the expense of decreasing scientific quality. In truth,

# Juneteenth in STEMM

- 72 Black scientists across 7 articles

# Conclusion

strive. I acknowledge our struggle and I acknowledge our strength. While we will continue to be the epitome of excellence, I also invite us to rest, to rejoice in our triumphs.

There is something magical that happens when we gather, when we support each other, when we love each other. This is my nod, this is my hug. Join me in celebration of our excellence, our magic. We deserve to be here. We've got this. We rise. Still, we rise.

#### The illusion of progress

We tout objectivity as the cornerstone of science. Not surprisingly, many scientists claim that their commitment to objectivity produces equitable research spaces. However, this is not the experience of scholars from historically excluded groups. There are lessons we can learn from non-scientific spaces about the gap between claims and indicators of progress. Juneteenth began as a celebration of Black liberation in Texas and spread across Black communities living in the United States. Juneteenth's standardization as a federal holiday reflects both a recognition of the centrality of Black people to U.S. history and the sterilization of a holiday for mass consumption. This formalization did nothing to improve the lives of Black people, and instead provided a guise of justice.

Although celebrations like Juneteenth seemingly exist beyond science's purview, we can learn from this case study. Evolution dictates that nothing exists outside of sociality for humans. Our socio-cultural identities and the milieu in which they develop do not cease to exist when we cross the threshold into professional spaces. When science grants scholars the space to bring their entire identities to their research, we will move closer to progress. There is evidence that increased diversity enriches science. However, formal diversity and inclusion initiatives do little to address the unwillingness of scholars to acknowledge that their conceptualization of rigorous inquiry centers maleness and whiteness. Just as we must remain current on literature and methods, it is imperative that we evolve our understanding of excellence to move beyond shallow illusions of progress.

#### Juneteenth reminds Black professionals to rest and recharge

For those of us who are Black in STEM, Juneteenth encourages us to reflect on (1) the day that the enslavement of Black Americans officially ended; (2) the legacy of anti-Black racism in America; and (3) anti-Black racism in our own professional settings. For those of us who have to navigate the world and our professions as a Black person, fully aware of both our invisibility and hypervisibility, reflecting on what Juneteenth means for STEM is personal.

As such, when I think about what Juneteenth means for STEM, I think about all of the extra work, often times invisible, that Black professionals must do to be taken seriously in our professions and to create a more equitable future for ourselves and others. So, for me, Juneteenth is a reminder that Black professionals must take care of ourselves and practice radical self-care, even when institutions would ask us to give even more of ourselves. We have to take care of our bodies, minds, and spirits so that we can continue to do the work which we are passionate about, but that undeniably comes with scrutiny, discrimination, and often being "the first" Black person to have accomplishments in our field. Juneteenth is a day to rest, to care for ourselves and our communities. It's a day to recharge for the future hurdles in STEM we will surely face. Rest helps us control our own legacies, while also creating new paths for colleagues, students, and trainees.



Robin G. Nelson  
School of Human Evolution and Social Change,  
Arizona State University



Kelsha Ray  
McGovern Medical School, UT Health Houston

# Re-Centering Rigorous Inquiry

When science grants scholars the space to bring their entire identities to their research, we will move closer to progress. There is evidence that increased diversity enriches science. However, formal diversity and inclusion initiatives do little to address the unwillingness of scholars to acknowledge that their conceptualization of rigorous inquiry centers maleness and whiteness. Just as we must remain current on literature and methods, it is imperative that we evolve our understanding of excellence to move beyond shallow illusions of progress.

What Does Juneteenth Mean in STEM?

Robin G. Nelson

Beasley HK, Clark AL, Garner A, et al. What does Juneteenth mean in STEM?. *Cell*. 2023;186(12):2501-2505. doi:10.1016/j.cell.2023.05.011

## Voices

## What does Juneteenth mean in STEM?

Juneteenth commemorates the freeing of the last large group of enslaved people in 1865 at the end of the American Civil War. We asked several Black scientists what Juneteenth means to them in the context of science, technology, engineering, mathematics, and medicine (STEMM)? Their answers run the emotional gamut.



