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## Improving the Diversity Climate in Academic Medicine: Faculty Perceptions as a Catalyst for Institutional Change

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### Abstract

**Purpose**—To assess perceptions of underrepresented minority (URM) and majority faculty physicians regarding an institution's diversity climate, and to identify potential improvement strategies.

**Method**—The authors conducted a cross-sectional survey of tenure-track physicians at the Johns Hopkins University School of Medicine from June 1, 2004 to September 30, 2005; they measured faculty perceptions of bias in department/division operational activities, professional satisfaction, career networking, mentorship, and intentions to stay in academia, and they examined associations between race/ethnicity and faculty perceptions using multivariate logistic regression.

**Results**—Among 703 eligible faculty, 352 (50.1%) returned surveys. Fewer than one third of respondents reported experiences of bias in department/division activities; however, URM faculty were less likely than majority faculty to believe faculty recruitment is unbiased (21.1% versus 50.6%,  $P = .006$ ). A minority of respondents were satisfied with institutional support for professional development. URM faculty were nearly four times less likely than majority faculty to report

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All authors were members of the council at the time of this study. Drs. Price and Cooper had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

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satisfaction with racial/ethnic diversity (12% versus 47.1%,  $P = .001$ ) and three times less likely to believe networking included minorities (9.3% versus 32.6%,  $P = .014$ ). There were no racial/ethnic differences in the quality of mentorship. More than 80% of respondents believed they would be in academic medicine in five years. However, URM faculty were less likely to report they would be at their current institution in five years (42.6% versus 70.5%,  $P = .004$ ).

**Conclusions**—Perceptions of the institution’s diversity climate were poor for most physician faculty and were worse for URM faculty, highlighting the need for more transparent and diversity-sensitive recruitment, promotion, and networking policies/practices.

Increasing the diversity of the physician workforce has gained national attention as one of many potential solutions to problems of racial and social class disparities in access to health care. Ethnic minority physicians are more likely to practice in underserved areas and to care for patients of their own race/ethnic group, as well as low-income patients, Medicaid-insured and uninsured patients, and patients with poorer health status.<sup>1–3</sup> Ethnic minority patients have been shown to experience higher levels of participation and satisfaction with ethnic minority physicians.<sup>4–5</sup> Thus, a more diverse health care workforce could enhance the health care experiences of ethnic minority patients. Diversity in the health care workforce could also improve the experiences of health care professionals. Moreover, ethnic diversity in medical school and other higher education settings is associated with better educational experiences for all students.<sup>6</sup>

Ethnic minority faculty serve as important role models and mentors to trainees. However, compared with whites, they are less likely to be satisfied with their jobs and more likely to leave academic medicine.<sup>7</sup> Ethnic minority and foreign-born physicians have reported harassment, bias, and discrimination by their colleagues in academic settings.<sup>8–10</sup> Moreover, ethnic minority faculty experience of bias is related to their decreased career satisfaction compared with white faculty.<sup>9</sup> Ethnic disparities in promotion in academic medicine have been documented nationwide.<sup>11</sup>

The Institute of Medicine recommends that health professions educational institutions improve their diversity climate<sup>12</sup>; however, strategies for enhancing organizational change in academic medicine have not been clearly defined. The Johns Hopkins University School of Medicine (JHUSOM) and its affiliated medical institutions (Johns Hopkins Medicine [JHM]) recognize the importance of institutional diversity climate and are taking necessary steps to improve it. The JHM vision of diversity is that “by 2020, JHM will be recognized by peer institutions, patients and the community as a leader for diversity and inclusion in medicine” (personal communication, Drs. Janice Clements and George Dover, co-chairs, JHU Committee for Faculty Recruitment and Diversity, February 1, 2008). The Committee for Faculty Recruitment and Diversity was chartered in 2004 to lead this change throughout the institution. Similarly, in 2002, the Department of Medicine (DOM) chartered its Diversity Council to strategically address recruitment and retention of individuals from underrepresented racial and ethnic groups into the department.<sup>13</sup> The charter includes reviewing policies and procedures and informal practices across the department that affect recruitment and retention and establishes a data-based approach to analyzing the department’s diversity profile and informing improvement of the institution’s diversity climate.

Most published studies addressing diversity in academic medicine focus on gender-related issues or diversity in undergraduate and graduate medical education. Gender disparities in faculty promotion, compensation, and perceptions of harassment and discrimination are well documented.<sup>14–16</sup> Ethnic minority medical students have reported experiencing bias, discrimination, and stereotyping, which results in feelings of isolation, depression, and burnout.<sup>17–18</sup> Moreover, an institutional climate of diversity influences ethnic minority students’ choices of residency programs.<sup>19</sup> To our knowledge, relatively few studies have addressed

racial/ethnic differences in faculty experiences in academic medicine,<sup>7–10</sup> and despite the demonstrated importance of collegial networks to professional success and well-being in physicians,<sup>20–22</sup> few studies have examined the experiences of diverse faculty with regard to networking opportunities. The DOM Diversity Council, therefore, sponsored a qualitative study of the diversity climate at JHUSOM in which academic physicians reported that visible dimensions of cultural diversity (race/ethnicity, gender, foreign-born status) provoked cumulative advantages or disadvantages in the workplace, including disparities in recruitment, subtle manifestations of bias in the promotion process, and differential access to career networking opportunities.<sup>23</sup> Ethnic minority faculty anecdotally described structural barriers (e.g., poor retention efforts by persons in leadership positions) that hindered their success and professional satisfaction after recruitment.

