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RE: Request for Information (RFI): Strategies to Enhance Diversity in the Physician-Scientist Workforce (NOT-OD-16-027)

The Association of American Medical Colleges (AAMC) appreciates this opportunity to comment on ways to optimize funding policies and strategies to enhance diversity in the physician-scientist workforce, and thereby create a more vibrant and effective biomedical research system. The AAMC is a not-for-profit association representing all 145 accredited U.S. medical schools, nearly 400 major teaching hospitals and health systems, and more than 80 academic and scientific societies. Through these institutions and organizations, the AAMC represents 148,000 faculty members, 83,000 medical students, 115,000 resident physicians, and thousands of graduate students and post-doctoral trainees in the biomedical sciences. We have encouraged our member institutions to respond, and their comments may provide more detail and granularity on programs, policies and their impacts. The Association's comments here focus on general themes related to enhancing diversity in the physician-scientist workforce, organized according to three components provided in the RFI.

The AAMC agrees with the NIH Director's Advisory Committee Physician-Scientist Workforce (PSW) Working Group that clinical scientists are essential in bringing critical insights to basic research and are a vital link between discovery and translation of research findings into clinical application and improved care. If the nation is to strengthen and revitalize physician-scientist careers, particularly for new generations, it must take care to attract talented and dedicated individuals from across our entire population. The NIH has done an excellent job in identifying the pathways and various impediments to physician-scientist careers, to which we add several additional observations.

RFI Component 1: Educational Pathways

The AAMC agrees with the NIH on the key social and environmental factors affecting diversity of the physician-scientist pipeline. We strongly support early and repeated exposure to science and discovery across the educational continuum, including via virtual opportunities, to allow adequate time to develop the foundational knowledge and skills to pursue careers in science and research.

For both the K-12 and post-secondary educational factors that the NIH has identified, an additional factor is early access to physician scientists as role models and mentors. We should encourage academic medical centers, current physician scientists, and physician scientists in training to engage in

career counseling of local youth with an interest in this career path and particularly those in underrepresented groups. Early engagement would provide opportunities to consider the physician-scientist career path.

Specific to post-secondary educational factors, AAMC also recommends implementing the following strategies and practices to improve the physician-scientist workforce:

- **Opportunities for peer-to-peer training:** Institutions could support affinity groups which foster community building and encourage peer support among new and more senior students.
- **Access to pre-health guidance counselors:** Provide opportunities for individual advising and access to institution-wide or nation-wide resources for students on how to prepare for and apply to professional and graduate school (see AAMC resources on PhD in Biomedical Science (www.aamc.org/phd) and MD-PhD Dual Degree Training (www.aamc.org/mdphd).
- **Flexibility in curriculum and funding support:** Programs should, for example, allow students to pursue internships, study abroad, or other opportunities without perceived negative connotations or penalties.
- **Institutional commitment:** An intentional institutional structure and commitment to increase and support faculty and student diversity can help facilitate a more inclusive culture and climate. This environment is beneficial for the entire student and faculty bodies and is particularly beneficial for underrepresented groups. Another critical component is systemic, institutional, or regional approaches to promote engagement with alumni and local professionals who work in STEM and health professions.
- **Structured exposure to science:** As during K-12 years, post-secondary training opportunities should be available for students to have more structured exposure to science methodologies, experiences in the lab, or community-based research. A framework could be developed by NIH's National Research Mentoring Network.

To mitigate the above mentioned environment and social factors, we would like to suggest the following:

1. NIH might create or support a hub of resources with examples of existing pipeline strategies that have a demonstrated record of meaningfully impacting diversity in medical education and research training. Programs that make the physician-scientist pathway more accessible to potential applicants from underrepresented backgrounds should be acknowledged and sustainably funded. Innovative mentored research training programs developed by institutions receiving funding support through the NIH BUILD (Building Infrastructure Leading to Diversity) awards could provide the community with much needed strategies to attract, engage, and retain students from diverse backgrounds in the physician-scientist workforce.
2. NIH should consider supporting study to evaluate existing programs offering exposure to science that will assess factors such as level of education, length and/or continuity of exposure, types of mentors, etc. to help determine what experiences have the most positive effects on students' career decisions.
3. Mechanisms should also be considered to incentivize or reimburse the academic medical and STEM communities and physician-scientists who are engaged in mentoring and career counseling of local youth with an interest in this career path.

4. University career services should inform trainees about the broad spectrum of careers available in the medical and research profession. Resources could be developed on a regional or national level.

