

A photograph of the MIT building entrance, featuring large white columns and a glass facade. Several people are walking on the steps and in the foreground. A red horizontal band is overlaid across the middle of the image, containing the title text.

REPORT ON THE INITIATIVE FOR FACULTY RACE AND DIVERSITY

MASSACHUSETTS INSTITUTE OF TECHNOLOGY



REPORT ON
THE INITIATIVE FOR
FACULTY RACE AND DIVERSITY



MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Susan Hockfield, *President*

77 Massachusetts Avenue
Cambridge, MA 02139-4307

January 14, 2010

To the members of the MIT community:

To advance the frontiers of knowledge and innovation, to take on the world's great challenges, and to educate our remarkable students, MIT must attract and cultivate the finest talent. The history of the Institute and of the United States shows that brilliant minds can emerge from anywhere; we must ensure that for those women and men who have the ability and ambition to succeed at MIT, MIT is a place where they can thrive.

Today, Provost Reif and I share with you the report from the Initiative on Faculty Race and Diversity. It describes MIT's progress on diversity, but it finds that progress to be uneven. Through the search and tenure processes and in their daily lives on campus, the experience of many of our faculty members from underrepresented minority groups is different from that of their majority peers. The report makes clear that to achieve a true culture of inclusion, we still have much work to do.

This work continues to grow in importance. A richly diverse America does not await us, it is upon us; it is our present and our future. We draw most of our faculty, students and staff from America, and we must make full use of the talent this country has to offer if we hope to continue to invent the future. We share this challenge with our peer institutions; only by working together with them can we effectively increase the pipeline of academic talent, the central resource in meeting our diversity and inclusion goals.

Creating a culture of inclusion is not an optional exercise; it is the indispensable precondition that enables us to capitalize on our diverse skills, perspectives and experiences, so that we can better advance the fundamental research and education mission of MIT. To maintain the Institute's unrelenting standards of excellence, all members of our community must contribute at the apex of their abilities. A productively diverse community at MIT will make us better at what we do: broader and deeper as thinkers; more effective as collaborators; more creative as teachers; and more understanding as colleagues and friends.

The report outlines practical, systemic reforms, such as broadening search practices and providing new faculty with much better mentorship, but it also highlights the overarching need to foster a culture of inclusion. Ultimately, a community reaps the benefits of diversity only when it looks beyond the numbers alone and actively creates a culture where everyone feels valued and included – an environment in which everyone can do their very best work.

MIT will use this important report to strengthen our practices and to develop and implement innovative strategies so that we can achieve the kind of leadership on diversity and inclusion that we expect from ourselves in every other realm.

Sincerely,

Susan Hockfield

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MASSACHUSETTS INSTITUTE OF TECHNOLOGY

L. Rafael Reif, *Provost*
Maseeh Professor of Emerging Technology

77 Massachusetts Avenue
 Cambridge, MA 02139-4307

January 14, 2010

Dear Faculty Colleagues,

I am delighted to share with you the report of the Initiative on Faculty Race and Diversity, a detailed study of how race affects the recruitment, retention, professional opportunities and collegial experiences of underrepresented minority (URM) faculty at MIT. Representing more than two and half years of work led by a core team of MIT faculty, this report advances our discussion of diversity and inclusion, giving us data to assess established practices, from recruiting to mentorship, and challenging us to think carefully about our MIT culture and assumptions. Going forward, the report's findings and recommendations will guide our efforts to continue to increase diversity and strengthen the culture of inclusion at MIT.

The report uses the tools of scholarly inquiry to reveal something we long suspected but could not document fully until now: that for many of our faculty from URM groups, their experience at MIT is distinctly and sometimes painfully different from that of their majority peers. We are not succeeding in making all members of our faculty feel equally welcome and valued as scholars – and this distressing disparity of experience is a reality we must recognize and address.

Genesis and history of the study

The original impetus for this report stems from a unanimous 2004 resolution of the MIT faculty to double the percentage of URM faculty (and triple the percentage of URM graduate students) within ten years. The faculty adopted this resolution in recognition of MIT's commitment "to developing and maintaining a robust environment that values and celebrates the potential of all the members of the MIT community as that potential enhances MIT's mission to continued excellence in teaching, research and community service." To help turn this resolve into results, in January 2006 (shortly after I became provost), I established committees charged to focus on (i) minority faculty recruitment, (ii) minority faculty retention and (iii) the Dr. Martin Luther King Jr. Visiting Professor Program.

It soon became clear that we needed to examine not only URM faculty recruiting and retention but also larger issues related to how URM faculty experience MIT. To pursue this broader charge, in April 2007 I appointed a core team of faculty to determine the resources required for a systematic study of how the recruitment, retention, professional opportunities and collegial experiences of URM faculty are affected by race.

On July 12, 2007, this faculty team responded with a preliminary report. They advised that a penetrating review of these issues would take 12-24 months, that any such study should include both quantitative and qualitative data, and that it should actively engage the deans of the Schools and the heads of academic units. Along with providing early recommendations, the preliminary report also urged the study team leaders to convene an advisory board of mostly external academic experts, which they did.

The Initiative on Faculty Race and Diversity then began its research in earnest, with a team of faculty representing all five Schools. Led by Chair Paula T. Hammond (Department of Chemical Engineering) and director of the research effort Lotte Bailyn (Sloan School of Management), the faculty team also included:

- **Emery N. Brown**, Department of Brain and Cognitive Sciences and the Division of Health Sciences and Technology
- Associate Provost for Faculty Equity **Wesley L. Harris**, Department of Aeronautics and Astronautics
- Associate Provost for Faculty Equity **Barbara H. Liskov**, Department of Electrical Engineering and Computer Science
- **Leslie K. Norford**, Department of Architecture
- **Christine Ortiz**, Department of Materials Science and Engineering
- Associate Dean of Science **Hazel L. Sive**, Department of Biology and the Whitehead Institute for Biomedical Research
- **Marcus A. Thompson**, Music and Theater Arts Section

Together their efforts produced the report we share today.

Learning from the findings

The committee's careful, methodical approach produced a range of important findings. A number of them offer signs consistent with our aspirations; for example, our junior URM faculty report satisfaction with their lives at MIT, and the salaries of our URM faculty are at par with their non-URM counterparts. The report also highlights constructive efforts being pursued by individual academic units. (As I presented at the recent November 18th faculty meeting, some of these efforts have been rewarding: in the last five years, 27 of 236 of our faculty hires – 11% – have been from URM groups; in the last ten years, of our net growth of 75 faculty, 25 – or 33% – have been from URM groups. As a result, the percentage of URM faculty increased in the last ten years from 4.3% in AY2001 to 6.4% in AY2010, i.e., from 41 of 950 to 66 of 1025. Incidentally, the corresponding figures for women are 30% of faculty hires in the last five years, i.e., 70 of 236, and 84% of net faculty growth in the last ten years, i.e., 63 of 75). However, many of the findings in this study fall short of our aspirations. In fact, the report's most important general observation is about the experience of URM faculty members at MIT, and it tells us that we still have a long way to go to truly achieve a culture of inclusion.

MIT wants, and our students deserve, the strongest possible faculty, and a more diverse faculty is a stronger faculty in all academic dimensions, from research to teaching to mentoring. Our differences enrich our lives and our thinking. Yet a diverse faculty can only succeed if we actively build a culture that welcomes and embraces each one of us. We must work together to make sure that a culture of inclusion *is* the culture of MIT.

Next steps

With this report in hand, we will now work together to determine the most effective ways to take action. We will begin with a series of structured discussions with Academic Council, School Councils, and heads of academic units to understand the implications of the findings and to explore the best ways to achieve our goals of diversity and inclusion. I look forward to sharing best practices around searching, recruiting, mentoring and building the pipeline of faculty talent.

I want to express my personal appreciation to all members of the Initiative for providing the MIT community with this careful and thoughtful quantitative and qualitative research. I am most grateful to Professors Paula T. Hammond and Lotte Bailyn for their extraordinary efforts in producing this report. I also want to thank the External Advisory Board, study participants, and those postdoctoral staff and graduate students who worked on the report for their tremendous dedication to this effort.

The research report concludes, “We hope that this report will help everyone to be more self-reflective, to better understand the lives of the URM faculty at MIT and to appreciate how race plays into their experiences.” I strongly share this hope. Please reflect on ways you might become personally involved, whether in mentoring, recruiting or addressing pipeline issues. This report offers us a path to build a stronger MIT – an Institute better equipped to serve and nurture our incredible community of talented scholars. I look forward to taking on this important task together.

Sincerely,

Rafael Reif

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PART I: EXECUTIVE REPORT AND RECOMMENDATIONS

Initiative Committee Members: Paula T. Hammond (chair),
Lotte Bailyn (head of research team), Emery Brown, Wesley Harris,
Barbara Liskov, Leslie Norford, Christine Ortiz, Hazel Sive
and Marcus Thompson.

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INTRODUCTION

One of the great challenges faced by U.S. institutions of higher learning in the 21st century, particularly in fields of science and technology, is the engagement and full utilization of the population's talent. MIT has elected to take on this important task of addressing diversity at its highest levels, amongst its own faculty. In order to take significant steps forward in this effort across the Institute, it is critical to understand the issues that must be faced to attain a more diverse faculty.

To this end, the Initiative for Faculty Race and Diversity was charged by Provost L. Rafael Reif to investigate the status of underrepresented minority faculty (which includes Black, Hispanic and Native American faculty) at MIT and to use the findings from this investigation to inform a set of recommendations. The recommendations address Institute policy and practices, with the aspiration that their implementation will increase the recruitment and retention of underrepresented minority faculty. On a broader scale, it is also hoped that these findings and recommendations will guide policy both at MIT and at its peer academic institutions, and will inspire action across the nation to address this critical issue.

To arrive at its findings, the work of the Initiative included an in-depth study of the experiences of minority faculty on campus, with survey and quantitative personnel data, a cohort analysis, and in-depth interviews of minority faculty at MIT. (Detailed results of the research study are included in the Research Report — Part II of this document.) Faculty and other members of the MIT community are greatly encouraged to read the Research Report, which more completely details many aspects of the MIT minority faculty experience, and indicates areas and issues of significance that suggest frameworks for helpful discussions.

This Executive Report provides a brief background and motivation for this work and describes the definitions of underrepresented minority groups that are used at MIT. It also summarizes the activities of the Initiative's effort (Sections A through C); presents **a summary of the major findings of the research study (Section D)**; and **provides the recommendations of the Initiative (Section E)** that were informed by these research results. Specific issues addressed in the recommendations include faculty recruiting, mentoring, promotion and tenure, as well as structural recommendations that address support and accountability for diversity efforts. These efforts range from the improvement of the graduate student and postdoctoral pipeline to the setting of strategic goals for increasing the numbers of minority faculty at the Institute. **In the interest of learning from past and ongoing efforts, several interesting models of success within MIT's own departments and schools — and at other institutions — are highlighted throughout the recommendations section**, and these examples are further detailed in Section G. A more comprehensive description of the efforts each School has implemented in addressing diversity are detailed in Appendix C, which is a summary of the Initiative Committee discussions with the academic deans.

Finally, **plans regarding implementation of the recommendations and for long-term assessment of MIT's progress with respect to faculty diversity and underrepresented minorities are addressed in Section F.** These include discussions about the recommendations among the general faculty, deans and department heads at each of the School Councils, as well as additional discussion with the associate provosts for faculty equity and other faculty leaders. The goal of these discussions will be to determine how to best translate these recommendations into departmental, school and Institute policy.

A. BACKGROUND, MISSION AND OBJECTIVES OF INITIATIVE

The Goal of Diversity at MIT

A standing principle at the Massachusetts Institute of Technology is the pursuit of excellence in the creation of fundamental knowledge and the generation of innovative solutions to the world's problems. To accomplish its stated mission — “to advance knowledge and educate students in science, technology, and other areas of scholarship that will best serve the nation and the world in the 21st century”¹ — MIT must benefit from the ability to tap both the nation's and the world's brightest minds. The Institute has taken pride in its ability to unite people from a multitude of backgrounds to address the world's most complex problems and significant scholarly endeavors.

Diversity is core to the excellence that MIT seeks for several reasons:

- It is intrinsic in the mission of excellence in science and engineering education that we engage a truly diverse faculty; we must diversify our faculty or we lose in competitive advantage and in mission.
- A part of MIT's mission is to be of service to humanity — to hope to accomplish such a bold endeavor, one must also be inclusive of humanity.
- A diverse faculty is key to communal scholarship and intellectual scope.
- If we do not succeed in the diversification of faculty across the nation, we constrain ourselves and limit our success in all fields of endeavor.

Despite its importance, the picture of diversity among the faculty at MIT is lacking when one considers the representation of U.S. minority groups that traditionally have had more limited access to the educational opportunities and pathways that often lead to academic careers. In addition, the low levels of representation from minority groups indicate missed opportunities to gain and benefit from the top minds garnered from every aspect of American life. As was stated by current MIT President Susan Hockfield, “We cannot be satisfied until we are a community that not only seeks out diverse talent, but that truly embraces and rewards diverse perspectives, because we know that they make us stronger. In the end, we cannot be satisfied until, to everyone who earns a place at MIT, we are a community that says not ‘You're lucky to be here,’ but rather, ‘We're lucky you came.’”²

The U.S. population has changed significantly in the past century; at this time, African Americans represent 13.5% of the population, Hispanic Americans represent 15%, and Native Americans are 1.5%, resulting in minority groups representing a total of 30% of the U.S. population, a number that has been significantly increasing each year.³ Additionally, Asian Americans, including Pacific Islanders, make up approximately 5% of the U.S. population. On the other hand, the number of minority faculty at MIT has undergone a much slower growth. When one includes all faculty of African, Hispanic or Native American

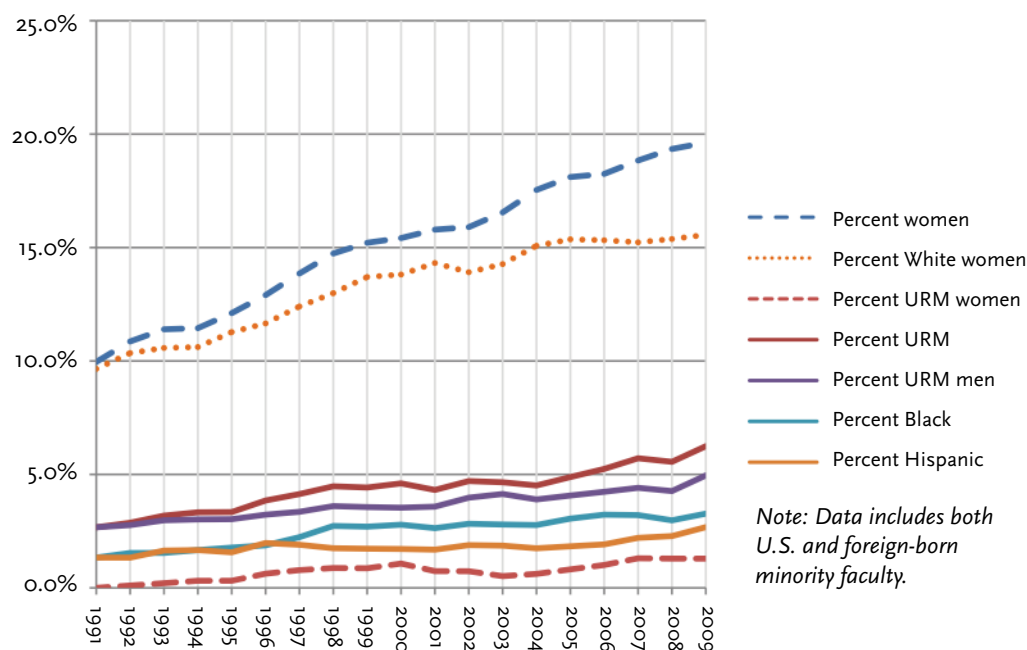


Figure 1. URM faculty and women faculty at MIT during the period covered in cohort analysis study.

heritage, regardless of citizenship, our overall underrepresented minority faculty population is currently at 6%, indicating an increase from 4.5% in 2000. The contrast in these numbers with the population values is significant; it is clear that there is talent within the United States that has not been tapped at the highest levels of our educational system — our faculty. Clearly, this problem is not unique to MIT, but represents a characteristic of most university faculty. It also signifies a situation that is even more critical in the science, technology and engineering (STEM) fields that are core to MIT's mission. Research indicates several gains from engaging groups with a broad range of ethnic, cultural and experiential backgrounds to the task of problem-solving, deliberation, information sharing and overall performance.^{4,5} It is intrinsic to the mission of excellence in science and engineering that we engage a truly diverse faculty; otherwise, we stand to lose in both our competitive advantage and our overall mission.