In light of this background, this study's objectives are to (1) quantify perceptions of bias or career obstacles, satisfaction with diversity and support for professional development, and inclusiveness of career networks among physician faculty in the JHUSOM, (2) compare the perceptions of ethnic minority and majority physicians, and (3) identify areas in which targeted strategies might improve the diversity climate in the DOM and JHUSOM.

## Method

### Study design and subjects

The investigators were members of the DOM Diversity Council during the time of the study. We conducted a cross-sectional study of tenure-track physicians at the JHUSOM from June 1, 2004, to September 30, 2005. To be eligible, physicians had to be in the tenure track for at least one year. To identify physicians, we used the Office of the Registrar's roster, which included each faculty member's name, clinical department, rank, gender, self-reported race/ethnicity, and graduate degrees. We limited the study to physicians to focus on faculty who provide and/or teach clinical care in addition to performing research and other educational activities. From a total of 2,098 medical school faculty, we used medical graduate degrees (MD, DO, MBBS) to identify physicians, and then we targeted 16 clinical departments that had eligible underrepresented minority (URM) faculty (anesthesia, dermatology, obstetrics–gynecology, internal medicine, neurology, neurosurgery, oncology, ophthalmology, orthopedic, otolaryngology, physical medicine and rehabilitation, pathology, pediatrics, psychiatry, general surgery, urology). We based our definition of URM (black, Hispanic [Mexican American and mainland Puerto Rican], and Native American) on the Association of American Medical College's definition published before June 2003.<sup>24</sup> We identified 913 potentially eligible physicians, of whom 809 were ethnic majorities in medicine (white/Asian) and 104 were URMs. Two hundred ten of these faculty were ineligible because they had left the institution, did not have retrievable mailing addresses, or were not tenured/tenure-track physicians employed fully by the institution. The Johns Hopkins institutional review board approved this study.

### Recruitment and data collection

Between June 2004 and September 2005, we mailed self-administered questionnaires to 703 potentially eligible faculty at their work addresses. Each mailing contained (1) a cover letter using the DOM chairman's letterhead and including signatures from two lead study investigators (E.G.P., L.A.C.), the former chair of the DOM's Diversity Council and coinvestigator (G.W.), and the DOM's chairman, (2) instruction sheet, (3) consent form, (4) questionnaire, and (5) self-addressed return envelope. To improve survey response rates, we employed several strategies. We mailed questionnaires to targeted faculty up to four times. With the second mailing, we supplemented recruitment with e-mail reminders from the department chairs, dean of the medical school, and Committee on Faculty Recruitment and

Diversity. For the third mailing, we included cover letters from the chairpersons of the departments for which we had lowest response rates. Each cover letter was signed by one chair and sent to faculty within that chairperson's department. We had difficulty recruiting URM faculty; therefore, we also sent these faculty personalized e-mail reminders with the second mailing and used telephone reminders from members of the DOM Diversity Council after the third mailing.

### Questionnaire content

We developed questionnaire items to assess our institution's diversity climate according to Hurtado's framework, which states that an institution's diversity climate is influenced by its historical legacy of inclusion/exclusion of diverse groups, structural diversity (e.g., number of diverse faculty), psychological climate (e.g., perceptions of racial/ethnic tension), and behavioral dimensions (e.g., quality/quantity of interactions across diverse groups).<sup>25</sup> Although our survey addressed structural diversity, psychological climate, and behavioral dimensions, we did not specifically probe faculty regarding their perceptions of the institution's historical legacy of inclusion. Fifteen items elicited respondents' levels of agreement (1 = strongly disagree to 5 = strongly agree) with experiences of bias or obstacles to career success in academics for various department/division activities. Sixteen items elicited respondents' levels of professional satisfaction (1 = very dissatisfied to 5 = very satisfied) with activities relevant to working in academic medicine in general and their institution in particular. We developed questionnaire items on experience of bias and professional satisfaction by including domains of department/division activities previously identified for a gender diversity survey.<sup>14</sup> We added questions that addressed select themes generated by our qualitative study and used findings from that study to guide wording of our questionnaire items.<sup>23</sup> Four items elicited faculty beliefs (1 = strongly disagree to 5 = strongly agree) about career networking inclusiveness in the institution. Two items asked respondents to indicate whether they would be in academic medicine or at their institution five years from now (yes/no). Twenty-eight items addressed the presence or absence of various aspects of mentorship experiences (yes/no). Sixteen items elicited demographic information (gender, race/ethnicity, birthplace, academic rank, career path, specialty, years at Johns Hopkins and in academic medicine, number of peer-reviewed publications, and number of grants as principal investigator or coinvestigator). We did not assess international medical graduate status. We piloted the questionnaire with five physician faculty with expertise in faculty development and racial/ethnic issues in health care (two URM women, one URM man, two majority men) to establish content validity. The total number of questionnaire items analyzed and presented in this study was reduced on the basis of factor analysis, as described in the Statistical analysis section below.

### Study variables

The main independent variable, self-identified race/ethnicity, was categorized as URM (black, not Hispanic; Hispanic; Native American), majority (white, not Hispanic; Asian), and other. The questionnaire did not define Hispanic, which was left subject to the respondents' interpretation. Respondents self-identified as *other* were excluded from analysis. Covariates of interest included gender, academic rank, specialty (DOM versus other), and birth status (U.S.-born versus foreign-born). Academic rank was dichotomized as junior faculty (instructor/assistant professor) or senior faculty (associate professor/professor).