Heather K. Beasley  
Vanderbilt University

#### Juneteenth truths and scientific freedom

The celebration of Juneteenth, for many Black Americans, encourages freedom, unity, and newly found knowledge of our American history. As history would write it, Juneteenth, or June 19th, 1865, revealed freedom to slaves 2 ½ years after the Emancipation Proclamation. Juneteenth, therefore, demonstrates that for many African Americans, although their freedom existed, it was unknown to them. Juneteenth significantly impacts the STEMM community, as our approach to knowledge requires uncovering truths. In science, we often find ourselves discovering new findings or truths that we did not previously know or even sometimes hoped might be true. These unknown truths therefore represent an important theme in STEMM, as gaining knowledge by uncovering the truth is the key to discoveries that lead to new scientific developments.

Opportunities, as I have had in STEMM, would be unthinkable without freedom, especially scholastically. Growing up in Montgomery, Alabama, and having a family that actively participated in moments of significant change in American civil rights, I am proud that their influence helped me reach my full academic potential. Juneteenth reflects the opportunity to occupy spaces from which we were previously excluded. I am grateful for those in STEMM that have used their freedom to make way for future generations to learn and grow, achieve previously inaccessible degrees, and become scientists that affect change in our communities. History is filled with many questions, and so is science. Juneteenth represents discovery, truth, and opportunity for Black scientists like me.



Alexandra L. Clark  
Department of Psychology, The University of  
Texas at Austin

#### Freedom in hostile landscapes

As a Black professor in Texas, I am often faced with two distinct realities—one that suggests academic freedom is to be celebrated and another that reminds me that it is not yet guaranteed. There is a growing tension between the scholarship of health disparities and the legislature within our state. My scientific work requires us to recognize that while emancipation was an important first step, we have not yet lived up to the absolute equality that the Juneteenth decree promised Black Americans. Threats to tenure and the dismantling of diversity, equity, and inclusion initiatives are clear attempts to deter a scientific discipline centered on promoting change. The parallels between the reconstruction-era struggles of Black Americans and the present-day context are clear—this is a hostile landscape. However, the answer is not to flee, but to remember that progress, while slow, is undeniable. Black Texans full of hope once spread the word about freedom and opportunity—even if they had to carefully do so in muted voices while in the presence of certain company—and banded together to create safe havens of support following the downfall of the confederacy. When I teach my students that structural racism and discrimination are fundamental drivers of disease, I see a generation intent on addressing these harsh realities. I also recognize that the voices of color I frequently reference in my lessons at the university inspire hope, a revolutionary sentiment that a select group of politicians cannot truly stifle.

# Threats to EDI

Threats to tenure and the dismantling of diversity, equity, and inclusion initiatives are clear attempts to **deter a scientific discipline centered on promoting change**. The parallels between the reconstruction-era struggles of Black Americans and the present-day context are clear—this is a hostile landscape. However, the answer is not to flee, but to remember that progress, while slow, is undeniable.

What Does Juneteenth Mean in STEMM?

Alexandra L. Clark

Beasley HK, Clark AL, Garner A, et al. What does Juneteenth mean in STEMM?. *Cell*. 2023;186(12):2501-2505. doi:10.1016/j.cell.2023.05.011

## Q&amp;A

**E. Dale Abel, MBBS, DPhil, David Geffen School of Medicine, University of California, Los Angeles**

Dr. E. Dale Abel is recognized for his significant contributions to our understanding of the interface between metabolic and cardiovascular disease. He is a leader, mentor, and champion of equity, diversity, and inclusion in science. In this interview with *Cell*, he discusses his research, what Juneteenth means to him, and the critical role mentorship plays in securing our scientific future.

**Biography**

Dale Abel is the William S. Adams Distinguished Professor and Chair, Department of Medicine, David Geffen School of Medicine and UCLA Health. He graduated with distinction from the University of the West Indies School of Medicine; obtained a DPhil from Oxford University as a Rhodes Scholar; trained in internal medicine at Northwestern University, where he was chief resident; and trained in endocrinology at Beth Israel Deaconess Medical Center, Harvard Medical School. Dr. Abel was Chair of the Department of Medicine and Director of the Fraternal Order of Eagles Diabetes Research Center at the University of Iowa, holding the François M. Abboud Chair of Medicine, and the John B. Stokes III Chair in Diabetes Research.