It is clear that we need the input and contributions of all members of our rapidly changing population to achieve the goals set forth by the U.S. to lead in key areas such as energy, the environment, medical advances and health care; economics, management and public policy; as well as the interface between the sciences and humanities. **As a leading institution in science and engineering, MIT must also take the lead in addressing the issue of diversity** given its key role in the future development of this country and the world. MIT can utilize its leadership position to directly address the challenge of increasing numbers of underrepresented groups in its faculty; in doing so, MIT will not only maintain and improve its standing as a top U.S. and world institution of higher learning, but will also serve to provide expertise, knowledge and approaches to this critical challenge that can inform others. As an institu-

tion, MIT must commit itself to take a hard look at this issue as a means of generating true and meaningful change. There is precedent for this level of undertaking; MIT has shown leadership in the area of equity among women faculty in its well-known *Women in Science Report*⁶ and in subsequent gender studies in 1999 through 2002. Although the endeavor to improve gender representation in the MIT faculty continues to be a work in progress, we can learn from this experience and apply our best efforts toward resolving URM representation. In recent years, MIT has begun to take on the important task of faculty diversity in different ways in a number of its departments and schools (see Section G and Appendix C for examples); however, there is much work yet to be done. As an institution that prides itself on the ability to address some of the world's most difficult problems, MIT can and should lead the nation in the important challenge of increasing the numbers of minority faculty via a strong Institute-wide policy that facilitates advancement in the area of faculty diversity. It is, of course, recognized that the availability of minority candidates, particularly in the STEM fields, can be limited. By addressing both the short-term need to increase minority faculty numbers, and longer-term efforts to address the available pool of candidates across fields, **it must be the ultimate long-term goal of the Institute to achieve parity of underrepresented groups with respect to the population.**

In 2004, the faculty of MIT resolved to address the issue of diversity and, in particular, the underrepresentation of minorities, with the goal of taking a close look at the issues, as well as delivering and implementing solutions. In late spring 2007, the provost charged a committee of faculty to investigate the undertaking of a key Initiative at MIT on the issues of race and its impact with regard to underrepresented minority faculty at the Institute. The Initiative sought to investigate the experiences of minority faculty, as well as the practices at MIT related to key aspects of faculty life including recruitment, hiring, and promotion to tenure and full professor, and to utilize the findings to develop recommendations for increasing minority faculty numbers. The Initiative executed an extensive study that investigated the questions: whether and how race and ethnic identity have impacted MIT's ability to recruit and to retain minority faculty; whether there are local or Institutional aspects native to MIT's culture, procedures or environment that have influenced or shaped this group of faculty, as well as their opportunities and experiences at MIT; and how these influences have affected MIT's effort to recruit and retain underrepresented groups among its faculty?

The overall findings generated from this study are addressed in this report, including a set of recommendations and an implementation plan to the senior administration, the associate provosts for faculty equity and to the deans of the five schools at MIT. The Initiative also utilized input from an External Advisory Board as well as members of the MIT community.

The goal of this work is to yield long-term positive change in the MIT environment; to improve the climate at MIT for minority faculty and all faculty with regard to matters of race and ethnicity; and to ultimately achieve long-standing and sustainable increases in overall numbers of underrepresented minority faculty in order to realize the benefits of diversity in education.

Definitions of Minority Faculty

The federal definition of a minority employee includes all U.S. citizens, both naturalized or permanent residents that have African, Hispanic or Native American heritage. A broader definition of minority group includes Americans and permanent residents of Asian descent, including Southeast Asians and Pacific Islanders. At MIT and most other STEM institutions, the underrepresented minority (URM) refers to those minority groups that are not represented in the STEM fields in numbers proportional to their composition in the U.S. population, which would not include the Asian group. It should be noted that the Initiative team recognizes that although Asians as a group are not underrepresented in the science and engineering fields, Asian women are significantly underrepresented among the ranks of faculty in all fields at MIT. While the focus and scope of this work was on the traditionally underrepresented minorities in science and engineering, it is recommended that attention also be paid to diversity with respect to Asian faculty, in particular Asian women, in future studies on diversity. It is thought that the recommendations of this Initiative will also positively impact numbers of Asian women and other groups with racial, gender or ethnic differences.

Table 1. Numbers of URM faculty at MIT from 2000 to 2009 using different definitions

	Numbers of minorities using different definitions									
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Only those born in U.S.	7	8	10	11	11	13	16	19	18	18
Assume missing data on COO is U.S.	32	30	33	32	30	32	34	34	34	39
Disregard COO (Federal guidelines)	43	41	45	45	44	48	52	57	56	63

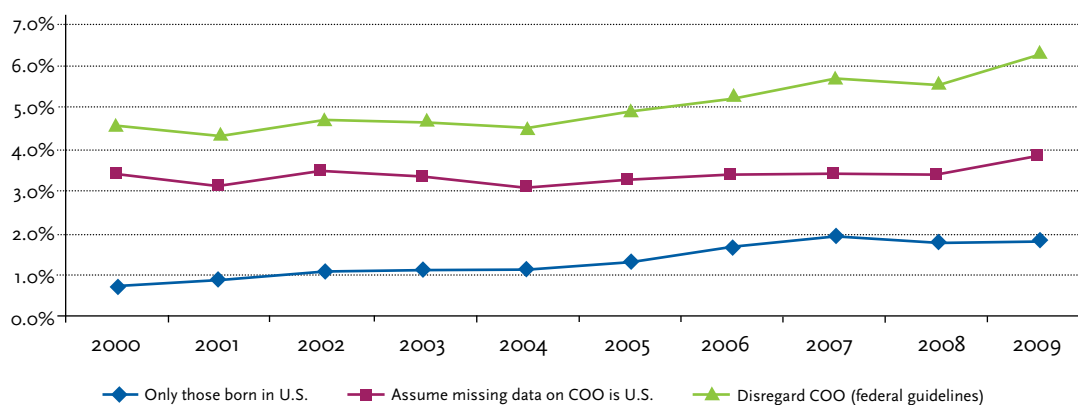


Figure 2. Plot of URM faculty based on different definitions

In reporting its numbers of URM faculty, MIT has included all faculty with African, Hispanic and Native American heritage who are citizens or permanent residents (i.e., based on U.S. federal guidelines), and newly arrived international faculty on temporary visas who either identified as an underrepresented minority or who were identified as such if he/she had not identified at all. The latter group is included in the count and is anticipated to achieve permanent resident status within a few years of their arrival at MIT. The numbers do not include faculty who meet the guidelines for minority status but who self-identified as White. Figure 1 includes data on both URM and women from 1991 to 2009, which is the period that was covered for the cohort analysis study in the research component. This plot indicates the relatively slow growth in URM faculty over an extended time period; the much more rapid increase in the minority population over the same time period reflects the degree to which the national academic environment fails to reflect the population that it serves. The data indicate the need for MIT and its peer institutions across the country to work together to significantly increase the number of minority students who enter the academic pipeline.

The data in Table 1 and Figure 2 include numbers of URM faculty at MIT over the past decade based on different definitions applied to URM faculty. It is important to note that a significant number of URM faculty are also of international origin. The broad range of cultural and national backgrounds of our URM faculty brings an important aspect of diversity to campus, and many members of the international group of URM faculty identify strongly as members of the underrepresented group. In addition, they contribute significantly to the presence and enrichment of the community of minority scholars on campus. The goal of increasing and supporting a diverse faculty provides a compelling educational benefit to all at MIT — minority and majority. Increased diversity of URM faculty from all sources, national or global, must be highly valued at MIT. Unfortunately, the numbers of URM faculty who are either U.S.-born or who have experienced a significant part of their childhood years and education in the U.S. are significantly small for some URM groups, and do not show a clear trend of increasing even over the past several years. It is difficult to tabulate data that present an accurate number of URM faculty who are U.S. born or who primarily have had an American upbringing or experience, because many faculty disregard the country of origin question on incoming faculty surveys. If one assumes that all those who do not indicate a country of origin are from the U.S., the percentage of U.S. minority faculty appears to be approximately 3.5 to 4%, a number that approaches one-tenth of the percentage of URM reflected in the general population. This estimation is the maximum possible number of URM faculty from the U.S. based on available data; the opposite bound is to assume that all of the respondents who did not indicate country of origin are international, leading to a mere 2% of the total faculty population. These numbers indicate very incremental or no growth in the numbers of U.S. underrepresented minority groups at MIT. More direct input was provided from the interviews with minority faculty; from the sample of minority faculty who were interviewed, 77% of Black respondents indicated that they were U.S. born, with the remainder from Africa (11%), the West Indies (8%) and Europe (4%). Among Hispanic respondents, 40% indicated that they were U.S. born, 35% were from South America, 15% from Mexico, and 5% each from the West Indies and Europe. The professional development, active recruiting and ultimate hiring of more U.S. minorities is a mandate based on

the diminishingly low numbers at MIT and its peer institutions.⁷ The U.S. pool is also the one that MIT strategically has the greatest opportunity and advantage in influencing and growing in future years. **It is key that MIT take greater advantage of the talent pool present in the United States by recruiting larger numbers of U.S. minority faculty;** where necessary, targeted intervention and recruitment at early stages may be necessary to increase these numbers in a manner that is sustained.⁸ To facilitate this increase, there must be an awareness of the numbers of U.S. national minority groups interviewed and recruited at MIT each year.

Initiative Activities

The Initiative on Faculty Race and Diversity involved four stages of effort. The first was the development of a preliminary report outlining general plans for the research study. This report, issued in summer 2007, included a description of a potential research plan based on discussions of the Initiative Committee as well as input from other researchers who have performed other studies of scale in this area. The report also provided a list of short-term recommendations meant to provide an early means of addressing retention of existing URM faculty and impetus to the recruitment of new URM faculty hires. A list of these short-term recommendations and how they were addressed by the administration is included in this report in Section H. The Preliminary Report was shared with the MIT community in summer 2007, and input was garnered from the minority faculty and from the general faculty in meetings both preceding and following its release.

The second and most extensive stage of effort was the execution of the research study. A full research team was recruited from within and outside MIT. Extensive efforts were made in a nationwide search for the Ph.D. scholars and consultants who comprised the research team, headed by Initiative Committee member Professor Lotte Bailyn of the MIT Sloan School of Management. The remainder of the team included Dr. Mandy Smith Ryan, Dr. Siomara Valladares and Dr. Carol Wright; external consultants working with the team included Dr. Clarence Williams and Dr. Sharon Fries-Britt. Biographies of the research team are provided in Appendix A. The research study was executed in stages from January 2008 through August 2009 and is outlined further in the following section. This stage of the work also included a significant analysis, during which time results were presented and discussed with the Initiative Committee, the External Advisory Board and Internal Technical Advisory Board. A summary of the major findings is given in Section D of this report, and a fully detailed research report is provided in Part II of this publication.

A third stage of this effort involved the formulation of solutions and recommendations. These recommendations (outlined in Section E) were informed by the major findings of the Initiative study and are put forth by the Initiative Committee in this report. These recommendations address recruitment and retention of URM faculty, and structural changes in administrative policy that will facilitate the increase in and the retention of URM faculty. In addition, the recommendations address the roles of the administration, academic

deans, department heads and individual faculty in reaching diversity goals at the Institute. Recommendations are fully outlined in Section E of this report.

The fourth and final stage of this Initiative is the discussion and implementation of the recommendations across the administration, schools and departmental units, a period that will enable frank discussion of the findings among departmental and school units. The recommendations will be presented at School Council meetings, and faculty leadership — including department heads and deans — will provide input on the ultimate means in which they can be implemented in departmental, school and Institute policy. In many cases, the recommendations included general guides to implementation with regard to the provision of resources or support as well as actions required at different organizational levels. During the implementation stage, many of these details can be confirmed or determined. The implementation section of this report (Section F) also includes recommended responsibilities and implementation strategies. Discussion of these recommendations in more detail is anticipated at every level from departmental units to the administration, as both the recommendations and their implementation are addressed.

B. BRIEF SUMMARY OF RESEARCH EFFORT

The research undertaken, which was designed to provide key information needed to develop recommendations and plans for implementation in addressing recruitment and retention of URM faculty, consisted of four key elements:

1. A quality of life survey was administered to the entire faculty in January 2008. As a part of the quality of life survey, the Initiative research team and the associate provost for faculty equity composed several additional questions meant to address race, ethnicity and gender issues, and more detailed questions were included regarding ethnic and national background. The survey responses were used to compare URM faculty perceptions and attitudes to those of the non-minority group on several issues such as overall satisfaction levels, teaching load, family work and life issues, etc. This survey had a high overall faculty response rate of 69% and a URM faculty response rate of 72%. This URM respondent group included a response rate of 80% among Black and 61% among Hispanic faculty.
2. A cohort analysis of all faculty coming to MIT from 1991-2009 to compare promotion and tenure rates and timing of promotions; hiring data by department and school; and points of departure from MIT, where relevant. The cohort analysis enabled direct comparisons of progression and success rates for promotions, as well as hiring patterns over this time period by department and school.
3. Quantitative indicators were included to compare salaries with appropriate controls.
4. In-depth, extensive qualitative interviews of all URM faculty were conducted by the research team, including a sample of those who have left, to understand their experiences at MIT and the role of race/ethnicity in those experiences. These interviews provided critical content regarding both MIT practices around recruitment and promotion, as well as information about climate at MIT with regard to race. The interview participation rate among all of the URM faculty was high at 80%. A sampling of interviews with White and Asian faculty with similar field and rank was also conducted as a part of this study. Finally, a select sampling of URM faculty who had left MIT for a range of reasons and at different career points over the past 20 years (including promotion issues, new career opportunity, dissatisfaction and retirement) were interviewed to gain historical perspective and to understand some of the issues that may be persistent or institutional that impact faculty of color.

C. ENGAGEMENT WITH MIT FACULTY, ADMINISTRATIVE LEADERSHIP AND ADVISORY BOARD

In conjunction with these studies, the committee engaged with the minority faculty community through a series of open discussions with junior and senior minority faculty. Two junior and two senior minority faculty forums were held on campus to discuss problems and potential solutions specific to these groups at different career points and to identify issues that are thematic across these groups. Suggestions and themes from these discussions have been used to inform the recommendations of the Initiative.

The Initiative's efforts and progress were outlined at faculty meetings periodically during the course of its work, enabling input from the general faculty as well as an opportunity to inform the faculty of the effort's objectives. During the course of the effort, the Initiative Committee also met with the Faculty Policy Committee and the Committee on Race and Diversity. The committee also met with each of the academic deans and their staff to generate discussion about its findings and potential solutions. It is anticipated that all of these discussions will continue upon release of this report, as input from the community is used to inform the implementation and reach of the recommendations.

The Initiative Team determined the need for an External Advisory Board based on its Preliminary Report and recruited a board of 13 distinguished members with experience with race and diversity issues on university campuses, and in particular with the fields of science and engineering. The board also included two MIT Corporation members. The biographies of the Advisory Board members are included in Appendix B. During the course of the Initiative effort, the Advisory Board met formally four times on MIT's campus to discuss the progress of the research effort and to provide input and advice. This External Board strongly recommended in 2008 that the Initiative establish an Internal Technical Advisory Board consisting of MIT faculty who are not vested in the study, but who could provide sound technical advice on its execution. This Technical Advisory Board was appointed in spring 2008 and met periodically and extensively with the research team from that point during the course of the study.