Main outcome variables were (1) perceptions of bias or obstacles to professional success, (2) reports of professional satisfaction, (3) perceptions of career networking inclusiveness, (4) intentions to remain in academic medicine and at their current institution, and (5) mentorship experiences. We categorized respondents' levels of agreement with statements regarding bias or obstacles to career success in academics for various department/division activities and career

networking opportunities as agree (agree/strongly agree) versus other (neutral/disagree/strongly disagree). Respondents' levels of professional satisfaction were categorized as satisfied (satisfied/very satisfied) versus other (neutral/dissatisfied/strongly dissatisfied). Intentions to remain in academic medicine and at their current institution as well as mentorship experiences were dichotomous variables (yes/no).

### Statistical analysis

We used exploratory factor analysis to eliminate questionnaire items that were not associated with other items or that did not "load" onto a factor. All factors with eigenvalues  $\geq 1.0$  were identified. We then used Varimax rotation to obtain more readily interpretable factors. For experiences of bias or career obstacles, two factors emerged: resource allocation (four items) and department activities (four items). For professional satisfaction, two factors emerged: diversity of colleagues (two items) and internal/external support for professional development (seven items). Career networking inclusiveness contained three items, and future career intentions contained two items. For experience of mentorship, three factors emerged: social issues (two items), career development and promotion (three items), and negotiation skills training (three items). The two items regarding mentorship on social issues were worded similarly ("Do you have a mentor that helps you with personal/social matters?" and "Do any of your mentors advise you on personal/social matters?"). The former question was excluded from analyses.

We explored differences between URM and majority faculty characteristics using chi-square analysis for categorical variables and Student's *t* test or Wilcoxon rank sum test for continuous variables. We used logistic regression to measure presence, strength, and statistical significance of associations between race/ethnicity and our main outcome variables. We used multivariate logistic regression to determine whether race/ethnicity was independently associated with faculty ratings (i.e., not explained by covariates of interest [gender, academic rank, specialty, birth status]). Odds ratios obtained from logistic regression analyses were converted to unadjusted and adjusted percentages. Adjusted percentages (presented in tables) compare the responses of URM versus majority faculty to each survey item while holding all covariates in the model constant at the mean probability of belonging in a particular category (gender, rank, specialty, and birth status) for the overall sample, thus allowing comparisons between two otherwise equivalent faculty, based on data available. To assess whether racial/ethnic differences in intentions to stay in academia or at their current institution were explained by differences in perceptions of bias, satisfaction, networking inclusiveness, mentorship, or number of peer-review publications, we then included as covariates in the regression model those outcome variables for which there were racial/ethnic differences. Finally, to assess whether associations of race/ethnicity with main outcomes differed across respondent subgroups, we performed stratified analyses. We performed formal tests of interaction by including product terms in regression analyses of the entire study sample. All statistical analysis was performed using STATA 8.0 Intercooled (STATA Inc., College Station, Texas).

## Results

### Response rates and participant characteristics

Among 703 eligible faculty (55 URMs; 648 majority), 352 returned surveys (50.1% response rate). A higher proportion of participants compared with nonparticipants were women (113 [32.1%] versus 78 [22.4%]), URMs (30 [8.5%] versus 25, [7.4%]), senior faculty (219 [60.0%] versus 185 [52.4%]), and members of the DOM (115 [32.7%] versus 67 [19.0%]) (all *P* values  $< 0.05$ ). Most study participants were men, Caucasian, senior faculty, members of the DOM, and had worked in academic medicine and at the institution for more than five years. There were no statistically significant differences between URM and majority faculty in gender, rank,

specialty, number of years at Hopkins or in academic medicine, or the number of grants for which the participant was principal investigator or coinvestigator. However, higher proportions of URM faculty were foreign-born and reported having at least one mentor. The median number of publications was lower for URM than for majority faculty (see Table 1).

### Experiences of bias or obstacles to career success

The likelihood of URM and majority faculty reporting experiences of bias in most areas was low. However, only about half of all faculty felt that recruitment and promotion were *unbiased*, and URMs were significantly *less* likely than majority faculty to agree that faculty were recruited to their department in an *unbiased* manner (Table 2).

### Professional satisfaction

Fewer than 50% of URM and majority faculty reported satisfaction with the diversity of their colleagues or with institutional support for professional development. Notwithstanding, URM faculty were nearly four times less likely than their majority peers to report satisfaction with racial/ethnic diversity. There were no differences between URM and majority faculty in satisfaction with proportion of women faculty, social integration at the institution, amount of external grant funding, protected academic time, recognition of clinical or scientific knowledge by colleagues, and networking opportunities within and outside of the institution (Table 2).

### Networking inclusiveness for career advancement

Only about a third of respondents believed that networking was inclusive of ethnic minorities, women, and foreign-born faculty; URM faculty were significantly less likely than majority faculty to feel that networking includes ethnic minorities (Table 2).

### Future career intentions

The probability of URM and majority faculty reporting that they would be in academic medicine five years from now exceeded 80%; however, URM faculty were less likely than their majority peers to report that they would be at their current institution five years from now (42.6% versus 70.5%,  $P < .01$ ) (Table 2). In models that separately adjusted for perceptions of bias in faculty recruitment, satisfaction with racial/ethnic diversity of colleagues, or perceptions of networking inclusiveness, the magnitude and statistical significance of racial differences in faculty intentions to remain at the current institution persisted (41.8% versus 71.0%, 42.5% versus 71.3%, and 42.5% versus 71.3%, respectively; all  $P$  values  $< 0.05$ ). Models adjusting for the presence of a mentor and the number of peer-reviewed publications revealed similar findings (42.6% versus 70.9% and 42.0% versus 71.3%; all  $P$  values  $< 0.05$ ).