RFI Component 2: Institutional and Programmatic Characteristics of Degree Programs

In addition to those factors identified by NIH, other factors that may influence training pathway choices of individuals from underrepresented groups include:

- **Admission considerations.** Admission committees must be trained to identify and separately consider circumstances beyond a student's control that may impact admissions criteria (see AAMC resources on Holistic Admissions (www.aamc.org/initiatives/holisticreview)
- **Pressures of medical school training and time to completion:** The burden of intense training and possible prolongation of training time may draw medical students away from research activities. A structured continuum of guidance and mentorship (often beneficial if provided by multiple mentors) during medical school years helps students to stay interested and involved in research. A higher percentage of students from underrepresented groups may be more sensitive to increased financial burdens related to research training and increased time to degree completion.

As a constituent observed, "the physician-scientist is a different breed than either the physician or the scientist." Physician scientists who are broadly trained, extremely talented, and are capable of performing in multiple domains often find themselves evaluated by success metrics that apply to one or the other domains that they inhabit (for example, grant awards and papers vs. clinical productivity). Such metrics, although critically important within a particular area, may discourage breadth or fail to capture and value the diverse roles that physician-scientists serve within academic health centers.

Therefore, we would like NIH to consider the following:

1. The scientific community, including the NIH, the National Academies of Medicine, and other stakeholders should develop a broader definition of a "physician scientist" that includes diverse characteristics and identifies unique evaluation metrics. To recognize a variety of needs and requirements for support, such a definition and metrics should be inclusive enough to capture the whole spectrum of clinical and scholarly activities. Physician scientists should be evaluated depending upon their role(s) within our medical, research, educational, and administrative structures. While these considerations apply to all physician scientists, we believe that research program residents, clinical fellows, and junior faculty from underrepresented groups might experience disadvantages more acutely when they join the research or clinical workforce, if they cannot be properly recognized for their own unique backgrounds and breadth of experience.
2. NIH should continue to support and encourage institutions in creating centralized institutional oversight for physician-scientist training and professional development, from undergraduate and graduate medical education to junior faculty. (The Clinical and Translational Science Awards Consortia are dedicated in part to such training.) This will allow for coordinated mentorship throughout the continuum of training and wide implementation of practices that promote inclusiveness of a medical "learning community." For example, medical students may be paired with PhD students and postdocs in the lab or jointly take didactic courses.

3. The network of mentors established by NIH's National Research Mentoring Network (NRMN) should include physician scientists from diverse backgrounds and provide training opportunities for these mentors. NRMN mentors should lead in developing and disseminating best practices in mentoring of clinical scientists.
4. During medical school training, research opportunities are usually provided in the form of summer programs, mostly between the M1 and M2 years. Funding to support structured exposure and opportunities for mentored research experiences during the M3 and M4 years may also be beneficial for maintaining a trainee's interest in research and preparing them for research residency tracks. Trainees also benefit from presenting their research at national scientific conferences, and resources should exist for students' travel, as well as for planning networking and mentoring sessions.

RFI Component 3: Career Decision Points and Pathways

For those students from disadvantaged backgrounds, there are unique challenges that may discourage them from pursuing the physician-scientist career path. The most obvious is the financial disincentive. With a restrictive funding climate, declining clinical reimbursements to support research, and the demands of clinical responsibilities, those who come to their first job with sizable debt may feel that they have only one chance to get funded (to pursue their research) before they have to give in to financial pressures and become clinical providers. We commend NIH for creating dedicated mechanisms to support new investigators that are separate from the traditional competitive grant funding cycles. To truly value the unique contributions of the physician scientist to improving health, now and in the future, those willing to commit to careers in care and discovery, at least in the early stages, should be supported for longer funding cycles (with milestone-based holistic assessments). Institutions must accept that new physician scientists' value cannot be boxed into the sum of reimbursements for physician services (RVUs) and an indirect costs from a research grant. To leverage the broad-based clinical and research training investment made, evaluation of their contributions should account for the specific challenges inherent in a multidimensional career.