D. MAJOR FINDINGS AND CONCLUSIONS

From the extensive data sets obtained by the research team, there were several key findings that are summarized below. These findings provide the opportunity to better understand means of increasing recruitment and extending retention of URM faculty.

The results described below were observed in at least one of the three key modes of inquiry used in the study, which will be designated in the text with a parenthetical italicized letter at the end of the finding statement (survey (*S*), cohort analysis (*C*), qualitative interviews (*I*)), and in many cases were substantiated by two or more of these methods, often in conjunction with information obtained from minority faculty forums (*MFF*). Ultimately, these major findings have helped to inform and shape the recommendations of this committee. Full statistical analysis and details obtained from the study are presented in the research report in unabridged form. The research report also contains additional research findings, including findings on the salary analysis, details on the survey results and additional findings from the qualitative interviews.

Definitions

For this report, URM faculty were defined based on records of the provost, which included all faculty of African, Hispanic or Native American ethnicity who fit under the federal employment definition of all U.S. citizens and permanent residents regardless of country of origin, plus those holding permanent visas in the U.S. The list included citizens, permanent residents and newly arrived faculty on temporary visas who either identified as an underrepresented minority or who were identified as such if he/she had not identified at all. It did not include faculty who meet the guidelines for minority status, but who self-identified as White. As described in the Introduction section, it is recognized that this sample represents the broader definition of underrepresented minority faculty and includes many international faculty with African and Hispanic ethnicity.

Recruiting

MIT recruits heavily from its own and a few peer institutions: Data from the minority faculty who were interviewed (80% response rate) indicate that **36% have an MIT degree (UG or grad)** and 60% received their doctoral degrees from three key universities (MIT, Stanford, Harvard – see Table 2) (*I*). Institute numbers are consistent with these data, indicating that 55% of all URM faculty have their Ph.D. from these schools, with similar, though slightly lower numbers from White (50%) and Asian (43%) faculty from the same three key universities.

To determine means of increasing the number of underrepresented groups on the MIT faculty, it is important to appreciate the universities that serve as primary sources of URM faculty for MIT. A large number of MIT minority faculty have acquired an MIT degree of some kind in the past, indicating a strong tendency of MIT departments to recruit from the Institute's own alumni. These statistics also indicate that URM candidates with

Table 2. Feeder school data for MIT URM faculty from interview sample**URM faculty with an MIT degree (n=47)**

Degree	Frequency	Percentage
No MIT degree	30	64%
Undergraduate	6	13%
Master's	4	9%
Doctorate	10	21%
Post-Doctorate	3	6%
MIT Lifer	3	6%

Note: MIT Lifer denotes faculty receiving B.S., Ph.D. and faculty appointment at MIT

Graduate schools feeding MIT's URM faculty (n=47)

Institution	Frequency	Percentage
MIT	10	21%
Harvard	9	19%
Stanford	9	19%
Yale	2	4%
Univ. of Chicago	2	4%
UC-Berkeley	3	4%
International	2	4%
Other	11	23%

Note: From URM interview data (n=47). Applies to schools from which faculty received a Ph.D. Other includes Caltech, Cornell, CUNY, Julliard, Northwestern, NYU, Princeton, UCSB, Univ. of Michigan, Univ. of Pennsylvania and Univ. of Virginia.

previous exposure to MIT may be more likely to consider a faculty position at MIT. On the other hand, the narrowness of the sources of URM faculty — essentially more than half with Ph.D. degrees from only three top-tier institutions — indicates a significant lost opportunity to gain faculty from other schools. The fact that these schools also do not have a large number of minority candidates in their pools can exacerbate a problem presented from narrow recruitment sources.

Conclusion: On the one hand, MIT has made good use of itself as a resource for faculty hiring. The Institute's ability to attract its own students can be used as a great opportunity to influence its future URM faculty numbers by cultivating positive student experiences and long-term relationships with its former students. On the other hand, an increase in the breadth of search could yield much larger numbers of URM faculty.

URM faculty hires reported more active recruitment than non-minority counterparts (1).

Approximately 79% of non-URM faculty report directly applying to MIT over being specifically recruited, compared to just 37% for URM faculty. These numbers indicate that the

dominant route for non-minority faculty to a position at MIT begins with a decision to apply, generally unsolicited. In the case of minority faculty, however, it is more often the case that a member of the department approached the prospective faculty member and actively encouraged/recruited his/her application.

Conclusion: Proactive measures initiated by MIT have been key to recruitment of URM faculty. Direct engagement by department heads and deans in these cases has often made the difference in a successful hire.

There is some ambiguity and misinformation on the nature of Provost Opportunity Hires among both URM and non-URM faculty (1). Such perceptions may be damaging to faculty who are thought to result from such hires. The provost retains access to a small number of faculty slots that can be made available to departments that, upon completion of a search, find an excellent faculty candidate who will increase diversity and whom the department wishes to hire. The faculty slot is provided by the provost, and resources such as start-up funds and laboratory space are provided by the department, as is the case for other departmental hires. General understanding among some faculty about the Provost Opportunity Hire process was often incomplete or incorrect and, in many cases, such misunderstandings influenced perceptions about the program and those hired using the provost slots. In some cases, it was incorrectly believed that such hires take place outside of the usual departmental search and hire process, which is not true for most schools and departments. Often, URM or women candidates hired using a Provost Opportunity could be negatively perceived (by fellow faculty and/or self-perception) to be a second-choice or lower-ranked

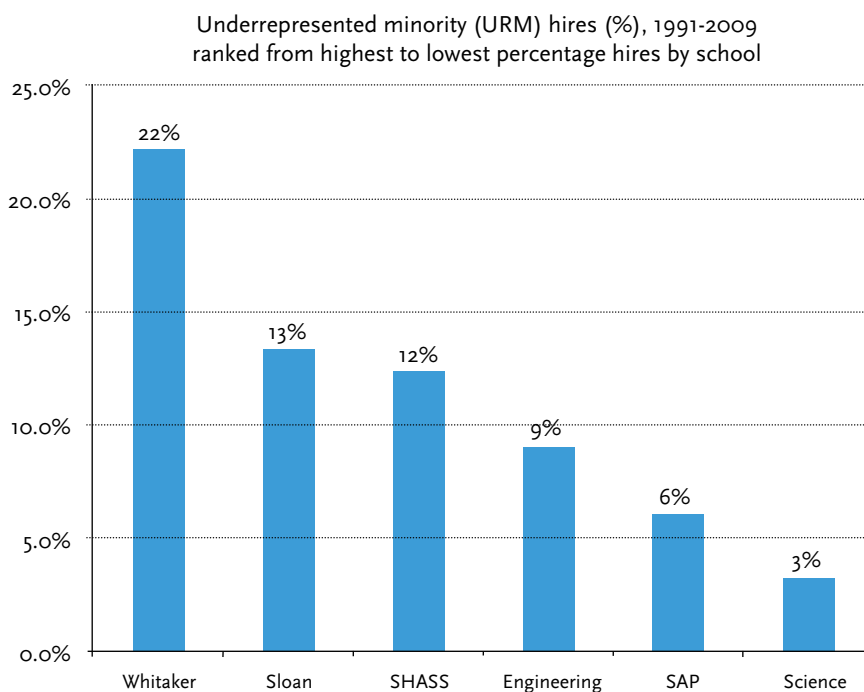
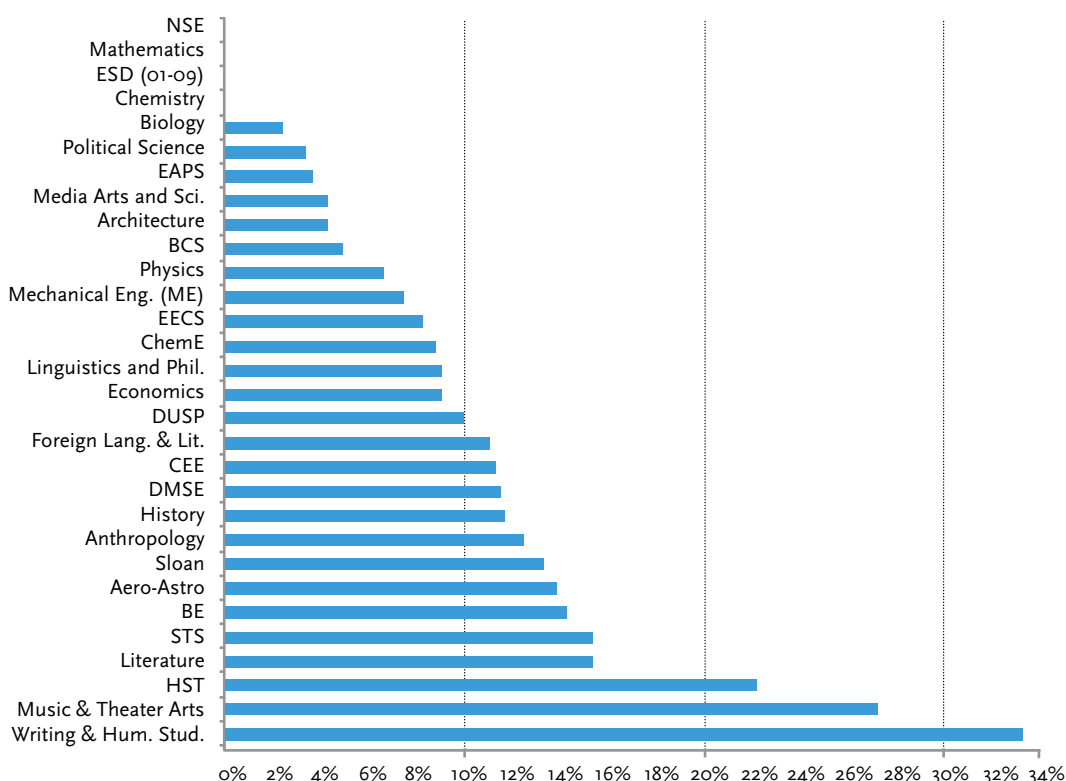


Figure 3. URM hiring by school, 1991-2009, from cohort analysis.

Underrepresented minority (URM) hires (%), 1991-2009
ranked from highest to lowest percentage URM hires by department



Note: Data counts dual hires as 50% in each department.

Figure 4. URM hiring by department from cohort analysis
(includes minorities of U.S. and international origin).

candidate or, in some cases, to have been hired without the same qualifications. In other cases, understanding around how the provost hire slot is made available and how it relates to the departmental role of providing new faculty resources (e.g., startup package or lab space) was unclear to faculty at large. These uncertainties seemed to primarily exist because of non-uniform information about the purpose, use and process surrounding such hires. The result of such perceptions could also influence those not hired using a provost's slot, due to the sometime presumption that a URM was hired under a "different" circumstance.

Conclusion: Lack of clarity about the use and purpose of Provost Opportunity Hires can lead to an undesired negative perception that could be alleviated with more open communication about the program and its process.

Hiring by school and department shows patterns in which minorities are consistently not hired in certain departments. There are also positive hiring patterns that are apparent in certain other departments/disciplines (C). The cohort analysis included the examination of incoming hiring of all faculty from 1991 to 2009 and determined the percentage of URM hires that took place during this time period. The number of URM hires is shown by school

and by departmental unit in Figures 3 and 4, respectively. There are definite and consistent trends among the different schools, as seen in Figure 3, with the percentage of hires over this time period varying across a range: from the Whitaker School (22%) to MIT Sloan (13.3%), SHASS(12.5%) to Engineering(9.3%), Architecture and Planning (6.3%) to the School of Science (3.4%).

The numbers provided per department indicate significant differences even within schools and also point to some departments in which there has been no minority hiring in the past two decades. On the contrary, there are certain departments that seem to have achieved relatively significant hiring of URM faculty.

It is clear that the hiring patterns reflect, in some part, the relative pools available within a given field. Successes within some of these more challenging fields in the recent past, however, indicate the potential to experience gains in faculty even given these kinds of challenges. A careful analysis of such departments within sets of fields or disciplines can lead to the learning and sharing of new approaches at MIT for increasing diversity in departments in similar disciplinary areas. Discussion and analysis with units that have had some difficulty in this area may also yield additional ideas about both increasing the pipeline and addressing the search and recruitment process.

**Table 3. Current numbers of URM faculty by school and departmental unit
(2009 – 2010 academic year)**

	URM	Asian	White	Grand Total	% URM
Architecture & Planning					
Architecture	2	5	28	35	5.7%
Program in Media Arts & Sciences		5	15	20	0.0%
Urban Studies & Planning	3	3	23	29	10.3%
Total	5	13	66	84	6.0%
Engineering					
School of Engineering			2	2	0.0%
Aeronautics and Astronautics	3	3	26	32	9.4%
Chemical Engineering	2	4	25	31	6.5%
Civil & Environmental Engineering	5	1	31	37	13.5%
Biological Engineering	1	2	15	18	5.6%
Electrical Engineering/ Computer Science	9	23	92	124	7.3%
Engineering Systems Division	1		6	7	14.3%
Material Sciences and Engineering	2	2	32	36	5.5%
Mechanical Engineering	3	18	47	68	4.4%
Nuclear Science and Engineering			15	15	0.0%
Total	26	53	291	370	7.0%

Table 3 (continued)

	URM	Asian	White	Grand Total	% URM
Humanities, Arts, & Social Sciences					
Anthropology Program	1	1	6	8	12.5%
Economics	2	2	30	34	5.9%
Foreign Languages & Literature Section		3	5	8	0.0%
History Section	1	1	12	14	7.1%
Linguistics & Philosophy	2		24	26	7.7%
Literature Section	2	1	12	15	13.3%
Music & Theater Arts Section	2	3	8	13	15.4%
Political Science	1	2	21	24	4.2%
Program in Science, Technology & Society	1		12	13	7.7%
Program in Writing & Humanistic Studies	4	1	4	9	44.4%
Total	16	14	134	164	9.8%
Sloan School of Management					
Total	10	15	81	106	9.4%
Science					
Biology		5	49	54	0.0%
Brain & Cognitive Sciences	2	7	29	38	5.3%
Chemistry		3	26	29	0.0%
Earth, Atmospheric & Planetary Sciences	1	2	34	37	2.7%
Mathematics	1	6	43	50	2.0%
Physics	4	11	59	74	5.4%
Total	8	34	240	282	2.8%
Whitaker					
Harvard/MIT Division of HST		1	6	7	0.0%
Office of Provost Area					
Office of the Provost		1		1	0.0%
Dean for Student Life – DAPER					
Total	1	1	10	12	8.3%

*Data from Provost Office of Institutional Research. Note: Dual hires are only counted once for the primary department or division. All data from 2009-2010 academic year, as reported November 2009.

These hiring numbers are not to be confused with the total number of minority faculty per department, which would include all current faculty members regardless of date of hire, and would also take into account losses of minority faculty during the cohort time frame. The total numbers of URM faculty per school and department for the 2009-2010 academic year at press time are provided in Table 3. These numbers can be compared to national university averages for the top 100 science and engineering research universities based on the 2007 Nelson Report,⁹ summarized for several STEM disciplines in Table 4. To also provide an

idea of the immediately available pool, the percentage of URM Ph.D.s produced in each of these fields is also included. In many cases, even when viewed on the highest education level — namely the number of Ph.D. graduates — URM remain underrepresented. MIT is approximately at, or in some cases, exceeds, the national average for certain fields; however, there are also several fields for which MIT is below the average. Given these data, it must be noted that the national Ph.D. numbers are low in general compared to the U.S. URM general population, which now exceeds 30%. Furthermore, there is not readily available data on URM postdoctoral candidates by field and discipline.

Conclusion: Over an extended time period, there are some units within MIT that had consistently low or zero hiring patterns with respect to minority faculty, indicating areas where focus, added resources, support and new strategies — for both pipeline and recruiting — could increase numbers. There are also units that have had relative success in URM hiring in past years, indicating the potential to examine and learn more about recruiting strategies within sets of fields or disciplines.