### Mentorship experience

Among 352 responders, 205 (58.2%) reported having at least one mentor. Similar proportions of URM and majority faculty reported having a mentor with the same career path (81.8% versus 79.61%), gender (86.4% versus 79%), or country of birth (77.3% versus 80.1%, all  $P > .05$ ). Fewer URM faculty than majority faculty reported having a mentor of the same race/ethnicity (36.4% versus 78.3%,  $P < .01$ ). There were no statistically significant racial/ethnic differences in reports of mentorship experiences (Table 3). Most participants reported that mentors promoted participation in activities that increase their visibility, advised about institutional promotion criteria, and helped them identify and remove career obstacles. However, few participants reported that mentors advised on personal/social matters or taught negotiation skills.

### Gender, rank, specialty, and birth status subgroup effects

Some relationships between perceptions of URM and majority faculty were modified by respondents' gender, faculty rank, specialty, or birth status (Table 4).

**Gender**—URM women were most likely to report biases in the allocation of clinical/nursing support. URM women were also more likely to report satisfaction with their amount of protected academic time than majority women and majority men, but not URM men. URM women were least likely to believe recruitment occurs in an unbiased manner, to believe networking opportunities include ethnic minorities and women, and to report satisfaction with the racial/ethnic diversity of colleagues and their social integration at the institution. Finally, URM men were most likely to report satisfaction with their amount of external funding.

**Faculty rank**—URM junior faculty were most likely to report biases in clinical/nursing support. URM senior faculty were most likely to report satisfaction with networking opportunities *outside* of the institution.

**Specialty**—Majority faculty in non-Medicine departments (non-DOM) were more likely to report satisfaction with the proportion of women faculty in their department.

**Birth status**—Foreign-born URM faculty were most likely to report experiences of bias in faculty appointments to leadership positions and least likely to report that networking opportunities include women.

There were no statistically significant racial/ethnic differences in experiences of mentorship by gender, faculty rank, specialty, or birth status.

### Discussion

This study is one of few to quantitatively characterize racial/ethnic differences in faculty's perceptions of bias, professional satisfaction, mentorship experiences, and future career plans in academic medicine.<sup>7–10</sup> Perceptions of the Johns Hopkins diversity climate were poor for most physician faculty and worse for URM faculty. Our findings support and extend what has been shown in previous work. To our knowledge, this is the first study to illustrate an academic medical institution's formal assessment of its diversity climate to better inform organizational change.

Our findings substantiate the urgent need for the institution to improve its structural diversity (number of diverse faculty). Study participants, regardless of their race/ethnicity, were not satisfied with the racial/ethnic diversity of the faculty, and URM faculty were less satisfied than majority faculty. Efforts to enhance recruitment of diverse faculty could improve the professional experiences and satisfaction of all faculty physicians, regardless of race/ethnicity.

We also found that there were perceptions of bias in faculty recruitment and promotion. Moreover, faculty perceived that career networking opportunities did not include ethnic minorities, women, and foreign-born faculty. URM women and URM junior faculty may be particularly vulnerable in this regard, because they were more likely than their colleagues to report experiences of bias, less likely to report professional satisfaction, and less likely to believe networking includes minorities, women, and foreign-born faculty. Yet, there was no significant difference in URM versus majority faculty perceptions of *availability* of networking opportunities within and outside the institution overall. These seemingly contradictory findings could relate to our wording of the questions. When faculty responses were stratified by gender, rank, department, or birth status, a lower proportion of URM faculty reported satisfaction *within* the institution, whereas a higher proportion of URM faculty reported satisfaction with

networking opportunities *outside* of the institution. Our findings suggest a need for faculty recruitment and promotion policies and procedures as well as networking opportunities that are transparent, equitable, and inclusive.

Fewer than 50% of all respondents reported satisfaction with most forms of institutional support for professional development. There were no significant differences between URM and majority faculty in satisfaction with their social integration, training in grantsmanship skills, amount of protected time, amount of external funding, or recognition of clinical and scientific knowledge by their colleagues. Institutional programs structured to enhance academic productivity could improve professional satisfaction of all faculty.

The finding that fewer than half of URM faculty survey respondents expect to be at our institution in five years is particularly concerning and warrants further investigation. Adjusting for perceptions of bias in faculty recruitment, dissatisfaction with diversity of colleagues, perceptions of the lack of inclusiveness of networking, mentorship, and number of publications did not explain these findings, so it is unclear whether URM faculty might leave for better opportunities elsewhere or because of other negative experiences with regard to the diversity climate. Previous studies indicate that ethnic minority faculty at other institutions have also had negative experiences and expressed similar intentions to leave their current institution.<sup>26</sup> Establishing a confidential mediation process for faculty who experience barriers and conducting formal exit interviews for all faculty who leave an institution would provide more insight as to which strategies will improve faculty retention.

Overall, there was a high likelihood of all respondents reporting that their mentors engage in career development and promotion activities and a low likelihood of reporting that mentors advise them on social issues or teach negotiating skills. There were no statistically significant racial/ethnic differences in mentorship experiences. Given the potential importance of mentorship for achieving professional success and the dearth of rigorous evidence to support this assertion,<sup>27</sup> future work should examine barriers to mentorship and test successful mentorship models for faculty from diverse groups.