Dr. Abel has made seminal contributions to the role of altered mitochondrial metabolism in the pathophysiology of diabetic cardiomyopathy, and his laboratory has elucidated critical roles for insulin and IGF1 signaling in cardiac health and disease. His recent work has focused on mitochondrial mechanisms that mediate inter-organ crosstalk in the pathophysiology of insulin resistance and mitochondrial pathways linking metabolism with increased risk for atherothrombosis. Dr. Abel's laboratory has been funded by the National Institutes of Health, the American Heart Association, the American Diabetes Association, and the Juvenile Diabetes Research Foundation. He is an elected member of the American Association of Physicians (AAP), the American Society for Clinical Investigation (ASCI), the American Clinical and Climatological Association (ACCA), the National Academy of Medicine (NAM), and the National Academy of Sciences (NAS). Dr. Abel is past President of the Endocrine Society



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**Could you tell us about your research?**

My lab works at the interface of metabolism and cardiovascular disease. We have characterized pleiotropic roles of cardiomyocyte insulin signaling in the regulation of mitochondrial energetics, autophagy, and cardiac hypertrophy. We have described the contribution of altered cardiac glucose and pyruvate metabolism as contributors to heart failure pathophysiology. We have studied contributions of ROS-mediated mitochondrial uncoupling in diabetes-related heart failure and have elucidated contributions of glucose transport and mitochondrial dynamics to platelet biology and activation in pathophysiologic states such as diabetes. We are also interested in mechanisms by which mitochondrial

dysfunction in one organ may regulate systemic metabolic homeostasis via release of novel circulating factors.

**What are the challenges or exciting questions in your field?**

In a complex organ like the heart, there are intricate interactions between distinct cell types such as fibroblasts, immune cells, endothelial cells, and cardiomyocytes in the pathophysiology of heart disease. Our understanding of altered metabolic signaling in these compartments and how crosstalk occurs between them remains incomplete. The ability to determine metabolic flux at single-cell resolution could represent a significant advance that could move the field forward in a manner analogous to the way in which single-cell RNA-seq continues to provide new insights. At the organismal level, it is becoming increasingly clear that inter-tissue communication via circulating mediators that include classical and novel hormones and signaling via cellular components such as extracellular vesicles will continue to shape our understanding of metabolic homeostasis. Ultimately, we hope that some of these advances will inform strategies to prevent and reverse the adverse cardiovascular consequences of cardiometabolic disease.

**How do you find inspiration, particularly during challenging times?**

I find inspiration in a world view grounded in my upbringing and personal beliefs that my sojourn on this planet is not solely to advance my own interests but to ensure that I leave it a better place than I found it. Thus, I derive gratification by investing in others who should ultimately succeed me and persuading them that selfishness is ultimately counterproductive. As such,

# Need for Continued EDI Work

When we stop addressing barriers to advancement and professional development, and the importance of ensuring that we pay attention to increasing diversity of those who populate the pipeline, we could witness a gradual but sustained reduction in creativity and innovation.

E. Dale Abel, MBBS, DPhil, David Ge...

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Abel ED. E. Dale Abel, MBBS, DPhil, David Geffen School of Medicine, University of California, Los Angeles. *Cell*. 2023;186(12):2527-2530. doi:10.1016/j.cell.2023.04.040

## Editorial

## Juneteenth in STEM: Remember, recognize, reflect

Three years ago, following the high-profile murders of George Floyd and other Black Americans, we published an editorial titled, "Science has a racism problem." In it, we noted the contributions to systemic structural racism in science: the United States' history of slavery and racial oppression; a lack of educational opportunities, mentorship, and representation; and the gatekeeping systems in academia, industry, and scientific organizations. We lamented that it had taken these murders for us to speak up about a problem we had long known existed. And we committed to using our platform to amplify the voices of Black scientists.

Today, we could write our June 2020 editorial again. Why does science have a racism problem?

In this issue of *Cell*, we present several pieces from more than 70 Black scientists who shed light on the answers to this question within the context of what Juneteenth means in science, technology, engineering, mathematics, and medicine (STEMM).

In 2021, US President Joe Biden proclaimed June 19th as "Juneteenth Day of Observance." A national holiday, Juneteenth commemorates the freeing of the last large group of enslaved individuals in the United States as the American Civil War ended in 1865, more than 2 years after the Emancipation Proclamation declared free the slaves residing in states that had seceded from the Union.