Table 4. 2007 URM data from top 100 research universities

Field	Discipline	URM % Ph.D. 96-05	% URM in top 100 department faculty*	% URM faculty at MIT in 2009/2010
Physical Sciences	Chemistry	7.5	3.9	0
Physical Sciences	Mathematics	6.1	3.3	2.0
Physical Sciences	Physics	5.2	2.5	5.4
Physical Sciences	Earth Sciences	5.5	3.7	2.7
Biological Sciences	Biology	7.8	4.1	0
Engineering	Chemical Engineering	7.7	5.6	6.5
Engineering	Civil Engineering	8.2	6.1	13.5
Engineering	Computer Science	6.6	2.8	{ 7.3
Engineering	Electrical Engineering	7.9	3.3	
Engineering	Mechanical Engineering	3.7	4.1	4.4
Social Sciences	Economics	8.4	5.8	5.9
Social Sciences	Political Science	12.7	7.3	4.2
Social Sciences	Sociology	16.4	13.5	N/A
Social Sciences	Psychology	12.9	6.9	N/A

*At time of survey, URM represented 28% of the 2006 U.S. population.

Data taken from "A National Analysis of Minorities in Science and Engineering Faculties at Research Universities," Donna J. Nelson, 2007.

Retention

A significant number of minority vs. non-minority faculty leave before or at the associate professor without tenure (AWOT) case. The first three to five years appear more critical to the retention of URM faculty than the majority group (C). Junior faculty at MIT undergo a two-step process to tenure that includes promotion to AWOT and promotion to associate with tenure. Cohort analysis data (see Table 5) indicate that a disproportionate number of URM faculty leave MIT prior to AWOT or after the AWOT case (i.e. without going up for a tenure case), when compared to the non-minority faculty group. For example, 74% of entering White assistant professors were promoted to AWOT, whereas only 55% of URM faculty were promoted, and 79% of Asian faculty. These numbers were statistically significant and provided a meaningful contrast in terms of expected outcomes for URM versus non-URM junior faculty at MIT. Once beyond the AWOT promotion, differences in URM versus non-URM tenure rates still indicate a difference (63% vs. 53%) but it is significantly lower and not statistically significant. The findings indicate that a disproportionately large number of minority faculty are lost within the early stages — generally the first three to five years that precede the first promotion. Reasons for early departure can range from other opportunities offered elsewhere to direct indications about the improbability of tenure, but it is clear that many faculty do not make it through these first critical years and end up leaving the Institute. This phenomenon constitutes a significant loss in the number of URM faculty retained at MIT.

Conclusion: These findings suggest that earlier intervention, more consistent mentoring and oversight, and a strong support structure during this time period could make a significant difference.

Table 5. Promotion rate data for AWOT and tenure taken from cohort analysis

Promotion to AWOT (Asst. Professors hired from 1991-2004)				Promotion from AWOT to Tenure (Asst. Professors hired from 1991 to 2000)			
	Promoted to AWOT	Left without promotion	N		Promoted to tenure	Not promoted	N
URM*	55%	45%	38	URM	53%	47%	17
Black	61%	39%	23	Black	58%	42%	12
Hispanic	50%	50%	14	Hispanic	40%	60%	5
White	75%	23%	436	White	63%	37%	230
Asian	79%	19%	80	Asian	60%	40%	42
Overall	74%	24%	554	Overall	62%	38%	289

* Includes 1 Native American

Mentoring across the Institute lacks consistency, including level of commitment and a defined role for mentors (I). The interview data indicated there was a broad range of mentoring experiences reported by URM faculty. Among the most positive experiences were those in which mentors were accountable at the departmental or higher levels for taking an active

role in mentoring the junior faculty member. Formal programs with such accountability and personal investment from the faculty were most successful. In these cases, mentors were reported to take on an advocacy role rather than a departmental evaluatory role, indicating a difference between the perceived roles of a formal mentor versus a tenure committee member; other studies have found that this kind of role is extremely beneficial to the mentee.¹⁰ More negative experiences included those in which mentors were non-existent, or were not engaged or active, or in which the junior faculty received ill-conceived or overly-directive advice. Interviews with non-minority and minority faculty indicated that poor or negative mentoring experiences are more frequent for URM than non-URM faculty, and they are particularly high among URM women. It should be noted that it can be beneficial for URM junior faculty to have access to at least one mentor from a non-URM group; and in particular, cross-racial or cross-gender mentoring experiences tend to be positive and helpful experiences.^{11,12} **Finally, some junior faculty expressed a lack of knowledge of how mentors might best be utilized to support their careers.**

Conclusion: A consistent mentoring approach across the Institute with accountability, a defined role of a mentor, as well as periodic and timely assessments of progress can contribute to success of junior faculty in the years preceding promotion.

The potential for subjectivity in tenure/promotion decisions, as well as communication about expectations, is more of a concern for URM faculty (I, S). Interview data indicate there is a greater concern among URM faculty about having an objective review process compared to the non-URM sample. This data is complemented by survey data that indicate URM faculty feel requirements for tenure are less clearly communicated with them than their non-URM counterparts.

Conclusion: Concerns exist among some URM faculty regarding a less-than-objective tenure review in general, or a tenure review that is influenced by aspects of race, ethnicity or gender. Aspects of the tenure process that are less defined or less clearly communicated can create increased concerns around subjectivity with regard to these matters.

Many URM faculty, particularly, though not exclusively, in SHASS, SAP and Sloan, work in research areas that are different from the majority of their peers (C). In these cases, there was often concern expressed about the appropriate choice of referees for promotion. There was also concern regarding the level of respect or understanding afforded these different aspects of the chosen research problem by their departmental peers.

Conclusion: Attention and additional effort is required and should be applied toward the support and development of faculty who work in new, frontier areas of the field not well-represented in a departmental unit, or in areas less widely recognized but with potential socio-cultural, national or global impact.

Data from the survey indicate that there is more dissatisfaction among tenured URM faculty compared to their White counterparts (S, MFF), with Asian faculty in the middle. There also

is more dissatisfaction among Asian and URM tenured faculty compared to their untenured counterparts. These trends are not statistically significant, but are supported by the interviews and by the discussions heard in the faculty forums. Although it is clear that faculty generally agree they are satisfied with being a faculty member at MIT, when we compare the extremes reported by tenured White to tenured URM faculty (and see whether they are very dissatisfied or very satisfied with being a faculty member at MIT), the difference approaches the $p=.10$ level of significance. Tenured URM faculty (and, to some extent, Asian faculty as well) are less likely to be highly satisfied with their MIT lives and are more likely to be dissatisfied.

Some possible reasons for this difference culled from qualitative URM faculty interviews and the minority faculty forums with senior URM faculty include accumulation of micro-inequities and stressors such as:

- Lack of peer recognition and acknowledgement;
- Ceilings or barriers at high levels (lab director, senior appointments, chairs);
- Perception of MIT as an equitable place;
- Fatigue, anger or frustration from past efforts to improve diversity;
- Accumulation of micro-inequities.

Ironically, these data are accompanied by the fact that **it is the URM non-tenured faculty, particularly the Black faculty, who are most likely to be very satisfied with their lives at MIT (67% Black vs. 47% White) (S)**. Untenured URM and Asian faculty are more satisfied than White untenured faculty, and more satisfied than their tenured counterparts. This may indicate that recent efforts to provide a supportive environment for junior faculty have met some level of success, at least in terms of overall satisfaction with life at MIT. It is difficult to separate cohort factors — such as changes in administrative practice or departmental climates at MIT — from differences in attitude that may occur over the course of a faculty career, as URM faculty begin to face some of the challenges described by the senior URM faculty. (The latter was also the case for women.)

Conclusion: There is an inverse vector with regard to overall satisfaction in moving from junior to senior faculty rank for URM versus non-URM faculty that is disconcerting, and if addressed could improve the long-time retention of tenured URM faculty at MIT.

Climate

One of the overall issues that impacts the careers and the quality of life of URM faculty is the climate around race and inclusion present within the schools and departments, within classrooms, labs and other localized work environments at MIT. The MIT culture is unique and promotes the scientific standard of objectivity, but it also tends to place less emphasis on humanistic aspects of the academic enterprise. Within this culture, which seeks to view the individual with respect to his/her contributions to a field and levels of productivity, it can often be difficult to address the larger social culture in which MIT is embedded, which includes inherent value placements on aspects such as cultural differences, race and

diversity. Below are findings that address the climate at MIT and its potential impact on URM faculty.

MIT non-URM faculty view diversity as less critical to the Institute's core value of excellence (S). Based on responses from the quality of life survey to the question "I feel a diversified faculty is important for MIT's academic excellence," URM faculty and women both indicate diversity to be a more critical component of MIT's core value of excellence than non-URM males. This difference indicates a deeper dissimilarity in the appreciation of why participation at the highest levels of all groups is needed for future technological and research developments. The idea that MIT's long-term success depends on recruitment of the top talent throughout the U.S. as well as the world is a message that has not yet reached a large part of the faculty. Furthermore, it is clear that the value placed on gaining a diverse faculty is not high.

Conclusion: This low level of valuation speaks to the climate to which minority faculty are recruited. It also indicates the expectation that these faculty exhibit MIT's high ideals of excellence *in spite of* race or gender differences, rather than demonstrating excellence *as a part of* the continuum of diverse backgrounds and perspectives gained from a broad spectrum of diverse faculty.

Discussion of race-related issues is avoided at MIT, to the detriment of many URM faculty who may face but cannot confront such issues directly (I). Based on URM and non-URM faculty interviews, there is great awkwardness in openly addressing race and racial differences at MIT, leading to a sense of silence regarding race. URM faculty indicated this difficulty can lead to issues in communicating concerns from minority faculty regarding race, and can also impede the ability of faculty, in general, to move beyond unexpressed concerns or cultural misunderstandings. In some cases for example, URM faculty may feel that speaking on diversity as a topic in any way can potentially "brand" them as someone who focuses only on this concern at the expense of other issues.

Examples of situations in which this kind of "silence" can be inhibiting include the discussion around a minority faculty candidate or a promotion case in which comments from a referee, or a negative interaction with specific members of the field, might bring about a relevant concern impacted by race or gender. These issues are often extended to faculty discussions around other members of the MIT community, such as URM students and staff, in which presumption or misunderstanding would be more readily addressed without the unspoken expectation of silence on these issues.

Conclusion: The social and political issues that surround the ability to discuss race openly, when necessary, create barriers that can impact and inhibit discussion of key issues for faculty. This ultimately impacts the climate at MIT.

Meritocracy is a concept that is key to the ideals at MIT. Although it is important to strive for this ideal, there is tension created by the outward presumption that true meritocracy is

already essentially achieved at MIT (I). Such presumptions preempt the potential for hidden bias or preferential behavior and do not acknowledge the use of relatively monolithic criteria of excellence (which often works against those who are minorities by race, gender or field). As a community focused on scientific and technological advances, MIT holds a great deal of pride in the concept of a merit-based society in which those who excel are rewarded proportionately. On the other hand, the presence of bias remains a possibility even among those who are most well-intentioned. For that reason, it is not possible to guarantee that racial, gender and other cultural biases do not impact the way in which faculty are evaluated. In short, it is not possible to proclaim a fully meritocratic process when our society presents innate biases to which all can be susceptible on some level. An excellent example involves the differences found in patient evaluations of physicians that resulted in less favorable ratings of minority and women physicians in comparison to the objectively measured physician performance metrics devised to correlate with patient satisfaction and well-being.¹³ Other studies also confirm the presence of unconscious bias in many evaluative settings and contexts.¹⁴⁻¹⁶

Furthermore, although the *ideal* of a meritocracy is, in general, one that can be appreciated by many, there are flaws in the belief that merit is equitably assigned to different kinds of contributions. In particular, the tendency to use two or three highly defined metrics as a means of evaluating quality can lead to a more myopic view of excellence. It may also lead to an inability to quantify, value and recognize other types of achievements that also enrich and contribute to the academic excellence of the Institute. On the other hand, the ability to recognize and reward a broader range of merit can lead to creative and significant advances in new areas. A quote from a young URM faculty member describes this concept: “*To insist on orthodoxy [i.e. narrow, singular definition of excellence] would stifle one of the pillars of MIT which is to encourage innovation and entrepreneurship of ideas.*”

Conclusion: Although the meritocracy concept presents an appropriate ideal, tension is created by the presumption that true meritocracy is already achieved at MIT. This view does not acknowledge the potential for hidden bias nor address the fairly narrow means of assessing excellence.

There is tension at MIT around the concepts of inclusion vs. excellence (I, MFF). The promotion of excellence at the highest levels (national and worldwide recognition, significant and high-impact advances) is a key feature of MIT’s strength. One of the greatest tensions associated with achieving a diverse faculty is the idea that by being more inclusive, one sacrifices excellence or dilutes quality. This concept and the tension generated by it was an underlying theme in both URM and non-URM interviews. The anticipation from some members of the community that the intentional inclusion or recruitment of a minority faculty member might, in some cases, represent a lowering of standards is one that can yield negative experiences for URM faculty even before their career has begun. On the other hand, this same tension is sometimes used as a reason for the lack of progress in increasing URM faculty numbers (i.e. “no good URM candidates can be found”). The presence of faculty with diverse racial and cultural viewpoints can bring a great deal of perspective to work, as well

as a broader and more extensive choice of problems, frequently with high impact. Examples include engineering, scientific or architectural solutions that impact those from lower income groups in the rural U.S., in the country's urban centers, or in developing nations that have not been touched by technological advances.

Conclusion: In general, the belief that inclusion must equal dilution of excellence is one that has not been effectively discussed and countered within MIT's culture, although inclusion of the top scientists and engineers across a broad range of experiences can lead to innovation. It can also lead to the foundation of new research areas that have high impact in many parts of the country and world.

E. RECOMMENDATIONS

The findings described in Section D, as well as the additional input gained from discussions in the minority faculty forums, in meetings with the deans and from other members of the MIT community, have informed a set of recommendations to increase and promote diversity among the MIT faculty. Although the focus of these recommendations is on underrepresented minority groups, **it is believed they will benefit a much broader group of faculty, especially all junior faculty members, and the faculty in general, including those who represent a broad range of differences: gender, national, cultural, sexual preference and identity, and physical ability.** We also believe these recommendations will strengthen many of the core elements of the Institute's hiring, mentoring and promotion processes by implementing a framework for greater oversight and self-evaluation at all levels, from department and lab to school and administration. Finally, along with the research findings, **several recommendations were informed by successful examples of diversity efforts — from the building of the pipeline among graduate students and postdoctoral associates to the successful recruitment of new URM faculty — which were found within our own departments and schools.** For this reason, the recommendations will provide the opportunity for MIT to learn from its best local successes by sharing information where appropriate and providing implementation across its units. The recommended actions will enable MIT to leverage its academic strength and reputation toward increasing diversity by setting and ultimately achieving targeted goals in diversity. These goals should be given similar priority to other known factors of excellence such as publication, rank and international recognition.

As mentioned above, we recognize that some aspects of the strategies recommended here have been implemented, in full or in part, in specific schools, departments or units at MIT. There is a great deal of good will and a large amount of effort that has been expended by many units to address diversity issues. In such cases, shared experiences and practices will prove helpful in designing and implementing Institute-wide policies and systematic approaches that impact and improve URM faculty recruiting and promotion. Some of the specific models of interest that exist at MIT and at other institutions are described in Section G. The diversity-related efforts that have taken place in each of the schools is also detailed in the meeting summaries with the academic deans, included in Appendix C.

Structural Recommendations

These recommendations are intended to increase the level of active engagement that the Institute invests in the increased diversity of the faculty by addressing administrative organization of effort, from recruiting to reporting. Particular action is directed toward increasing the numbers of all underrepresented minority faculty, with special emphasis on the recruitment of U.S.-born and/or -educated underrepresented minorities, though these measures should also lead to increased diversity of many different kinds within the faculty. As a launch point for a university that has accomplished much by setting strategic goals for challenging endeavors, **these measures include directed efforts to set meaningful goals and guidelines**

and to increase the level of short- and long-term strategic planning of our departments, labs and centers around diversity efforts; to generate the needed ideas and infrastructure to support them; and to encourage sharing and discussion of practices among department heads and academic deans. Goals and efforts should reflect the academic pipeline for specific fields and should also include a comprehensive plan to address long-standing pipeline issues as well as short-term efforts in recruiting.