Our study should be interpreted in the context of its limitations. First, our sampling frame was physician faculty at one institution; therefore, our findings may have limited generalizability to other academic institutions or to nonphysician faculty. Second, with a response rate of 50%, our findings may not be representative of all faculty at our institution. For example, participants may represent faculty with salient experiences in the topic areas we explored and who were looking for venues in which to describe their experiences. Third, given the sensitive nature of the questionnaire, participants may have tried to give “socially acceptable” responses. However, we minimized the likelihood of this bias by using study numbers and removing identifiers from surveys to ensure confidentiality. Fourth, use of more personalized recruitment strategies for URM faculty may have introduced bias to our findings. Nonetheless, the Committee for Faculty Recruitment and Diversity confirmed our findings in a larger diversity climate survey in 2006 (personal communication, Drs. Janice Clements and George Dover, co-chairs, JHU Committee for Faculty Recruitment and Diversity, February 1, 2008). Fifth, we used an instrument that was tailored to our institution but not previously validated. However, we did establish content validity by using a theoretical framework, findings from a previous qualitative study of faculty, and the views of experts to develop the items. Still, we may not have covered instrumental aspects of professional development, such as mentorship and networking, in adequate depth. Sixth, because of the cross-sectional design of our study, we do not know whether faculty perceptions are predictive of professional success and/or retention. Longitudinal data collection of institution-specific rates of recruitment, promotion, and retention among diverse faculty are needed. Finally, the authors’ affiliation with the DOM Diversity Council could have influenced the interpretation and application of the results to



policy and programmatic changes. Even so, our study was among a number of factors prompting institutional changes related to the diversity climate.

Notwithstanding these limitations, this study showed that a majority of respondents at our institution desire a more diverse faculty, that perceptions of bias and exclusivity are common, and that URM faculty physicians are more likely than majority faculty physicians to anticipate leaving the institution. Each institution's diversity climate and strategies to improve it may be unique; however, our study is one example of how assessment of faculty perceptions may serve as one of many catalysts for organizational change with regard to diversity in academic medicine.

Our findings were presented to the dean of JHUSOM in March 2005 and to the Board of Visitors (a group of about 40 friends and donors that addresses academic issues such as faculty appointments and promotions in the JHUSOM) in collaboration with the Committee on Faculty Recruitment and Diversity in May 2005. Institutional changes that have occurred since then may be considered as embodying John Kotter's<sup>28</sup> eight steps to transforming organizations. Our survey findings established a sense of urgency for improving the diversity climate: in 2005, the university and the Board of Visitors conceived of and funded 12 scholarships as a means of attracting the most sought-after URM students to Hopkins<sup>29</sup> (step one). JHM formed an institution-wide diversity committee, a powerful group of people within the institution, to work as a team in leading the change by formulating the vision, designing strategies to implement it, communicating the vision to the broader institution, and role modeling expected behaviors (steps two, three, and four). JHM has also sponsored leadership retreats on diversity, incorporated diversity and inclusion into the mission, vision, values and strategic plans for the institution, conducted the aforementioned baseline survey of the diversity climate for all faculty and staff, hosted retreats for all URM faculty with institutional leaders, and held town meetings that heighten expectations for change among faculty, staff, and students<sup>30</sup> (step five). Accountability for progress toward diversity is now monitored by having all JHM entities and departments report annually to the dean/CEO and quarterly to the JHUSOM Board of Trustees (step six). JHM uses the credibility of small improvements in key departments to change systems, structures, or policies that contradict the vision for diversity (step seven). In 2007, a new professorship designed to attract exceptionally promising faculty, with an emphasis on recruiting highly qualified URM to JHUSOM, was established with a generous gift from Baltimore-area philanthropist Robert Meyerhoff and his late wife, Jane.<sup>29</sup> Finally, JHM has now incorporated specific diversity and inclusion goals for the institution with regard to the talent pipeline, workplace climate, community partnerships, and disparities in access and quality of patient care into its 2020 strategic plan. The last two strategies anchor changes in the diversity climate to the institution's culture, values, and social norms to prevent loss of improvements once the pressure for change is removed (step eight). Our study also relates to other organizational change models.<sup>31–33</sup> By addressing the initial "standing still," "collecting data," and "confronting the brutal facts" stages of organizational change, it has led to subsequent stages, including engagement of powerful stakeholders, an aspiration for change, focus and intentionality, and multiple actions.

Our study findings support ongoing initiatives to improve ethnic diversity among physicians in academic medicine. Faculty perceptions, although subjective, are the basis of the reality in which faculty work and can, in turn, impact overall professional satisfaction, recruitment, and retention of select groups. We employed a two-stage, rigorous, mixed-methods approach to assess the unique diversity climate at our institution and to quantify faculty perceptions of their work environment. We provide a replicable model of institutional needs assessment that could be employed at other academic medical institutions with similar missions, goals, and visions with respect to workforce ethnic diversity. More studies in this area are needed to facilitate nationwide comparisons of the diversity climate across various academic medical institutions

and to determine whether standard policies and procedures will enhance recruitment, promotion, retention, and professional development of ethnically diverse physician faculty in academic medicine.

