

EDITORIAL

Everyone must be able to breathe: a plan to support diversity and inclusion in respiratory physiology

 **Melissa L. Bates**^{1,2,3} and **Karla K. V. Haack**⁴

¹Department of Health and Human Physiology, University of Iowa, Iowa City, Iowa; ²Department of Internal Medicine, University of Iowa, Iowa City, Iowa; ³Stead Family Department of Pediatrics, Holden Comprehensive Cancer Center, University of Iowa, Iowa City, Iowa; and ⁴Department of Ecology, Evolution, and Organismal Biology, Kennesaw State University, Kennesaw, Georgia

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INTRODUCTION FROM THE CHAIR OF THE AMERICAN PHYSIOLOGICAL SOCIETY'S RESPIRATION SECTION

As a scientist, I (M.L.B.) have spent the past 20 years thinking about how we breathe as a basic physiological process. Now, I feel overwhelming grief when I hear “I can't breathe” as a refrain from our fellow black Americans. The topic that many of us have devoted our lives to studying is a basic human right that has been denied so casually to some, and this saddens and frustrates me. Some scientists pride themselves on conducting their research as an apolitical endeavor. We cannot, and indeed we must not, check our morals at the doors of our laboratories.

Many members of our society are active in addressing these injustices. I believe we can take additional steps to improve our inclusiveness and address unmet needs in physiology. I invited Dr. Karla Haack, Chair of the APS Diversity and Inclusion Committee and member of the Neural Control and Autonomic Regulation Section of APS, to coauthor this editorial. Dr. Haack and I collaboratively offer long-term steps that we can take as physiologists, personally as scientists, and, as the APS Respiration Section, to address health disparities and support our underrepresented colleagues professionally. We offer this plan together as a road map for us all to consider applying. Addressing these issues is essential to promote the best science, address important health disparities, and secure the future of our section within the APS.

STEPS THAT WE CAN TAKE AS PHYSIOLOGISTS

First and foremost, we are physiologists and are well-poised to address scientific questions that impact communities of color. Underrepresented minorities, particularly black Americans, have historically had poorer health outcomes, compared with white Americans. Most recently, we have learned that black adults and children have higher SARS-CoV-2 (i.e., COVID-19) infection rates and poor outcomes (2, 4). Black Americans also have higher incidences of and worse outcomes from air pollution exposure (6), hypertension (25), heart and lung transplantation (1, 14, 17), asthma (18, 27), sleep-disordered breathing (3, 20, 24), prematurity (15, 16), and blood and lung cancer (5, 26), among others. Contributors to poor outcomes are multifactorial and include socioeconomic status,

poor access to treatment, and physiological differences. As physiologists, we can address these important questions in the same way that we have begun to rigorously address sex as a biological variable. We can collaborate with our colleagues who work in these areas. We can advocate for funding for these questions and make it a priority to review grants and manuscripts in health disparities. We also must guarantee that all physiologists have an opportunity to engage in groundbreaking research. We can take care to cite our minority colleagues appropriately (7), be vigilant in identifying implicit bias (19), and remain open to policy initiatives that are aimed at addressing the insidious racial disparities in grant and manuscript review (8).

STEPS THAT WE CAN TAKE PERSONALLY

Educate yourself. We do not all see the world through one singular lens. We carry our own life experiences into our interactions with others. This is not a weakness as long as we recognize and embrace our differences. We should also acknowledge that this lens is often fallible, and the perceptions that we have of others can be inaccurate, or worse. The NIH has more information on sociocultural factors including implicit bias, stereotype threat (when someone is in a situation for which there is a negative stereotype for a group/s that they belong), and more [see (17a)]. Reflect on these sociocultural phenomena. Have you experienced any of these? Have you unknowingly inflicted them on someone else? If so, how can you do better next time? Continually asking yourself these questions will keep you calibrated.

While not a perfect instrument, we can also explore our own implicit biases. We hope that awareness brings motivation to be more inclusive in our words and actions [resources available (12)]. It is time to stop viewing racism as only explicit acts of villainy, and to recognize that we all exist within a system that reinforces racial bias (22). Books like Richard Rothstein's *The Color of Law* (21) and Dr. Ibram X. Kendi's *How To Be an Anti-Racist* (13) comprehensively explore how government policies have created our current system of inequality and how to be active in your refusal to perpetuate this inequality, respectively.

Be an advocate and contribute to local action plans: Be willing to ask yourself difficult questions about the environment around you. How many people of color are in your lab? Department? College? On your APS committees? Are you

Correspondence: M. L. Bates (melissa-bates@uiowa.edu); K. K. V. Haack (khaack@kennesaw.edu).

advocating for these individuals by asking them to be participants in scientific sessions, and not simply contacting them for additional volunteer work? Have you communicated your willingness to act as a sponsor? Are you advocating for their promotion and tenure? For major APS awards? Are you actively seeking new hires that contribute to and prioritize a diverse and inclusive workplace? For some of us, advocating for persons of color may require us to think a bit further than our immediate circle of colleagues. Being involved as a sponsor of a Minority Travel Fellow awardee, and with our underrepresented awardees and Porter fellows at our section banquet, are examples of how we can widen our own networks, as well. Underrepresented minority scientists are often burdened by service activities (9, 23). Listen carefully and also be willing to contribute to the hard work required to develop local action plans at your institution.

Encourage inclusivity: Perhaps you recall the #actuallyliving-scientist campaign from a few years ago. You are an actual, living scientist. You may be the first scientist someone meets, so make it a positive experience. Someone inspired each of us to be a scientist, so pay it forward. Make your labs and classrooms inclusive and safe spaces where all trainees feel visible and valued. Commit to discussing in lab meetings at least quarterly what you can do as a lab to promote inclusivity.