1. **Each departmental unit, lab and center should work with its academic dean and the associate provost of faculty equity to set realistic but meaningful specific goals with timelines with respect to recruitment efforts of URM faculty.** These goals should include URM faculty interview and recruitment; planning for future faculty recruitment through outreach on the graduate, undergraduate and lower level; and efforts to increase the graduate and postdoctoral pool, especially for fields that are highly challenged with regard to pipeline. Specific strategies and efforts should be re-assessed and new strategies put into place if long-term increase in diversity is not achieved. A focus should be placed on units that have experienced difficulty in this area in the past, with the idea of providing additional support and addressing needed strategies that can lead to success over reasonable time horizons.
2. **Resources and support should be provided to all units by the administration and school deans to assist in the recruitment and/or retention of faculty from URM groups.** Efforts toward increasing diversity in the faculty should be periodically assessed and taken into account when reviewing the performance of the units and their leadership. For units that have achieved some level of success and/or met goals in URM recruitment and diversity efforts, resources should remain available for continued efforts in increasing diversity; attention toward retention should also be considered.
3. **Institutional measures of success and strategic plans for future diversity efforts** for each of the schools, set by the president, the provost and academic deans, should be specified and addressed on an annual or biannual basis in a written report to the president.
4. **Minority hiring and retention should be critical issues in the selection of MIT administrative leadership.** It should be the MIT administration's goal to appoint leaders (i.e., deans, department heads, etc.) committed to advance diversity in the faculty. A clear plan to increase URM diversity and, where possible, a track record and accountability in this area must be a necessary condition in consideration of others for appointment to department, lab, center, school and administrative leadership roles.
5. **The MIT Corporation should play a role in active oversight via the visiting committees.** The Corporation should discuss the critical nature and importance of diversity and recruitment of URM and women faculty with all Visiting Committee chairs. Each Visiting Committee should have at least one member who strongly advocates for issues of diversity.
6. **The provost should ensure support and clarity around the purposes and mechanisms of the Provost Opportunity Hire.** This includes the critical fact that the program enables the hiring of top choice candidates who enhance diversity that are put forward following departmental searches.

7. **Department heads and deans should catalog specific efforts and progress toward the recruiting and retention of diverse faculty in a formal and uniform manner**, with such efforts shared annually at a Dean's Council Meeting. A great deal of information can be gained by sharing and comparing strategies and goals. This meeting should specifically address the sharing of lessons learned in the recruitment of underrepresented minority candidates; emphasis should be placed on the progress made and efforts put forth by each department in achieving goals.
8. **Specific sharing of information from programs and departments — with quantifiable measures of success in minority faculty recruiting and retention, and pipeline issues such as minority graduate student recruiting — should be implemented. These departments should be recognized for their successes.** One means of sharing information on models of success more universally with faculty is to ask such units to present their efforts and acquired knowledge at a general faculty meeting for dissemination and discussion.

Recruiting Recommendations

1. **Department heads and faculty search chairs must be held accountable** for minority faculty recruiting and strategic efforts toward a diverse faculty. This is possible through the usual methods of departmental evaluation and oversight (see Structural Recommendations).
2. **Faculty search chairs must be trained and informed** on issues that include hidden biases, broad search policies and existing resources for identifying potential candidates. This training process should be executed and maintained by the schools and the provost's office. Resources needed for the implementation of training programs should be provided by the administration and managed by the associate provost office for faculty equity.
3. **When possible, faculty searches that involve hiring in small groups or clusters, as opposed to single hires, should be pursued.** Final top candidates should be grouped, but not ranked, since ranking can often lead to exclusion of excellent candidates based on arguments of fit or need. An example of the approach of cluster hiring is given from MIT Sloan (Section G). In some cases, this can be facilitated in the following ways: by the monitoring of slots by school deans; open discussion with the dean's office and the department about potential candidates who are strong but may be in areas beyond the focus of a current search; or coordination across searches in several departments. An example of coordination between search committees from the School of Engineering is also provided in Section G.
4. **MIT should build strong pipeline programs on campus and network with the top peer institutions** from which current URM faculty have come in a targeted and focused manner.
 - a. A large number of MIT's URM faculty have matriculated at MIT or from a short list of peer institutions. Building **strong two-way relationships with these peer institu-**

tions that involve directed recruiting will expand the pool of faculty candidates. For such efforts to be successful, they must be initiated on the top levels — between presidents at the institutions of interest (based on the cohort analysis, Stanford and Harvard would be in this group). The interactions initiated on the presidential level should be bridged by **specific one-to-one interactions with peer schools, including planned efforts for sharing information and shaping programs (on the school, department or disciplinary level) between deans and department heads.** This kind of model should be adapted to engage groups of search chairs and department heads — on the level of fields or disciplines — to exchange information with frequency. Such efforts would enable the tracking of potential candidates early in their graduate careers and the guiding of those candidates toward academia.

- b. The ability to target our own MIT students is an opportunity the Institute must take advantage of with deliberate **programs that introduce undergraduate and graduate students to faculty life at MIT and the possibilities of a future career in academia.** These efforts can be made in conjunction with the Office of Minority Education and the Office of the Dean for Graduate Education.

5. **Each department should track its top underrepresented minority undergraduate and graduate students,** follow their academic careers and post-graduate successes, and keep information available that will enable or inform a search committee in future years.
6. **The Institute must enforce the broadening of searches to other carefully selected institutions to increase the numbers of highly qualified URM applicants. Because these relationships are strongest on a disciplinary level, these interactions should be engaged by department heads and academic deans in a strategic fashion by determining top schools at which URM candidates reside. Infrastructure should be provided to enable departments and units to build these relationships.** The fact that more than half of the current URM faculty come from three or four peer institutions is indicative of a significant problem in the breadth of academic searches. For many departments and disciplines, even an extension of a search for URM candidates to the top 10 schools could impact these numbers. In many cases, there are excellent, highly ranked institutions, particularly in specific areas or fields, which also have larger numbers of URM Ph.D. candidates. **MIT must form strong and substantive relationships with these institutions that will enable the sharing of information about potential URM candidates early in their graduate careers.** It is critical that significant effort is placed in building the quality of these partnerships, which rely on trust and mutual benefit to yield an exchange and growth of minority scholars. Weak efforts could lead to a diminution of respect or trust with MIT and a loss of good faith.
7. **MIT departments and schools should increase the numbers of prestigious postdoctoral/visiting scholar programs that can bring minority scholars to campus, naturally expanding the pool of potential candidates over a short timeframe.** These programs do not need to be solely focused on minority candidates, but should be used to increase the pool of URM candidates. This benefits MIT and its peer institutions by producing highly qualified scholars with substantive experience and some exposure to the academic rigors at the

Institute. Such programs would be particularly beneficial if they enable scholars to initiate independent research in a supportive faculty lab environment and to develop a strong mentorship relationship with the faculty member(s). An example of such an initiative that has been successful in attracting women faculty is the prestigious Pappalardo Fellowship Program established in Physics, discussed in Section G.

8. **Bridge programs in science and engineering that facilitate the transition for excellent students from less competitive undergraduate institutions for MIT graduate school should be designed.** This approach would be particularly helpful in fields with low numbers of URM students and for which few students matriculate at top-tier graduate institutions. Such programs could provide a one- or two-year period of academic rigor at MIT and could also offer academic research opportunities. An example of such a program exists in the field of Physics at Vanderbilt University with Fisk University, an historically Black university. Several of the participants in the bridge program have applied and been admitted to Vanderbilt as graduate students, making Vanderbilt one of the top producers of minority physics Ph.D.s, as described in Section G.
9. **MIT should develop programs that enable departments to build relationships with early and pre-career minorities in a substantive fashion.** More targeted programs can be undertaken by specific departments to attract and evolve future faculty members. Resources for such programs should be discussed and made available on the school and administrative level, and partnerships among departments can enable shared resources. **Coordinated efforts such as these can be greatly facilitated in schools or departments that hire a full- or part-time person to focus on minority recruitment on both the student and the faculty level. Resources for such personnel and programs should be implemented to allow a much more extensive use of MIT's own student resources.** An example of such hires includes the position of manager of diversity recruitment for the School of Architecture and Planning to address outreach, diversity awareness and recruiting on every level, from undergraduate and graduate students to faculty. A second example is the hiring of a full-time staff person in the Department of Biology to operate diversity recruitment and outreach programs directed toward undergraduate and graduate students. Both of these examples are discussed in more detail in Section G. Career-building workshops can also bring graduate students and postdoctoral associates to MIT's campus to learn more about the preparation for faculty life, the application process and the expectations of applicants. They can include assignment of mentors, discussion of research plans or discussions on how to choose a good postdoctoral opportunity. An example of one such activity was a Future Faculty Workshop — supported by MIT's Chemistry, Chemical Engineering, and Materials Science and Engineering departments — headed by Chemistry Department Head Tim Swager. Swager partnered with participants at Carnegie Mellon and the University of Massachusetts, Amherst, in the cross-disciplinary area of materials chemistry and engineering and polymer science; this example of cross-field and cross-institutional collaboration is also detailed in Section G.
10. **Minority undergraduate students should be targeted and encouraged toward graduate school** via summer research opportunities at MIT such as the MIT Summer Research

Program (detailed in Section G). Comprehensive on-campus honors programs that train and prepare the top URM undergraduates for graduate school at research institutions can also greatly increase the yield of undergraduates that attain Ph.D.s; an example is the Meyerhoff Program at the University of Maryland, Baltimore County, as described in Section G.

11. **The disciplinary and departmental units at MIT should engage on a substantive level in professional organizations to specifically reach minority scholars.** The presence of MIT, especially when it includes significant representation from faculty or key staff at organizations that represent minority groups in a range of fields, can have real impact in both the exposure of students who are considering faculty careers and have not considered MIT, and in opportunities for MIT to spot new talent. Such groups include the National Society of Black Engineers, Society of Hispanic Professional Engineers, National Black MBA Association, National Society of Hispanic Physicists, National Society of Black Physicists, National Organization of Black Chemists and Chemical Engineers, etc.

Mentoring Recommendations

Given the differences between mentoring experiences among URM and non-URM faculty, and the significant loss of URM faculty in the first three to five years at MIT, we have placed particular emphasis on mentoring and support of all junior faculty, with an eye toward retention. This section and the next specifically address recommendations on mentoring in relation to the tenure and promotion process. It is noted that a comprehensive investigation of MIT's tenure and promotion, as well as the grievance procedure, has been addressed separately by a faculty committee appointed by the Faculty Policy Committee, and chaired by Thomas Kochan. A number of the points addressed below resonate with the findings and forthcoming recommendations of the FPC committee as well.

1. **Formal mentors should be assigned to all junior faculty hires as part of an Institute-wide policy on mentoring.** There is not a universal mentoring policy in place today for junior faculty at MIT, and there are large variations in mentoring efforts across schools and departments. Inconsistencies in mentoring practices and, in some cases, a lack of a formal mentoring program of any kind, have led to a range of negative mentoring experiences. Even in the best case, a lack of consistent mentoring represents a lost opportunity to provide guidance, support and information that assist in the development and optimization of junior faculty, along with their career opportunities.
 - a. It is recommended that junior faculty be assigned at least two mentors. Multiple mentors enable a balance/counterbalance in career guidance and provide the advantage of more than one perspective. It also provides a greater opportunity for a good fit with at least one departmental faculty member.
 - b. It is also recommended that one faculty member outside of the departmental unit (and in some cases outside of the school or the Institute) be assigned a mentorship role, which would be slightly different from that of department members. This

external mentor can provide a broader range of advice and may also have the ability to prod action outside of the department in difficult or strained internal situations.

2. **The primary role of the mentor as an *informed advocate* independent of the evaluation process, rather than an evaluator, must be delineated** and should be encouraged. In some cases, 'mentors' have been defined as internal evaluators of a tenure candidate as part of a tenure committee. This role of evaluator should be reserved for the senior faculty departmental body that determines the final promotion decisions (be it a full senior faculty, subdivision or tenure committee) and not specifically assigned to the mentor. Mentors should be independent advocates who can inform fellow senior faculty of the candidate's status and efforts, as well as act to help shape and develop the junior faculty member in a supportive fashion.
3. **Mentors should be accountable to the department** in their role. Regular annual or biannual meetings with the mentee, followed by a presentation and update of the mentee's progress to the department or department head, should be minimal requirements of mentors. Mentors should be chosen so that they may be engaged/invested in both the process and the person.
4. **Mentors should be trained/informed of their role and expectations** — formal training or informationals within departments or schools may be needed to disseminate the meaning of the mentor's role.
5. **Mentees also should be trained or informed on what to expect** from and how to use mentors. Specific training and information on mentors and the promotion process in general can be included in the junior faculty introductory workshops now offered on teaching.
6. **Annual departmental reviews should be implemented for each junior faculty, beginning in the first year.** It is important for junior faculty to receive feedback and advice from their departments or units as early as possible. The review should be followed by verbal and/or written feedback from the department head and the assigned mentor(s). A follow-up meeting based on the feedback provided should be arranged with the mentee during the course of the following year.
7. **All junior faculty should be introduced to the Faculty Personnel Record or other relevant device or form used to assemble the promotion package** in the first year. This is early enough to enable junior faculty to see benchmarks for tenure evaluations, to discuss and determine the relative importance of those benchmarks with mentors, and to enable mentors to impart rubrics for success.
8. **Department heads, deans and the provost must implement a comprehensive feedback and evaluation process.** It is recommended that the MIT Office of the Associate Provost for Faculty Equity initiate a general procedure enabling feedback from junior faculty on their mentoring experiences, which can be shared with deans and department heads.
9. **Regular discussions with the associate provosts for faculty equity and department heads to confer on the progress for each of the junior faculty in the department or unit should occur on an annual basis.**

Promotion and Career Development (tenure and beyond)

To address the concerns raised about objectivity and the tenure process, as well as questions about field-specific tenure issues that were named by multiple URM faculty, the following overall suggestions regarding the tenure process are provided.

1. **A general oversight process for all tenure cases from the dean and provost level that can take place prior to development of the junior faculty case is recommended.** This overview could consist of a discussion with the department or unit head and the dean to cover potential issues and how they will be handled (e.g., time off tenure clock for children, unusual situations regarding lab or infrastructure availability, other concerns).
2. In many fields, URM faculty study areas viewed as different, nontraditional or “non-core” to a specific discipline. In many such cases (regarding both non-URM and URM faculty), there is a need to pay specific attention to letter writer selection. **Careful discussion of potential referees, including their competency levels and research relevance to the candidate, should begin with the first annual reviews** and continue to the point of promotion.
3. **Guidelines to promotion and tenure should be described to all junior faculty upon arrival,** and these guidelines should be reviewed with specific attention to details about how junior faculty can actively engage in the tenure process.
4. It is recommended that **clearer guidelines be presented on the promotion to full professor, including typical expectations around timing and accomplishment.** This information should be provided by the department chair and the assigned mentors within a year of a positive tenure decision. Mentors should maintain a role in the process to “full” and address how to gain recognition and expand research programs and/or other opportunities as senior faculty.

Climate

1. **MIT must present leadership from the top levels** to introduce, create and maintain a climate of inclusion. Efforts should include:
 - a. The president and provost should initiate systematic efforts on the importance of diversity; motivation and the initiation of innovative processes to address diversity challenges should become a part of the primary messages shared with the Institute faculty.
 - b. Leadership training of new deans and department heads should be introduced, which should include a significant and relevant diversity component.
 - c. Implementation of a diverse faculty and student body as a part of the evaluation of success for schools, departments, labs and centers, and their leadership.
2. **The Institute should create forums at MIT where race and cross-cultural interactions are openly discussed.** One approach to the idea of Institute-wide forums would be problem-solving open forums or task-force style working groups that **seek innovative solutions to**

increasing diversity. This approach is unique to the MIT culture of creative and collaborative means of addressing difficult problems. A second approach is to directly address the faculty about the existence of hidden bias using workshops, as was done recently in the School of Science with each of its departments, detailed in Section G.