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**Table 1**

Characteristics of 352 Respondents in a Survey Measuring Physician Faculty Perceptions of Diversity Climate at Johns Hopkins School of Medicine, 2004–2005\*

Characteristic	No. (%) overall (n = 352)	No. (%) majority (n = 311)	No. (%) underrepresented minority (n = 30)
<b>Gender</b>			
Male	239 (67.9)	212 (68.6)	18 (60)
Female	113 (32.1)	97 (31.4)	12 (40)
<b>Birthplace</b>			
U.S.	278 (79.9)	251 (82)	20 (67.7)
Foreign born <sup>†</sup>	70 (20.1)	55 (18)	10 (33.3)
<b>Self-identified race/ethnicity</b>			
Asian	29 (8.3)	29 (9.4)	0 (0)
Black, not Hispanic	25 (7.1)	0 (0)	25 (83.3)
Hispanic	5 (1.4)	0 (0)	5 (16.7)
White, not Hispanic	280 (80)	280 (91.6)	0 (0)
Other	11 (3.1)	0 (0)	0 (0)
<b>Academic rank</b>			
Instructor	6 (1.7)	6 (2)	0 (0)
Assistant professor	134 (38.3)	111 (36)	14 (46.7)
Associate professor	101 (28.9)	90 (29)	10 (33.3)
Professor	109 (31.1)	101 (32.8)	6 (20)
<b>Career path</b>			
Academic clinician	86 (25.5)	80 (26)	6 (20)
Basic science researcher	52 (15.4)	47 (15.3)	5 (16.7)
Clinical researcher	113 (33.53)	99 (32.3)	14 (46.7)
Clinician educator	36 (10.7)	34 (11)	2 (6.7)
Other	50 (14.8)	47 (15.3)	3 (10)
<b>Specialty<sup>‡</sup></b>			
Medical	115 (32.7)	101 (32.5)	10 (33.3)
Pediatrics	51 (14.5)	46 (14.8)	4 (13.3)
Surgical	52 (14.8)	46 (14.8)	4 (13.3)
Other	126 (35.8)	111 (35.7)	11 (36.7)
<b>&gt;5 Years at Johns Hopkins</b>			
	257 (73.4)	231 (74.8)	20 (66.7)
<b>&gt;5 Years in academic medicine</b>			
	283 (81.3)	254 (82.7)	21 (70)

Characteristic	No. (%) overall (n = 352)	No. (%) majority (n = 311)	No. (%) underrepresented minority (n = 30)
Has at least one mentor <sup>†</sup>	205 (60.1)	181 (58.2)	24 (80)
	<b>Median (IQR)</b>	<b>Median (IQR)</b>	<b>Median (IQR)</b>
No. of peer-reviewed publications <sup>‡</sup>	30 (12–75)	31 (14–80)	15.5 (6–48)
No. of grants, as principal investigator	3 (1–6)	3 (1–6)	3 (1–8)
No. of grants, as coinvestigator	2 (0–5)	2 (0–5)	2 (1–5)

IQR, interquartile range.

\* Subtotals in columns for each characteristic may not equal the number of participants because of missing data. In addition, the subtotals in rows for each characteristic may not equal the total number of participants because data for faculty self-identified as “other” are not included.

<sup>†</sup>  $P < .05$ .

<sup>‡</sup> To protect the anonymity of study participants, specialties were combined into medical (internal medicine), pediatric, surgical (neurosurgery, ophthalmology, orthopedics, otolaryngology, general surgery, urology), and other specialties (anesthesia, dermatology, gynecology–obstetrics, neurology, oncology, physical medicine and rehabilitation, pathology, psychiatry).

**Table 2**

Agreements With Statements Regarding Bias/Career Obstacles, Professional Satisfaction, Networking Opportunities, and Future Intentions From a Survey Measuring 341 Majority and Underrepresented Minority (URM) Physician Faculty Perceptions of Johns Hopkins School of Medicine Diversity Climate, 2004–2005

Topic addressed by statement	No. (%) of respondents, unadjusted percent agreement	Percent agreement by race/ethnicity, adjusted by participating characteristics <sup>¶</sup>		
		% Majority	% URM	P value
<b>Bias or career obstacles</b> <sup>*</sup>				
<i>Allocation of resources</i>				
Office or lab space	93 (28.0)	27.1	30.8	.68
Clerical support	106 (31.6)	31.1	30.6	.95
Clinical/nursing support	77 (23.1)	21.5	27.6	.45
Core equipment	48 (14.6)	12.8	21.9	.19
<i>Department activities</i>				
Opportunities for informal networking/collaboration	80 (24.2)	18.9	20.8	.83
Faculty appointments to leadership positions	70 (20.8)	18.0	24.1	.42
Faculty recruitment unbiased	165 (49.0)	50.6	21.1	.006
Faculty promotion unbiased	165 (49.0)	48.5	43.0	.62
<b>Professional satisfaction</b> <sup>†</sup>				
<i>Diversity of colleagues</i>				
Racial/ethnic diversity of colleagues	148 (44.1)	47.1	12.0	.001
Proportion of female faculty in your department	182 (54.0)	54.9	48.6	.52
<i>Support for professional development</i>				
Social integration at Hopkins	163 (48.1)	48.3	42.7	.57
Training in grantsmanship skills	126 (37.3)	37.0	38.2	.90
Amount of protected academic time	125 (37.0)	36	47.1	.24
Amount of external funding	131 (38.9)	38.6	41.2	.79
Recognition of clinical or scientific knowledge by colleagues	195 (57.5)	58.3	63.1	.63
Networking opportunities at Hopkins	199 (58.7)	60.7	54.7	.55
Networking opportunities outside Hopkins	207 (61.1)	61.8	72.7	.25
<b>Career networking inclusiveness</b> <sup>‡</sup>				
Inclusive of ethnic minorities	109 (32.3)	32.6	9.3	.014
Inclusive of women	140 (41.5)	42.1	23.3	.06
Inclusive of foreign-born faculty	111 (33.1)	32.1	16.0	.09
<b>Future intentions</b> <sup>§</sup>				

Topic addressed by statement	No. (%) of respondents, unadjusted percent agreement	Percent agreement by race/ethnicity, adjusted by participating characteristics <sup>¶</sup>		
		% Majority	% URM	P value
Will be in academic medicine five years from now	285 (83.6)	83.3	86.7	.59
Will be at Hopkins five years from now	229 (67.2)	70.5	42.6	.004

\* Participants were asked to state their levels of agreement (1 = strongly disagree, 3 = neutral, 5 = strongly agree) with the statement, "I believe that I have experienced bias or obstacles to career success in academics with respect to the following activities." Activities were listed as described in the table. In addition, they were also asked to state their levels of agreement with the statements, "Faculty are recruited to my department in an unbiased manner" and "Faculty are promoted in my department in an unbiased manner."