Vote: Decisions at local, state, and national levels can either reinforce inequalities or attempt to fix them. Remember that some Americans have had their votes suppressed or otherwise hindered. Never take yours for granted.

STEPS THAT WE CAN TAKE AS A SECTION

Make a representative from the Diversity and Inclusion Committee a full member of our steering committee. More than 10 years ago, we changed our section's Standard Operating Procedures so that the representative to the Trainee Advisory Committee could participate as a voting member of our steering committee. This gave our trainees a voice, allowed them to share their concerns with leaders in the section, and provided a pathway to future leadership. Regular input from our trainee members led to truly meaningful initiatives including the development of the Marilyn Merker Memorial Trainees Highlights Breakfast and Endowment Fund, and expansion of our trainee-focused research recognition awards program. Our section has successfully trailblazed in our support of trainees, and other sections have followed our lead. In this same spirit, we must continue this trend. Giving a voice and a seat at the table is not just our responsibility, it is also to the benefit of the section. In collaboration with the Chair of the Diversity and Inclusion Committee, we will change our Standard Operating Procedures to make a representative of the Diversity and Inclusion Committee a formal member of the Steering Committee. As Chair of the section, a priority for me (M.L.B.) is to carry this initiative to completion within the next year.

Improve the pipeline to leadership. Active participation in APS leadership is a documented career catalyst. The personal connections and networks built through society participation stimulate new collaborations, bring recognition through awards for service and leadership, and contribute to building a national and international reputation that is important for career advancement. The Society is also in need of a diverse leadership to contribute an abundant pool of creative ideas that navigate

APS to an even more successful future. Service at the national level often begins with service at the section level. We must, therefore, encourage the nomination of underrepresented members at the section level and commit to promoting them to national-level leadership. At the section level, we will involve everyone interested in serving our community. The Diversity and Inclusion Committee is currently working on an initiative to make the application process for section steering committees and APS-wide committees more transparent so that interested applicants know the exact steps they should take to become more involved.

Become more involved in the Martin Frank Diversity Travel Awards Program and Porter Fellowship. A recent study published in the *Proceedings of the National Academy of Sciences of the United States of America (PNAS)* reported that while graduate students from underrepresented backgrounds perform more innovative work, they are less likely to have their work recognized (11). We have the power to improve the visibility of the work of our underrepresented members. The Martin Frank Diversity Travel Awards Program offers opportunities for underrepresented, early career members to attend and network at the APS's annual meeting. We must ensure that this program reaches its fullest potential by committing to engage with these outstanding scholars at the annual meeting, and then throughout their careers. As more senior faculty, many of us recognize our roles as mentors. Some junior faculty may fail to recognize that they have also achieved a level of success that the next generation of scientists aspires to. Any section member who is a level of training more advanced than the awardee can serve as a sponsor for a Martin Frank Diversity Travel Fellow.

Importantly, faculty also serve as sponsors by writing letters of support, nominating trainees for awards, promoting their work, making connections with colleagues, and serving as collaborators and consultants. Sponsorship is a critical component in career advancement. For underrepresented physiologists to have the same access to sponsorship, members of the Respiration Section must commit to getting to know them, getting to know their science, and committing to their advancement. Each member of our section should attend the Martin Frank Diversity Fellow activities at our annual meeting and convey their willingness to sponsor the careers of these physiologists.

The annual section banquet is a highlight of our annual meeting. It is a time to reconnect with friends, to recognize the achievements of our members, and celebrate our award winners. We will commit to recognizing the achievements of our underrepresented members, and expressing our appreciation for the opportunity to celebrate with them.

Commit to platforms that promote inclusive participation. The #MeToo movement has raised difficult questions about sex/gender inclusion in physiology. The APS has developed a Code of Conduct as a result. It outlines clear expectations and recourses for all. When we hear colleagues asking whether panels are gender diverse while planning our annual meeting, it warms our souls. In the same way, we must now actively, continuously, and systematically ask whether our panels are inclusive of underrepresented scientists. Be bold enough to ask your colleagues about the diversity makeup of the session chairs and speakers before submitting a proposal for consideration. The Respiration Section will ask our Joint Program

Committee representatives to report on the composition of every panel. We must also take care that our award nominee lists are diverse, including for our most prestigious section awards. By soliciting Comroe Lecture nominees through the APS awards website, we can encourage a more diverse nomination pool. We will solicit participation from all members to represent physiology publicly. This includes serving as an APS media contact and participating in journal-sponsored initiatives, including podcasts and webinars. We want to make visible the faces of all types of physiologists. The section will also engage with journal editors, program committee chairs, and nominating committee chairs to develop concrete plans for inclusion.

CONCLUSIONS

Diversity is good for the APS's scientific mission and it is good for the individual scientists who contribute to that mission. By no means is this plan intended to provide a complete solution to problems that are rooted in centuries of inequality. These conversations have been going on for some time, and yet we have not made adequate progress. It is time to take effective actions and establish policies and cultures that have real impacts far into the future. Progress is long overdue, and we must quicken our pace in addressing the inequalities that have not spared physiology. We remain committed to hearing every voice of every member and to learning how we can better support our underrepresented members. The APS is our scientific home and we remain hopeful that the members of our section are equally committed to making everyone feel safe and welcome here. I (M.L.B.) pledge to implement the components of this plan within the Respiration Section and to continue to reinforce these values within our membership. We hope that other sections will also adopt and expand this plan and we remain committed to working together.

Thank you for considering this plan.

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