3. **It is recommended that MIT harness its top and most highly respected scholars, scientists and engineers of the Institute to act as spokespeople on diversity issues.** Key individuals respected for their academic achievements can be used as visible and influential allies in the effort to increase faculty diversity. Other allies include those people with institutional roles and/or background and knowledge who have shown consistent support for issues of diversity. An example from a peer research institution is the University of Michigan, where highly respected non-minority faculty were engaged as both consultants and advocates to address and champion diversity and excellence across campus. It should be noted that significant resources may be needed to engage, inform and prepare such allies. This example, which is a part of the National Science Foundation-funded ADVANCE STRIDE program, addressed all STEM fields on campus and is detailed in Section G.
4. Efforts toward increasing diversity need to be clearly specified and owned from department heads through the school and Institute levels (see structural recommendations). **Departments should be expected to take the initiative to invest in the resources needed to develop either their own programs or joint programs with departments in related fields,** and to take part in other efforts to increase student and faculty diversity.
5. **Active efforts are expected from department heads and deans to seek and recognize talent from faculty of color (at all ranks) within and beyond the university.** Such efforts include speaking opportunities, named seminars, invitation of visiting faculty and scholars, selection of members to visiting committees, etc. By increasing awareness of scholars of color across all fields, increasing awareness of excellence in diversity will help to address some issues around tensions of inclusion versus excellence.

F. PLAN FOR INSTITUTIONAL IMPLEMENTATION, ASSESSMENT AND ONGOING EVALUATION OF PROGRESS

To ensure an open discussion of the recommendations provided by the report as well as the study findings, and to enable implementation of the recommended actions, the following steps are suggested:

1. It is recommended that the president and provost, in conjunction with the MIT Corporation and with the academic deans, promptly review and address the implementation of the recommendations above. School Council meetings will be arranged for each of the schools to discuss the report with the Initiative Committee and provost to enable input on the best means of implementation and to address concerns and issues surrounding implementation, as well as additional ideas. Within each school, discussions can center on how the guidelines can best be translated into school and departmental policies. The input gathered during this implementation planning period will enable the formation of Institute-wide policy, as well as school and unit policies, that fully address the recommendations.
2. During this time period, the associate provosts for faculty equity and the Initiative Committee will work to initiate discussion of the recommendations with the general faculty and MIT community. Further input from the general faculty will be arranged via means such as the general faculty meeting. Input from the community can be used for further refinement of the recommendations, while maintaining their key intent and objectives.
3. It is further recommended that the provost and the MIT Office of the Associate Provost for Faculty Equity work with the deans and academic units to address the administrative details of implementation to ensure Institute-wide incorporation of the recommendations in every unit.
4. The Faculty Race and Diversity Initiative Committee, or a similar committee of faculty members appointed by the provost and including the associate provosts for faculty equity, should be maintained during the remainder of the 2009-2010 academic year. The goals of this group will be to work with the president, provost and academic deans on the implementation of the recommendations, and to give feedback regarding the intent and details of the recommendations.
5. Appropriate staff and resources should be provided to the associate provost for faculty equity to support implementation of these recommendations, including the management of diversity metrics, the development of needed diversity informational or training programs, and facilitation of faculty diversity efforts across the Institute.
6. The Institute must assess the progress made on the recommendations established in this report in future years. A committee of senior faculty should be assembled to periodically review progress made toward minority faculty recruitment and retention every five to 10 years and report to the president and provost with further recommendations, if

needed, to accomplish the original goals of this report. The results of these evaluations should also be shared with the general faculty.

7. The cohort analysis data set should be maintained and updated each year to provide a means of evaluating progress of the Institute in achieving goals of increased faculty diversity. This data set should be further expanded to include several additional key variables, including doctoral degree institution, country of origin, and years of professional or academic experience before hire; these variables will be critical in gaining increased understanding over time. Institutional Research must maintain data at the intersection of race, gender and national origin of all faculty, and must also maintain records of hiring, promotion, resignation and retirement of faculty to address other key details in the cohort study. Additional resources must be provided to accommodate the personnel needed to maintain these records. This data must be examined annually by the president, provost and associate provosts for faculty equity, as well as shared and discussed with the school deans and department and unit heads.

G. EXISTING PROGRAMS AND MODELS FOR SUCCESS

Across the Institute, there have been several efforts introduced at departmental and school levels to address URM and women faculty recruitment, graduate student recruitment and pipeline issues. Furthermore, efforts have appeared to address hiring, search and hidden bias issues as well, with a number of new programs or policies developed over the past few years. In this section, we highlight a few examples of these efforts, many of which represent both known and new approaches to increase the pool of diverse candidates in hiring. Many of these efforts represent models or concepts that are indicated as Institute-wide mandates or goals in the recommendations. **This short list is not intended to be exhaustive; there are numerous programs that exist across the Institute that also provide useful examples of ways in which diversity can be addressed.** It is an intent of this study to initiate further discussion and sharing of such programs across the Institute, including both success stories and lessons learned from less successful attempts as a means of informing new efforts launched. Finally, it is important to emphasize that there are many examples of wonderful ideas and efforts that have been carried out on the campuses of other research-intensive universities. It is important to learn from these examples and determine which aspects of models set forth by peer institutions can be adapted to MIT. A few examples are provided here, but the list is not meant to be exhaustive, merely representative of the successful models embraced by our peer schools.

Examples from MIT

MIT Pappalardo Fellowships in Physics

The Pappalardo Fellows Program in Physics is highlighted here as a model that worked for increasing numbers of women faculty at MIT. For certain fields and disciplines, it is thought that similar models may be effective in increasing URM faculty candidates and hires. The mission of the MIT Pappalardo Fellowships in Physics is to sustain a distinguished, on-campus postdoctoral fellowship program for the department that identifies, recruits and supports the most talented and promising young physicists at an early stage of their careers. This initiative was made possible by the generosity of Mr. A. Neil Pappalardo (EE '64), an MIT alumnus with a long history of generosity to both the Institute and the Department of Physics. The program traditionally appoints three new fellows per academic year, each for a three-year fellowship term. Fellows are selected by means of an annual competition; candidates cannot apply directly, but must be nominated by a faculty member or senior researcher within the international community of physics, astronomy or related fields.

All MIT Pappalardo Fellows in Physics are provided with the following:

- Independence in selection and focus of research direction within the MIT Department of Physics throughout their three-year fellowship term;
- Active faculty mentoring fostered by weekly luncheons and monthly dinners with faculty and guests during the academic year, which promotes scientific exchange and professional growth for the fellows;

- A competitive annual stipend with an annual cost-of-living increase (currently \$60K for first-year fellows), combined with \$5K per year in discretionary research funds; and
- MIT Medical health insurance coverage for fellows and their dependents.

The outreach to the physics community for the program is large, with a rigorous selection process that engages faculty in the evaluation of fellows. Beginning each July, more than 1,300 physics (and related fields) faculty are emailed a solicitation for nominations of their top candidates for that fall's fellowship competition. Approximately 135 to 150 nominations are received each year. The review, evaluation and selection process begins with a thorough reading and grading of applicant materials (CV, publications list, research essay, three reference letters) by a minimum of two faculty members (typically both an experimentalist and a theorist in the candidate's area of physics). A short list of approximately 18 finalists is selected by committee consensus in mid-November. Over a two-day period in mid-December, the finalists meet for one half-hour each in a panel-style interview with the committee (15-20 minute "blackboard" talk by the finalist, with 10-15 minutes of Q & A with the faculty). At the end of this two-day interview period, the committee ranks all finalists, designating by consensus the top three to receive "first-round" offers, followed by five to six alternates, with the remaining half designated as not yet at that stage of career development that would allow them to benefit from an independent postdoctoral position such as the Pappalardo Fellowships.

Results of the MIT Pappalardo Fellowships Program indicate that from its inception year in 2000 to 2009, two of the five Pappalardo Fellows appointed to the MIT physics faculty are women (Gabriella Sciolla and Jocelyn Monroe). A total of 10 of the overall 34 Pappalardo Fellows during this same time period have been women (17 of 60 fellowship offers made were to women finalists), and 37 of 171 fellowship finalists invited to interview were women. It is also noted that each year since its inception, the Pappalardo Fellowships Executive Committee membership included one to two women faculty.

Biology URM Student Outreach Programs

In the recent past, the Department of Biology has made intentional and focused efforts to address graduate student enrollment and, in particular, graduate student diversity. The determination of the faculty to address this problem and implement substantive change was additionally fueled by concerns expressed by the National Institutes of Health and related NIH training grants operated by the department. Several faculty members were committed to changing diversity numbers at the graduate student level, which will ultimately improve the pipeline for faculty hires. This progress has been facilitated in part by the hiring of a full-time staff person, Mandana Sassanfar, who has coordinated many of the department's new outreach programs and efforts. Thus, over the last five years, the Department of Biology has made great strides in increasing the diversity of the population by recruiting URM graduate students to its program. In this time period, the fraction of students who are underrepresented minorities has almost tripled, with a steady increase from 5.2% in 2004 to 14.4% in 2009.

A variety of positive and focused outreach activities have synergistically come together to contribute to this success. These activities include: 1) faculty participation in the major national conferences for minority scientists and undergraduate students, including the Annual Biomedical Research Conference for Minority Students (ABRCMS) and Society Advancing Hispanics/Chicanos and Native Americans in Science (SACNAS); 2) faculty visits to colleges and universities with a large URM population. This establishes regular and direct contacts with directors of programs that aim to increase URM and underprivileged students' access to scientific research careers, e.g. Minority Access to Research Careers (MARC), Minority Biomedical Research Support (MBRS), the Meyerhoff Scholars Program at University of Maryland and the Howard Hughes Medical Institute (HHMI); 3) providing summer research opportunities to URM and underprivileged students at MIT (co-administered with the Science and Engineering-supported MIT Summer Research Program, or MSRP); 4) providing coordinated or individualized campus visits to MIT for URM and underprivileged students interested in graduate school in the biological sciences; and 5) providing opportunities for faculty from primarily URM-serving institutions to perform sabbatical research or to visit and present their research at MIT. These activities have contributed to success in recruiting outstanding minority students to the Biology program, not only by making direct contact with the students themselves, but also by providing opportunities for the Department of Biology to establish significant relationships with key faculty who mentor minority and disadvantaged students.

Future Faculty Workshop — Cross-disciplinary Materials Workshop

To address the need for increased diversity among faculty working in the areas of Chemistry and Chemical Engineering (as it relates to Polymer Science and Materials Science), Department Chair and Professor of Chemistry Tim Swager teamed with colleagues at Carnegie Mellon and the University of Massachusetts, Amherst, to create a workshop to train URM students and scholars in these fields. The workshop, designed to help prepare URM students for a faculty career, was a cross-disciplinary effort with the departments of Chemical Engineering and Materials Science and Engineering at MIT, and involved similar departments at the partner schools. The co-founder of the program is Prof. Richard McCullough, vice president for research and professor of chemistry, Carnegie Mellon University. This pilot workshop was held for the first time from June 15 to 17, 2008, at MIT's Endicott House. The second workshop was held in Pittsburgh, PA, at Carnegie Mellon from August 8 to 11, 2009, and a third one is being planned at the University of Massachusetts campus for 2010 or 2011.

The three-day workshop seeks to provide mentorship to aspiring underrepresented minority students with ambitions to become independent academic researchers in the areas of Chemistry, Chemical Engineering and Materials Science as they relate to Polymer Science, Materials Chemistry and Physics, Nanoscience, and Supramolecular Science. A diverse set of professors from varying ethnic backgrounds and stages of their careers participated as speakers and mentors, with a student/ faculty ratio of less than four maintained. Prominent faculty from each of the institutions involved participated in the program, giving lectures that included topics on research perspectives and practical issues, how to prepare a strong research plan for a faculty application, and how to find a good postdoctoral position. The

agenda also included informal networking mixers, talks and panel discussions on preparing for the “Path to Professorship” by creating a strong experience in graduate school, developing research interests (creating a unique identity), choosing and cultivating mentors, developing strong references, sharing personal experiences in job interviews, the job application process, the job interview, writing research proposals, intellectual property issues and pitfalls, and unwritten rules. There were break-out sessions with mentors to work with students and postdocs on proposal development, and specific panels on running a research group and negotiations with department heads and deans. The technical research talks were presented by faculty in the evening sessions. Funding for the workshop was provided by the MIT departments of Chemistry, Chemical Engineering, Materials Science and Engineering; Carnegie Mellon University; University of Massachusetts, Amherst; Dow Chemical Co.; and the American Chemical Society Petroleum Research Fund (ACS-PRF).

Position of Manager of Diversity Recruitment for the School of Architecture and Planning

The hiring of a person who can focus on increasing the pipeline, the formation of networks and issues such as climate can be essential to advance diversity efforts on the department or school level. To this end, the dean of the School of Architecture and Planning has hired a manager of diversity recruitment (MDR), the only school-level position of its kind at MIT. The current person hired for this position is Dr. Robbin Chapman, a URM woman who earned her Ph.D. at MIT and is thus well acquainted with the Institute and its unique culture. The MDR supports faculty search committees within the school’s units by assisting with outreach and the development of candidate pools; providing diversity training as requested; updating the school’s faculty search handbook on diversity issues; and facilitating interaction between search committee chairs and the school’s Faculty Diversity Committee. The MDR also assists with recruiting graduate students, via attendance at relevant conferences and engagement of faculty to do the same, and by serving as a point person for visiting URM prospective students. She facilitated the school’s inaugural participation in the MITES program in 2009 and is a member of all SA&P department and school-level diversity committees.

The MDR convenes monthly diversity roundtable dialogues, which address a range of diversity and inclusion issues. The discussions provide practice in cross-cultural communication. The MDR has also championed diversity snapshots of a broad variety of SA+P faculty, staff and students, to help viewers challenge their assumptions about individuals based on what can be seen. Each snapshot includes a photographic image and three lists, titled: “Some things you can see about me,” “What you may guess about me,” and “What you can’t tell by looking at me.” These snapshots — displayed on flat-panel screens in the school’s corridors and common spaces — have received a good deal of positive response from students and faculty alike as a means of introducing members of the school’s community while celebrating its diversity. Finally, the MDR office has led an open-to-the-Institute series of diversity workshops over MIT’s Independent Activities Period (IAP). In sum, the MDR position appears to be a good use of resources, in large part because the current holder was an excellent fit for the appointment. More information is available at <http://sap.mit.edu/about/diversity/>.

Chemical Engineering Department ACCESS Program

For the first time in fall 2009, the Department of Chemical Engineering decided to launch a program directed toward potential graduate student candidates entitled “A Community in Chemical Engineering Select Symposium,” or ACCESS. The program, initiated by Department Head Klavs Jensen, was in direct response to suggestions and recommendations derived from the visit by the Chemical Engineering 2009 Visiting Committee (VC). Among the recommendations, one proposed by a member of the MIT Corporation was to develop a program that directly engages a broader pool of diverse applicants to the department via outreach. In separate discussions, another VC member, who is chief executive at Dow Chemical Company, offered to fund such a program. The symposium was organized by the department’s student office and headed by Student Administrator Suzanne Easterly and her staff, with support from the Graduate Admissions Chair, Professor Arup Chakraborty.