<sup>†</sup> Participants were asked to state their levels of satisfaction (1 = very dissatisfied, 3 = neutral, 5 = very satisfied) in response to the statement, "How satisfied are you with each of the following?" Questionnaire items for diversity of colleagues and support for professional development were listed as described in the table.

<sup>‡</sup> Participants were asked to indicate whether they agreed or disagreed with the following statements (1 = strongly disagree, 3 = neutral, 5 = strongly agree): "At Hopkins, networking opportunities for career advancement tend to include ethnic minorities"; "At Hopkins, networking opportunities for career advancement tend to include women"; and "At Hopkins, networking opportunities for career advancement tend to include foreign-born faculty."

<sup>§</sup> For future intentions, participants were asked, "Do you believe you will still be in academic medicine five years from now?" (yes/no) and "Do you believe you will still be at Hopkins five years from now?" (yes/no).

<sup>¶</sup> Adjusted percentages from multivariate logistic regression represent the frequency of URM and majority faculty agreement with each survey item as if the gender, rank, specialty, and birth status of the URM and majority faculty members were similar.

**Table 3**

Agreements With Statements Regarding Mentorship Experience Among 205 Respondents With Mentors in a Survey Measuring 341 Majority and Underrepresented Minority (URM) Physician Faculty Perceptions of Johns Hopkins School of Medicine Diversity Climate, 2004–2005\*

Topic addressed by statement	No. (%) of respondents, unadjusted percent agreement	Percent agreement by race/ethnicity, adjusted by participant characteristics <sup>†</sup>		
		% Majority	% URM	<i>P</i> value
<b>Social issues</b>				
Advise you on personal or social matters	65 (31.9)	30.0	37.5	.60
<b>Career development and promotion</b>				
Suggest and promote your participation in professional activities that would enhance your visibility outside of Hopkins	158 (77.5)	75.1	91.7	.08
Prospectively advise you about criteria for promotion and your progress toward these criteria	148 (72.5)	72.4	75	.69
Identify obstacles to your career success and facilitate removal of them	125 (61.3)	61.3	62.5	.91
<b>Negotiation skills training</b>				
Teach you how to negotiate for salary support	46 (22.6)	21	33.3	.17
Teach you how to negotiate for academic time	57 (27.9)	26.5	37.5	.26
Teach you how to negotiate resources (e.g., office space, clerical support)	65 (31.9)	30.4	41.7	.25

\* Participants were asked to indicate whether any of their mentors engaged in activities as listed/described in the table (response categories: yes/no).

<sup>†</sup> Adjusted percentages from multivariate logistic regression represent the frequency of URM and majority faculty agreement with each survey item as if the gender, rank, specialty, and birth status of the URM and majority faculty members were similar.



Table 4

Agreements With Statements Regarding Bias/Career Obstacles, Professional Satisfaction, Networking Opportunities, and Future Intentions, Stratified by Gender, Rank, Specialty, and Birth Status, From a Survey Measuring 341 Majority and Underrepresented Minority (URM) Physician Faculty Perceptions of Johns Hopkins School of Medicine Diversity Climate, 2004–2005

Topic addressed by statement	Adjusted percentage of agreement with statements (%)*								
	Male		Female		Senior faculty		Junior faculty		
	Majority	URM	Majority	URM	Majority	URM	Majority	URM	
<b>Bias or career obstacles</b>									
<i>Allocation of resources</i>									
Office or lab space	23.3	26.6	36.3	40.5	25.5	28.9	30.0	33.8	
Clerical support	27.1	26.6	40.6	40.0	27.1	26.6	38.2	37.6	
Clinical/nursing support	<b>19.7</b>	<b>25.5</b>	<b>25.6</b>	<b>32.5</b>	<b>16.8</b>	<b>22.0</b>	<b>30.6</b>	<b>38.1</b>	
Core equipment	11.3	19.4	16.7	27.5	10.1	17.5	18.5	30.0	
<i>Department activities</i>									
Opportunities for informal networking/collaboration	10.9	12.1	47.4	50.2	15.0	16.5	26.9	29.1	
Faculty appointments to leadership positions	13.6	18.4	30.9	39.2	17.7	23.7	18.6	24.7	
Faculty recruitment unbiased <sup>†</sup>	<b>63.2</b>	<b>40.0</b>	<b>25.8</b>	<b>8.3</b>	59.1	27.4	37.3	13.4	
Faculty promotion unbiased	59.7	54.3	26.7	22.6	58.1	52.6	33.7	28.9	
<b>Professional satisfaction</b>									
<i>Diversity of colleagues</i>									
Racial/ethnic diversity of colleagues <sup>†</sup>	<b>52.2</b>	<b>14.4</b>	<b>36.6</b>	<b>8.2</b>	45.8	11.5	49.3	13.0	
Proportion of female faculty in your department	54.9	48.6	55.0	48.7	57.4	51.2	50.8	44.6	
<i>Support for professional development</i>									
Social integration at Hopkins	<b>52.8</b>	<b>47.1</b>	<b>39.1</b>	<b>33.8</b>	54.5	48.8	38.7	33.4	
Training in grantsmanship skills	39.0	40.2	33.0	34.1	43.0	44.2	28.3	29.3	
Amount of protected academic time	<b>36.0</b>	<b>47.1</b>	<b>36.2</b>	<b>47.3</b>	36.8	47.3	34.8	45.8	
Amount of external funding	<b>41.0</b>	<b>43.6</b>	<b>33.8</b>	<b>36.3</b>	43.0	45.6	32.1	34.5	