In addition to the factors that NIH has identified, the AAMC recommends:

- **Strong institutional commitment to culture change:** Diversity and minority faculty retention issues must be a permanent part of an organization's mission and strategic plan. Organization-wide goals must include a commitment to recruiting and supporting trainees and faculty from all backgrounds. These goals must be supported by policies and practices that reposition diversity and inclusion as drivers of institutional excellence. According to a recent study by Urban Universities for HEALTH, institutions with faculty cluster hiring programs reported that faculty hired through clusters have been as productive, if not more so, than faculty hired through traditional methods and demonstrated improvements in faculty retention. Additionally, cultural competency training and training to reduce unconscious bias should be mandatory for participating in hiring committees, and should be encouraged and accessible for other faculty, trainees, and staff.
- **Choice of clinical settings to practice:**
  Physicians from underrepresented groups may feel a strong obligation to work in clinical settings with predominately minority patients. In cases when the desired patient population is found at a community hospital, federally qualified health center, or private group practice,

flexibility in primary clinical responsibilities and access to a research infrastructure within a collaborating academic medical center should be provided to physician scientists.

- Wellness and resilience:
  Burnout among U.S. physicians is on the rise. According to a recent study, more than half of physicians said that work is less meaningful, and they feel emotionally exhausted and ineffective. It is well known that resilience and wellness are strongly linked to retention and job satisfaction. To promote resilience and change the culture across all developmental phases of physician and scientists, some institutions are offering skills, attitude, and behavioral training.

- **Professional development opportunities:** Organized junior faculty development programs have positive effects on faculty retention and may facilitate success in academic medicine. Effective mentorship is a key component in the retention of junior clinician-scientists at academic health centers and the biomedical workforce at large. A holistic institutional mentoring program that provides senior, peer, and staff mentorship to support junior faculty members engaged in clinical and translational science and supported by a combination of institutional and federal resources creates a multilevel mentoring matrix. Programs should include essential management and leadership skills necessary for principal investigators. At one medical school, such a program helped the school to increase inclusion of women and underrepresented minorities in the institutional research enterprise.

The AAMC also proposes:

1. NIH should encourage institutions to consider evaluation criteria and support a national study of all variances of pathways to become a physician-scientist. As these pathways are evaluated, the successes need to be widely communicated and peer-to-peer learning should be encouraged.
2. Strong support is needed for research residency programs similar to those in internal medicine and pediatrics: American Board of Internal Medicine Research Pathway, Accelerated Research Pathway in Pediatrics and Integrated Research Pathway in Pediatrics. Outcomes from currently existing programs should be analyzed with successful practices widely disseminated.

Additional Comments:

In assessing the complexities of factors that shape diversity in the physician-scientist workforce, the AAMC makes these additional observations:

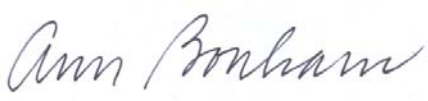
- All project proposals or applications for funding to support interventions to enhance the diversity in PSW must include a detailed evaluation plan to assess the impact of the program.
- If the NIH launches any pilot programs to increase diversity, the program structure and approach should be easily adaptable and reproducible, and awardees should be required to analyze and disseminate program outcomes, so that successful strategies could be used by numerous institutions.
- The extent to which institutions are addressing unconscious bias and using evidence-based practices in their hiring processes (e.g., cluster hiring) vary between institutions. There is also a void in data evaluating effectiveness of unconscious bias training for search committees. Useful practices and effective elements of unconscious bias and cultural competency training programs, should be widely disseminated, and resources to support implementation could be helpful.

- National metrics for tracking retention and success of physician-scientists from underrepresented groups should be developed and implemented.

In closing, AAMC acknowledges the contributions and encouragement for physician scientists from the NIH and other federal agencies. We especially recognize the important role of academic societies who are uniquely positioned to nurture and guide aspiring students and clinical researchers throughout their careers by sponsoring outreach, mentoring, networking, and professional development activities at their scientific meetings and through their members in the academic medical centers.

The AAMC is again grateful for this opportunity to comment, and we look forward to working with the NIH as it considers policies and strategies to improve diversity in the physician-scientist workforce. Please feel free to contact me, or my colleague Irena Tartakovsky, Manager, Science Policy (itartakovsky@aamc.org) or Malika Fair, Director of Public Health Initiatives (mfair@aamc.org) with any questions about these comments.

Sincerely,



Ann C. Bonham, Ph.D.
Chief Scientific Officer

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RFI Component 1: Educational Pathways

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3. *University of Michigan—Global REACH* http://globalreach.med.umich.edu/about/metrics
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RFI Component 2: Institutional and Programmatic Characteristics of Degree Programs

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RFI Component 3: Career Decision Points and Pathways

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Additional Comments:

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