The ACCESS program is a three-day visit to MIT that provides URM undergraduate students (juniors and seniors) with an overview of the potential benefits of a graduate chemical engineering degree. In addition to the educational and research opportunities inherent in graduate studies, the program gives details on the MIT community and available support for minority students. During their visit, participants also receive a glimpse of graduate student life in the Boston area. The first ACCESS symposium, held in late October, engaged 17 students from diverse backgrounds, including a dominant number of URMs. All received one-on-one discussions with faculty members in research areas of interest to them, research lectures from prominent faculty members, workshops on the chemical engineering graduate school application process, and discussions about graduate opportunities at MIT and beyond. Only an undergraduate student nominated by his or her current school’s department head can apply to attend ACCESS. Faculty at the peer U.S. institutions in Chemical Engineering, as well as historically Black colleges & universities/minority institutions (HBCU/MIs), are contacted about the program, and nominations are solicited and advertised broadly. Early reports from this program indicate that several students were excited about the prospect of applying to MIT. Finally, all received significant information regarding the admission requirements that can help them shape their undergraduate background to increase the possibility of admittance to MIT and other top schools in the field.

SHASS – Search Oversight and Departmental Lecture Series

SHASS leadership (Dean Fitzgerald and three predecessors) has exercised joint faculty and administrative oversight of all search and hiring requests from each department at the school level. A committee consisting of the dean, associate deans, director of human resources, and an equal number of faculty from various departments reviewed each “Request to Search” and “Request to Hire” to assure the use of best practices, and to serve as a backstop even when the department designated its own minority interests representative on a search committee. The joint committee has visited departments to speak with the full faculty, search committee and/or department head prior to planned searches in order to discuss best practices and to answer questions.

The deans have encouraged department heads and committed individual faculty members to make creative use of Institute Target of Opportunity guidelines. In addition, they have offered funds to support a departmental lecture series to enable colleagues to meet and scrutinize potential candidates among their cohort before a formal search. Within the last five years, the dean has challenged each SHASS unit to present the names of senior minority scholars in their fields who could be tenured at MIT. From these lists, efforts to recruit and hire were made with one yield. The department heads have used Targets of Opportunity within a search to add a previously unanticipated talent or dimension of the field and, since 1995, at least 13 URM scholars have been added to SHASS in departments such as Music and Theater Arts, Linguistics and Philosophy, Writing and Humanistic Studies, Anthropology, History, Literature, and Science, Technology and Society. Six are now tenured professors. Of these six, one was hired as the result of a discipline-based lecture series funded by the dean's office.

Hidden Bias Discussions in the School of Science

During the 2008-2009 academic year, the School of Science (SoS) Dean's Office sponsored discussions concerning "hidden bias" for faculty in each SoS department. Discussions were organized and led by two highly qualified MIT faculty members, Professor Sally Haslanger (philosophy) and Prof. Thomas DeFrantz (theater arts, women's and gender studies). Attendance was strongly encouraged and monitored. These sessions appeared to facilitate conversations about concepts surrounding bias ("schemas") and opened the way for further consideration of bias present in a department that may impact recruitment and retention. Previous hidden bias seminars had been presented in 2007 at MIT Sloan by Associate Dean JoAnne Yates and Barbara Liskov. The material used for the more recent discussions was adapted from materials utilized by the STRIDE program at Michigan (see below).

Each department advertised the discussion to its faculty members, including the following text: "The upcoming discussion concerning 'Overcoming Hidden Bias,' sponsored by the dean's office, comprises a forum to address hidden gender and racial bias. The interesting notion of 'schemas' — unconscious expectations that govern our interactions — will specifically be explored. We hope that these discussions will be a productive way to help faculty identify hidden bias, especially during recruitment and retention."

School of Engineering – Central Coordination of Search Committees

When the School of Engineering administration informally surveyed search committees after the completion of searches, it was found that women and URM candidates were sometimes not selected because of a lack of fit rather than a lack of qualifications. In such cases, the candidate was highly qualified but the research area did not appear to meet the more specific needs of the department. The dean's office responded to this observation by adapting the flexibility of hires as well as the opportunity for excellent top candidates to be hired in an appropriate unit within the school. This approach has contributed to the hiring of five URM faculty and 10 women in the past two recruiting years. One of several key means of accomplishing this flexibility is the formation of a Faculty Search Committee in the school. For the past two years, every search goes through a central coordination with Associate Dean Cindy

Barnhardt. Barnhardt chairs the Faculty Search Diversity Committee, the members of which are the search chairs of each department. This committee meets every three to four weeks during the recruiting season (from November through May) to discuss information about specific candidates, in part because some applicants apply for more than one department. Before interviews begin, interview lists are sent to Barnhardt along with lists of eliminated women and minorities. At the meeting, the reasons for elimination of these candidates are discussed, and if the candidate is not a good fit for a given department, there is the opportunity for another department in a related field to consider the candidate. Such opportunities are not unusual, as research in the engineering fields has become more and more interdisciplinary. By utilizing this system of coordination, a candidate who is highly qualified has a greater chance of being considered and ultimately hired by one of the engineering departments.

MIT Sloan — Cluster Hiring

For some time the MIT Sloan School of Management had tried to hire a senior woman for a Target of Opportunity (TOO) slot, but without success. In fact, MIT Sloan was the only school that had not made such an appointment, which ultimately led the deputy dean — concerned about diversity hiring — to authorize certain slots as TOO only, particularly to groups whose case for a slot was less strong. Certain groups who only had a TOO slot were then much more active in looking for candidates and did indeed make offers to senior women. The ability to use cluster hiring — hiring in larger groups and a range of different areas — enables greater inclusion of people from diverse groups, including women and URMs. In addition, the combination of broader cluster hires with some TOO restrictions can lead to increased diversity in hiring. In recruitment for the 2009-2010 year, MIT Sloan authorized 21 positions of which eight were specifically designated as TOO. MIT Sloan made 30 offers for the 21 slots, as some of the top candidates turned down offers in favor of other opportunities.

The distribution of the offers is as follows:

- 2 senior male minority
- 1 junior female minority
- 5 senior White women
- 4 junior White women
- 18 others, all male

The final roster of 14 new faculty consists of the following:

- 1 senior male minority
- 1 junior female minority
- 2 senior White women
- 3 junior White women
- 7 others, all male

The provost gave Sloan two TOO slots to cover these positions.

The distribution of the 21 “first choice” invitations is also very diverse:

- 2 senior male minority
- 1 junior female minority
- 5 senior White women
- 3 junior White women
- 10 others, all male

Experimental data have shown that selecting 10 candidates from a pool at one time leads to a more diverse group than selecting 10 people one at a time from the same pool. This is behind the recommendation for cluster hiring, which has a secondary advantage of creating a cohort of newcomers, which can be particularly helpful for all junior faculty.

MIT Summer Research Program

Since its first summer in 1986, MSRP has tirelessly worked to increase the pool of minority students who pursue graduate degrees. During this time, MSRP has seen more than 90% of program participants pursue advanced degrees. With a goal of encouraging and preparing students to pursue graduate degrees at an institution of higher learning (not specifically at MIT), MIT was able to capture 17% of the 400 program participants.

A faculty committee, commissioned in 2004 by then-Provost Robert Brown, was charged with redesigning MSRP as MIT’s premier recruitment tool for underrepresented minority students. Since then, the committee has continued to serve as an advisory board for MSRP. Working with this committee, chaired by Professor Paula Hammond of the Department of Chemical Engineering, Christopher Jones (assistant dean for graduate education) has continued to implement important changes in the program. During its redesign, MSRP articulated its mission: “To promote the value of graduate education, to improve the research enterprise through increased diversity, and to prepare and recruit the best and brightest for graduate education at MIT.” As a direct result of the redesign, there has been an increase in the number of MSRP participants who apply to, are admitted and ultimately decide to enroll in MIT’s graduate programs.

Since the expansion of MSRP in 2005, more departments and programs throughout the Institute have become active participants, and the 2009 class included interns who worked in urban studies and mathematics. Not only have each of the five MIT schools agreed to a five-year commitment to fund a number of the interns, but several faculty members have added MSRP to their research grants providing funding for individual interns. MSRP continues to build lasting relationships within the MIT and broader Boston communities. To further engage the departments, MSRP continues formal visits with graduate officers, graduate administrators and current students in the departments in which MSRP interns have expressed an interest.

Key to the success of MSRP is faculty participation. Since 1986, more than 150 faculty members from a range of Institute departments have served as direct mentors to more than 500 MSRP interns. Faculty involvement includes program design, intern selection and matching interns with projects and academic interactions. MSRP continues to have a significant academic component in which faculty conduct weekly lunch seminars on their research.

Finally, MSRP continues to be successful at engaging alumni of the program who currently attend MIT as graduate students, hosting several events and dinners to bring this group together while also providing resources for their success.

Peer Institution Examples

University of Michigan STRIDE (Science and Technology Recruiting to Improve Diversity and Excellence)

This program was established under the University of Michigan's NSF ADVANCE program with the leadership of ADVANCE's PI, a social scientist familiar with the gender field. The design was based on and further adapted from Harvard University's Committee on Faculty Diversity. The initial committee was recruited by the deans of three colleges in the science and engineering fields and consisted of a group of highly respected senior faculty who were given resources for course release or research support. STRIDE was led by social scientist and Professor of Psychology and Women's Studies Abigail Stewart, who was provided with staff support. The STRIDE committee members, consisting of a majority of men, were actually new to the PI and to each other. They spent a summer reviewing research literature on gender schemas and evaluation bias, discussed it with the PI, and ultimately produced a PowerPoint presentation along with a 27-page recruiting handbook. They then met with departments, department heads, recruiting committees, and anyone else interested to give their presentations and lead discussions. The handbook was widely distributed by the deans. During the first year of their efforts, the recruitment of women scientists doubled from 15% to 31%. In later years, they began to recruit other faculty allies into a new group called FASTER (**F**riends and **A**llies of **S**cience and **T**echnology **E**quity in **R**ecruiting) and taught the new members what they had learned. Today, many universities, including MIT, have based their own presentations on STRIDE. The University of Michigan is now supporting the program since their NSF funding has ended. <http://sitemaker.umich.edu/advance/stride>.

Fisk-Vanderbilt Master's-to-Ph.D. Bridge Program

This program emerged from two facts about the trajectories of minority students to the doctorate in science. First, the 10 top producers of African American baccalaureates in physics are HBCUs. Second, the trajectory of minority students to move toward a doctorate is more likely to be via a master's degree in a different institution, hence creating complicated transition issues not typically found with non-minority students. The Bridge Program that emerged is based on applications to Fisk for a master's degree in physics. After successful completion of that degree, including a master's thesis, students can apply to Vanderbilt Ph.D. programs in physics, astronomy, materials, biology and the biomedical sciences.

These students are not promised admission to the Vanderbilt Ph.D. program and, like other candidates, have to meet the standard requirements. What they are offered, however, is the following: the opportunity to take courses at Vanderbilt during their time at Fisk; the provision of a Vanderbilt advisor as well as a Fisk advisor; help in preparation for the GREs; and an invitation to participate in programs such as Preparing Future Faculty.

At the time of application to Fisk, students are asked if they want to be considered for the Bridge Program. The application goes through the standard Fisk admissions process and then proceeds to the Bridge committee, consisting of relevant faculty from both institutions and including the Vanderbilt graduate admissions person. Criteria for admission to the Bridge Program are not proven ability but unrealized potential, which is gauged by personal visits with faculty at baccalaureate schools, heavy marketing, and attendance at minority association meetings and conferences. The program, therefore, is meant to increase the pool of minority Ph.D.s, rather than fight for those who already meet the accepted criteria of admission to top programs. It has had the secondary effect of increasing applications to Vanderbilt science doctoral programs from minority students who do meet the usual criteria.

During the Bridge years, students take courses at Fisk and at Vanderbilt, including at least one core Ph.D. course at Vanderbilt. They have advisors from both schools and have research experiences with faculties at both. Their Vanderbilt advisor serves as a mentor on the Vanderbilt Ph.D. application and admission process and is specifically geared to being an advocate for the student during this time. This one-to-one relationship between the Fisk student and the Vanderbilt mentor is the core of the program. In addition, full financial support is provided during the Bridge years and during the Ph.D. program, if the person is accepted. To date, the success rate of acceptance to Vanderbilt is 97% and they attribute their failures to the program, rather than to the student. They have actually modified the program on the basis of some of these failures and are beginning to send a few of their students to other Ph.D. programs, including one at Yale.

Meyerhoff Scholars Program at University of Maryland, Baltimore County (UMBC)

This program started in 1988 with a grant from Robert and Jane Meyerhoff to provide financial aid, mentoring, advising and research experience to young African American male undergraduates committed to getting Ph.D.s in STEM fields. In 1990 women were admitted to the program, and in 1996 it was opened to people from all backgrounds who were “committed to increasing the representation of minorities in science and engineering.” That year also was the beginning of the Meyerhoff Graduate Fellows Program in the biomedical and behavioral sciences.

Selected scholars receive full financial aid, including room and board, and attend a mandatory six-week summer bridge program, which includes courses in math and science as well as in African American studies. The bridge program is not seen as remedial, as students are chosen for their strengths, but is meant to acclimate students to the philosophy of the program. The college experience of these scholars is based on high academic expectations, with students working together in study groups. They are also expected to participate in

some community activities. While the group forms a close community, each individual also receives personal advising, counseling and tutoring as necessary, as well as a mentor from the larger Baltimore-Washington area. During the summer, students are placed into research internships provided with stipends. The program's underlying philosophy is high expectations and appropriate environmental support.

A recent evaluation comparing the first 10 years of Meyerhoff Scholars with those who were accepted into the program but declined (students with higher verbal SATs who went to universities of somewhat higher standing) showed that 29% of the Meyerhoff group compared to only 5.5% of those in the comparison group had graduated from or were attending STEM Ph.D. or M.D./Ph.D. programs, a dramatic difference.

H. FOLLOW-UP ON THE PRELIMINARY REPORT: SHORT-TERM RECOMMENDATIONS OF THE INITIATIVE

During the course of the Initiative's work, there were also efforts to address any issues that might be readily resolved or improved over a short time frame. With this concept in mind, the Initiative team generated several short-term recommendations in its preliminary report of July 2007 that were intended to have impact on minority faculty recruiting and retention of our current faculty. These recommendations were addressed by the MIT Associate Provost for Faculty Equity Office as follows:

- The provost should mandate that in early fall the deans collect and review pre-search plans for all searches being conducted in their school, and then discuss them in Dean's Council, summarizing *the specific recruiting efforts* being used to identify underrepresented minority candidates.

Status: Implementation of discussion of search plans introduced for Dean's Council, along with discussions with associate provost among faculty recruiting chairs. New alignment with the schools on increased attention to minority faculty hiring efforts.

- Develop consistent Institute-wide templates for departments to use in tracking searches and URM faculty appointments (that can be submitted electronically to the school deans). The provost should mandate that the deans aggregate these data and bring it to Academic Council.

Status: New Institute-wide template for collecting information on recruiting efforts for minorities and women was implemented in Fall 2007 and remains in use. New requirements for reporting specific recruiting efforts have also been added to the reporting procedures for each school.

- Alert and inform visiting committees to ask about URM hiring and retention, including specific questions about the department's plan of action for recruiting URM faculty, to which they would be held accountable on the next visit.

Status: Discussions planned with Secretary of the MIT Corporation Kirk Kolenbrander to directly address the emphasis placed on the charge to visiting committees to enhance minority graduate student and faculty recruiting and the need to diversify visiting committee members. This item is currently reflected in the Recommendations, Section E.

- Create a name exchange with the MIT9 universities containing lists of URM graduate students and postdoctoral fellows for prospective faculty candidates.

Status: After discussion of some of the legal issues around sharing information about candidates, agreement has been reached to begin forming networks with MIT's peer schools. Further discussion was needed to determine the breadth of this network, means of implementation and ways of providing information on possible recruits, as well as resources to

maintain the information network. Because this concept is a part of a larger peer network and recruiting concept in the final recommendations, elements of this idea are included in the Recruiting Recommendations Section.

- To heighten the awareness of mentorship needs, the provost or the associate provost for faculty equity should meet individually with the department heads of departments that have minority junior faculty members to review the members' current faculty personnel records, discuss their progress, as well as the department's means of advocacy and mentorship for them.