Topic addressed by statement	Adjusted percentage of agreement with statements (%)*							
	Male		Female		Senior faculty		Junior faculty	
	Majority	URM	Majority	URM	Majority	URM	Majority	URM
Recognition of clinical or scientific knowledge by colleagues	61.4	66.0	51.7	56.7	70.5	74.5	37.2	42.0
Networking opportunities at Hopkins	69.3	63.7	41.3	35.4	68.6	63.0	47.2	41.0
Networking opportunities outside Hopkins	64.4	74.9	56.0	67.7	72.8	81.5	41.9	54.2
<b>Career networking inclusiveness</b>								
Inclusive of ethnic minorities <sup>†</sup>	44.2	14.3	14.6	3.5	35.2	10.3	28.7	7.8
Inclusive of women <sup>‡</sup>	54.4	33.2	20.4	9.7	45.4	25.8	36.8	19.6
Inclusive of foreign-born faculty	44.6	24.5	13.3	5.8	35.9	18.4	26.4	12.6
<b>Future intentions</b>								
Will be in academic medicine five years from now	83.5	87.3	84.8	88.3	86.7	89.9	78.5	83.2
Will be at Johns Hopkins five years from now	74.8	47.9	60.3	32.0	74.5	47.5	63.5	35.0
<b>Topic addressed by statement</b>								
<b>Bias or career obstacles</b>								
<i>Allocation of resources</i>								
Office or lab space	29.3	33.0	26.1	29.7	26.5	30.0	30.1	33.8
Clerical support	30.5	29.9	31.5	30.9	31.1	30.5	31.5	31.0
Clinical/nursing support	21.0	27.1	21.7	27.9	22.0	28.2	19.4	25.2
Core equipment	11.7	20.0	13.5	22.7	13.4	22.7	10.6	18.4
<i>Department activities</i>								
Opportunities for informal networking/collaboration	21.6	23.6	17.8	19.5	20.0	21.9	15.0	16.5
Faculty appointments to leadership positions	17.3	23.2	18.4	24.5	15.5	20.9	31.9	40.2

Topic addressed by statement	Medicine		Other departments		U.S. born		Foreign born	
	Majority	URM	Majority	URM	Majority	URM	Majority	URM
Faculty recruitment unbiased	38.2	13.9	56.8	25.6	51.9	22.0	45.1	17.7
Faculty promotion unbiased	37.4	32.4	54.1	48.5	51.6	46.0	36.2	31.3
<b>Professional satisfaction</b>								
<i>Diversity of colleagues</i>								
Racial/ethnic diversity of colleagues	38.2	8.7	51.6	14.1	44.9	11.1	56.5	16.6
Proportion of female faculty in your department	<b>53.2</b>	<b>47.0</b>	<b>55.7</b>	<b>49.4</b>	52.2	46.0	65.5	59.7
<i>Support for professional development</i>								
Social integration at Hopkins	49.5	43.8	47.8	42.1	49.8	44.1	42.3	36.8
Training in grantsmanship skills	40.9	42.1	35.2	36.3	37.4	38.6	35.3	36.4
Amount of protected academic time	36.2	47.3	36.0	47.1	36.4	47.6	34.4	45.4
Amount of external funding	47.0	49.7	34.8	37.2	38.7	41.3	38.2	40.8
Recognition of clinical or scientific knowledge by colleagues	57.4	62.2	58.7	63.5	61.0	65.6	46.9	51.9
Networking opportunities at Hopkins	66.6	60.8	57.8	51.6	61.8	55.8	56.1	49.9
Networking opportunities outside Hopkins	67.2	77.2	59.0	70.3	63.7	74.3	53.3	65.2
<b>Career networking inclusiveness</b>								
Inclusive of ethnic minorities	30.4	8.5	33.6	9.7	33.6	9.7	28.6	7.8
Inclusive of women	39.2	21.1	43.6	24.3	<b>44.0</b>	<b>24.7</b>	<b>34.6</b>	<b>18.1</b>
Inclusive of foreign-born faculty	29.7	14.6	33.2	16.7	34.7	17.7	22.2	10.3
<b>Future intentions</b>								
Will be in academic medicine five years from now	85.5	88.8	83.2	87.0	84.3	88.0	82.3	86.3
Will be at Johns Hopkins five years from now	74.6	47.7	68.4	40.1	71.6	43.8	65.8	37.3

\* Adjusted percentages from multivariate logistic regression represent the frequency of URM and majority faculty agreement with each survey item as if the gender, rank, specialty, and birth status of the URM and majority faculty members were similar. The adjusted agreement by race/ethnicity is stratified by each covariate of interest and adjusted for all of the other covariates. Probabilities highlighted in bold represent questionnaire items for which there is a statistically significant interaction between majority/URM status and the covariate of interest ( $P < 0.05$ ).

† All minority women disagreed with statements regarding faculty recruitment being unbiased, satisfaction with racial/ethnic diversity, or inclusion of minorities and women in networking opportunities.