Juneteenth, as you will read in this issue, is a day that celebrates freedom and signals hope. Yet, it is also a day that reminds us of an ugly American legacy: racism. Almost as soon as the United States ended chattel slavery, it replaced it with an institutional racism that persists to this day, preventing Black Americans from attaining true equality. And this is so within STEM too.

Juneteenth is a day of reflection and recognition. It reminds us as a society of where we have been, where we should be, what we must do to get there, and that while words matter, action is needed.

You will find several pieces inside this issue on the impact of diversity, equity, and inclusion (DEI) initiatives in STEM and why we still need them. You will also read about the infrastructural work required to truly dismantle science's systemic racism. As our authors remind us, these steps are necessary because science functions best when it springs from a fount of diversity sourced from the entire human experience. And this is true for educational program admissions; lab, research, or editorial team composition; conference speaker or peer reviewer selection; and promotion and leadership choices. As Dr. Hannah Valentine asks us in her Q&A: "How can we have good science with only part of the story?" Systematically excluding groups or causing talented people to leave science because of a lack of support and sense of belonging results in science and society suffering.

The myth persists that increasing inclusion and diversity comes at the expense of decreasing scientific quality. In truth,

centering our science on equity, maximizing its diversity, and making it more inclusive all lead to more accurate and precise science. Equity in science is not a political issue; it's good science. To center on equity, however, we must first recognize and acknowledge whom our scientific and institutional processes harm and how. Revealing these patterns is the first step toward changing them.

In this issue's commentary, 51 Black scientists describe the unique and numerous challenges Black scientists face and elucidate the steps institutions and organizations must take to recruit, protect, develop, and foster them toward an equitable scientific future. And, critically, they remind us that the real remaining barrier preventing science from embodying Juneteenth's ideals is one entirely under our control. The key to removing it lies in the answer to this question: do we have the will to, once and for all, take the actions required to end science's racism problem?

In two separate Q&As, Drs. Hannah Valentine and E. Dale Abel discuss their research, the importance of mentoring to retain and develop the next generation of Black scientific leaders, what Juneteenth means to them, how racism has impacted them, and the importance of equitable science. They remind us of the critical roles biomedical journals play in centering issues of equity, diversity, and inclusion in STEM. As Dr. Abel puts it, "By openly discussing issues of equity and diversity, scientific journals are an important channel to put the many conversations about the importance of diversity in the life sciences front and center and thereby advance values of which all of us should be aware."

When *Cell* first unveiled its Leading Edge section in 2005, we introduced several formats "to highlight the social, political, economic, and ethical contexts that surround biomedical research worldwide." In the United States, since January 2021, 44 states have taken measures that would restrict teachings on racism and sexism, and 18 states have imposed such restrictions. Thus, the role of biomedical journals in highlighting impediments to scientific progress—such as racism, patriarchy, lack of inclusion and diversity, and systemic inequities—has never been more crucial. As we said in 2020, we alone cannot solve science's racism problem, but we can certainly front and center it.

This issue also includes a Story from Dr. Elsie Calderón-Spencer, a DEI researcher and STEM educator. She recounts 25 years of witnessing academic DEI initiatives and the tightrope Black and indigenous people of color must walk to survive in academia as they fight assimilation while trying to fit into spaces that were not created for and do not support them.

In our two Voices pieces, we asked Black scientists these questions: "What does Juneteenth mean in STEM?" and "How do DEI initiatives impact science and medicine, and why do we still need them?" Their answers spotlight several themes, including how vital representation (seeing one's self) is to a sense of belonging; how DEI initiatives without impact create a spinning

# The Diversity Tax

The burden of advocating for change should not rest with those who could most benefit from it. However, as this issue demonstrates, it too often does, a reflection of the diversity tax. The people and entities least directly impacted by oppressive structures often hold disproportionate power to effectuate the change needed within them.

Juneteenth in STEM: Remember, reco...

The Cell editorial team



Cell editorial team. Juneteenth in STEM: Remember, recognize, reflect. *Cell*. 2023;186(12):2493-2494. doi:10.1016/j.cell.2023.05.017

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**Thank you!**

**Questions?**



**CellPress**  
Science that inspires

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