Status: The associate provosts for faculty equity have met with each department head to address the progress and status of mentorship for every junior faculty member in each department. They also ascertain if additional needs of the junior faculty must be addressed and have continued this practice annually.

REFERENCES FOR EXECUTIVE REPORT

- 1) MIT Mission Statement. Available from <http://web.mit.edu/facts/mission.html>.
- 2) Hockfield, Susan (2008, February 21). MIT President's Speech for MIT MLK Day Celebration, Cambridge, MA. Available from <http://web.mit.edu/hockfield/speeches/2008-mlk-breakfast.html>.
- 3) U.S. Census Report (2008). U.S. Census Bureau, Washington, D.C.
- 4) Phillips, K.W.; Loyd, D.L. (2006). When Surface and Deep-Level Diversity Collide: The Effects on Dissenting Group Members. *Organizational Behavior and Human Decision Processes*, 99.
- 5) Sommers, S.R. (2006). On Racial Diversity and Group Decision Making: Identifying Multiple Effects of Racial Composition on Jury Deliberations. *Journal of Personality and Social Psychology*, 90, 597–612.
- 6) A Study on the Status of Women Faculty in Science at the Massachusetts Institute of Technology (1999), Massachusetts Institute of Technology, Cambridge, MA. Available from <http://web.mit.edu/faculty/reports/overview.html>.
- 7) Tapia, R.A. (2007). True Diversity Doesn't Come from Abroad. *Chronicles of Higher Education*, 54, B34.
- 8) Tapia, R.A. (2009). Minority Students and Research Universities: How to Overcome the 'Mismatch.' *Chronicles of Higher Education*, 55, A72.
- 9) Nelson, Donna (2007). *A National Analysis of Minorities in Science and Engineering Faculties at Research Universities*, National Science Foundation.
- 10) Davis, R.L. (1979). Master's dissertation, Massachusetts Institute of Technology, Cambridge, MA.
- 11) Thomas, D.A. (2001, April). The Truth about Mentoring Minorities: Race Matters. *The Harvard Business Review*, Harvard Business Publishing: Cambridge, MA, 98-107.
- 12) Thomas, D.A. (1993). Racial Dynamics in Cross-Race Developmental Relationships. *Administrative Science Quarterly*, 38, 169-194.
- 13) Hekman, D.R., Aquino, K., Owens, B.P., Mitchell, T.R., Schilpzand, P., & Leavitt, K. (2009). An Examination of Whether and How Racial and Gender Biases Influence Customer Satisfaction. *Academy of Management Journal*, in press.
- 14) Amodio, D. M., & Devine, P. G. (2006). Stereotyping and Evaluation in Implicit Race Bias: Evidence for Independent Constructs and Unique Effects on Behavior. *Journal of Personality and Social Psychology*, 91, 652-661.
- 15) Barden, J., Maddux, W. W., Petty, R. E., & Brewer, M. B. (2004). Contextual Moderation of Racial Bias: The Impact of Social Roles on Controlled and Automatically Activated Attitudes. *Journal of Personality and Social Psychology*, 87, 5-22.
- 16) Coleman, M. G. (2003). Job Skill and Black Male Wage Discrimination. *Social Science Quarterly*, 84, 892-905.

APPENDICES

Appendix A – Short Biosketches of Race Initiative Participants and Research Team Members
(includes Internal Technical Advisory Board)

Appendix B – External Advisory Board and Biosketches

Appendix C – Summary of Academic Dean Discussions for Each School

Appendix D – Summary of Minority Faculty Forums

APPENDIX A

Race Initiative Members

Paula T. Hammond, Ph.D., Initiative Chair (B.S. '84, Ph.D., MIT '93)

Bayer Chair Professor and Executive Officer, Department of Chemical Engineering

Professor Paula T. Hammond is the Bayer Professor of Chemical Engineering at the Massachusetts Institute of Technology and currently serves as the executive officer in chemical engineering. Her research program on self-assembling polymeric nanomaterials and directed assembly and patterning includes microbatteries and fuel cells, drug delivery and cellular templates for biomaterials. Hammond was awarded the NSF Career Award, the EPA Early Career Award, the DuPont Young Faculty Award and the Junior Bose Faculty Award at MIT. She serves as an associate editor for the journal *ACS Nano*. She was a 2003 Radcliffe Fellow at Harvard University, received the Georgia Tech Outstanding Young Alumni Award in 2004, and is a fellow of the American Physical Society and the American Institute of Biological and Medical Engineers. Hammond chaired a key committee for the redesign of the MIT Summer Research Program in 2005, a summer program that brings underrepresented minority undergraduates to MIT's campus for research opportunities and preparation for graduate school. She has also contributed to numerous other boards, panels, discussion groups and other mentoring/support groups for underrepresented minorities and women on campus during her time at MIT.

Lotte Bailyn, Ph.D., Head of Initiative Research Team

Professor of Management, Behavioral and Policy Science, MIT Sloan School of Management

Professor Lotte Bailyn's book, *Breaking the Mold: Redesigning Work for Productive and Satisfying Lives*, argues that industries will fail in an intensely competitive world unless they take into account the changing nature of the professional workforce. Bailyn was a member of the groundbreaking committee on the Status of Women Faculty in 2002, which summarized data and narratives of women faculty members' experiences in each of the schools.

Emery N. Brown, M.D., Ph.D.

Professor of Computational Neuroscience and Health Sciences and Technology, Department of Brain and Cognitive Sciences, MIT-Harvard Division of Health Sciences and Technology

Professor Emery Brown is a 2007 recipient of the prestigious Pioneer Award from the National Institutes of Health. He received \$2.5 million to "develop a systems neuroscience approach to study how anesthetic drugs act in the brain to create the state of general anesthesia."

Leslie K. Norford, Ph.D.

Professor of Building Technology, School of Architecture and Planning

Professor Leslie Norford studies building energy use in developed and developing countries. His work includes laboratory, numerical and field-based studies of space-conditioning equipment and building ventilation, with a recent emphasis on the interactions of buildings

with the urban environment. Norford is a MacVicar Faculty Fellowship recipient, which honors outstanding undergraduate teaching at MIT. As associate head of the Department of Architecture, he has participated in department efforts to recruit minority students and faculty.

Christine Ortiz, Ph.D.

Associate Professor of Materials Science and Engineering Director; MISTI (MIT International Science and Technology Initiatives) MIT-Israel Program

The research of Professor Christine Ortiz focuses on hierarchical macromolecular systems. Her research group ultimately aims to establish the relationship between organized hierarchical structure and mechanical properties, including the investigation of how these studies will be employed to design new biologically inspired materials technologies.

Hazel Sive, Ph.D.

Member of the Whitehead Institute for Biomedical Research; Professor of Biology; Associate Dean for the School of Science

Professor Hazel Sive studies embryonic development of the craniofacial region and development of brain structure. Her group additionally addresses the function of genes associated with human mental health disorders, including schizophrenia and autism. Sive is the first associate dean for the School of Science, where a major focus of her effort is on increasing diversity.

Marcus Thompson, D.M.A.

Robert R. Taylor Professor of Music, Head Boston Chamber Music Society

Professor Marcus Thompson heads programs in chamber music and performance studies at MIT. A violist, he has appeared as soloist, recitalist and in chamber music series throughout the Americas, Europe and the Far East. Thompson is a member of the viola faculty at New England Conservatory of Music and a violist of the Boston Chamber Music Society.

***Ex-Officio* Race Initiative Members**

Wesley L. Harris, Ph.D.

Associate Provost for Faculty Equity; Charles Stark Draper Professor of Aeronautics

Professor Wesley Harris is a former NASA associate administrator for aeronautics responsible for all aeronautics programs, facilities and personnel. An MIT faculty member since 1973, he directs the Lean Sustainment Initiative within the MIT Center for Technology, Policy and Industrial Development, in addition to his duties as department head. A member of National Academy of Engineering, Harris has long been involved in diversity efforts and formerly served as the director of MIT's Office of Minority Education. He is an elected fellow of the American Institute of Aeronautics and Astronautics, the American Helicopter Society and the National Technical Association, in recognition of his achievements in engineering, engineering education, management and advancing cultural diversity.

Barbara Liskov, Ph.D.

Institute Professor and Associate Provost for Faculty Equity

Professor Barbara Liskov is a member of the Department of Electrical Engineering and Computer Science and formerly served as associate department head for computer science. She is a member of the National Academy of Engineering, a fellow of the American Academy of Arts and Sciences, and a fellow of the ACM. She received the ACM Turing Award in 2009, the ACM SIGPLAN Programming Language Achievement Award in 2008, the IEEE Von Neumann medal in 2004, a lifetime achievement award from the Society of Women Engineers in 1996, and in 2003 was named one of the 50 most important women in science by *Discover* magazine. Her research interests include distributed systems, replication algorithms to provide fault-tolerance, programming methodology and programming languages.

Race Initiative Research Team**Mandy Smith Ryan, Ph.D.**

Dr. Mandy Smith Ryan, formerly an evaluation specialist in the Institutional Research group in the Office of the Provost at MIT, served as the quantitative analyst on the project. Smith Ryan received her Ph.D. in social and developmental psychology from Brandeis University, as well as a joint master's in psychology and women's studies from Brandeis, and a B.A. from New Mexico State University. Her dissertation investigated the concordance in reported condom use among romantic dating couples. Her previous projects include the Task Group on Financing of Graduate Students and the Task Group on Medical Care at MIT, and an evaluation of an alcohol-use intervention among first-year students. She recently relocated to New York City and is now employed by the City of New York Department of Health and Mental Hygiene as part of the Primary Care Information Project evaluation team.

Carol Wright, Ph.D.

Dr. Carol Wright holds a doctorate degree in educational policy studies, 2006, from the University of Wisconsin, Madison, with a minor in sociology. She completed her dissertation on "The Experiences of Black Middle Class Students at Two Small Liberal Arts Campuses: A Critical Inquiry," in which she executed an in-depth study involving multiple one-on-one interviews. She was also a postdoctoral fellow at TERC, conducting research and writing in cooperation with senior members of the TERC staff. TERC is a nonprofit education research and development organization dedicated to improving mathematics, science, and technology teaching and learning.

Siomara Valladares, Ph.D.

Dr. Siomara Valladares has a doctorate degree in education, higher education and organizational change from the University of California, Los Angeles. Her dissertation explored the tenure experiences of a sample of faculty of color within the University of California system to inform theory, policy, and institutional practice on the recruitment and retention of faculty of color. She was also a postdoctoral fellow at the University of California All Campus Consortium on Research for Diversity (UC/ACCORD).

Research Team Consultants

Sharon Fries-Britt, Ph.D.

Dr. Sharon Fries-Britt is an associate professor at the University of Maryland, College Park. Her research focuses on high-achieving minority collegians. A research consultant for the National Society of Black and Hispanic Physicists, she studies minorities in science. She was a CO-PI 2004-2006 on a grant to study race, equity and diversity in the 23 southern and border states, funded by the Lumina Foundation. She is an independent consultant on issues of race, equity and diversity.

Clarence Williams, Ph.D.

Dr. Clarence Williams has served MIT in the past as special assistant to the president, ombudsman and adjunct professor of urban studies and planning. His book, *Technology and the Dream*, documents (through oral histories) the experiences of Blacks at MIT, including students, faculty and staff. He is now an independent consultant residing in North Carolina.

Technical Advisory Board

Joshua Angrist, Ph.D.

Professor, Department of Economics

Dr. Joshua Angrist is a professor of economics at MIT and a research associate in the NBER's programs on Children, Education and Labor Studies. A dual U.S. and Israeli citizen, he taught at the Hebrew University of Jerusalem before coming to MIT. Angrist received his B.A. from Oberlin College in 1982 and also spent time as an undergraduate studying at the London School of Economics and as a master's student at Hebrew University. He completed his Ph.D. in economics at Princeton in 1989. His first academic job was as an assistant professor at Harvard from 1989-91. Angrist's research interests include the effects of school inputs and school organization on student achievement; the impact of education and social programs on the labor market; the effects of immigration, labor market regulation and institutions; and econometric methods for program and policy evaluation.

John Carroll, Ph.D.

Morris A. Adelman Professor of Management; Professor of Behavioral and Policy Sciences and Engineering Systems

Professor John S. Carroll received a B.S. in physics from MIT and a Ph.D. in social psychology from Harvard. He taught in the psychology departments of Carnegie Mellon University and Loyola University of Chicago and was a visiting associate professor at the University of Chicago Graduate School of Business prior to joining the MIT Sloan faculty in 1983. Carroll has published four books and numerous articles in several areas of social and organizational psychology. Much of his research has focused on individual and group decision-making; the relationship between cognition and behavior in organizational contexts; and the processes that link individual, group and organizational learning. Carroll is a fellow of the American Psychological Society.

Susan Silbey, Ph.D.

Leon and Anne Goldberg Professor of Humanities; Professor of Sociology and Anthropology

Dr. Susan Silbey is the Leon and Anne Goldberg Professor of Humanities and a professor of sociology and anthropology. She is the recipient of numerous prizes and awards including the John Simon Guggenheim Foundation Fellowships (2009) and the Harry Kalven Jr. Prize for advancing the sociology of law (2009). Her current research looks at the roles and conceptions of law in scientific laboratories, comparing the place of law in expert communities and popular culture, with special attention to the ways in which complex technological organizations observe and govern themselves. She is also supervising an experiment in ethnographic fieldwork on the development of new safety regimes in research labs. In addition, she is completing a six-year longitudinal study of engineering education, following a cohort of students through four different engineering schools.

APPENDIX B

Advisory Board Members

Evelynn M. Hammonds, Ph.D. (S.M., MIT '80)

Chair, Advisory Board, Initiative on Faculty Race & Diversity

Dean of Harvard College; Barbara Gutmann Rosenkrantz Professor of the History of Science and of African American Studies

A former MIT faculty member, Dean Hammonds' current work focuses on the history of the intersection of scientific, medical and socio-political concepts of race in the United States.

Carlos Castillo-Chavez, Ph.D.

University Regents and Joaquin Bustoz Jr. Professor of Mathematics and Statistics; Executive Director of Mathematical and Theoretical Biology Institute (MTBI) / Institute for Strengthening the Understanding of Mathematics and Science and the Mathematics Science Honors Program (MSHP), Arizona State University

Recognized as one of the most prominent mathematicians in the country, Dr. Castillo-Chavez has dedicated much of his time to enhancing the level of participation and opportunities for U.S. students, particularly underrepresented minorities, in the fields of math and science.

Thomas DeFrantz, Ph.D.

Professor of Theater Arts, MIT; Director, MIT Program in Women's and Gender Studies; Director, SLIPPAGE: Performance, Culture, Technology @ MIT

Professor DeFrantz's area of expertise is the performed African American arts, and he has published widely in the areas of dance and performance studies. He teaches undergraduate courses in theater arts and comparative media studies and has spearheaded the seven-member faculty team that will offer "Centering Africa in Diaspora: Introduction to Black Studies" at MIT. He convenes the MIT Minority Faculty group.

James Gates Jr. (B.S. '73, Ph.D., MIT '77)

J. S. Toll Physics Professor & Director of Center for String & Particle Theory, University of Maryland

Dr. Gates' research has made notable contributions to theoretical high-energy physics. He has published widely and has received national and international recognition for his work on supersymmetric theories. In 1984, after resigning his MIT faculty appointment, Dr. Gates moved to Maryland.

Stephen M. King, Ph.D.

Consultant, Multi-Cultural Engineering Education Systems

Dr. Stephen M. King is an independent consultant operating as Multi-Cultural Engineering Education Systems (MEES) and specializes in developing corporate-academic partnerships for building significantly more diversity in the academic pipeline for engineering and related careers. Currently the director for the Center for Women & Minorities in Science, Technology,

Engineering, and Math (STEM), King is also on advisory boards for the Society of Women Engineers (SWE), the Society for Hispanic Professional Engineers (SHPE) and the National Society of Black Engineers (NSBE).

Shirley Malcom, Ph.D.

Head of the Directorate for Education and Human Resources Programs of the American Association for the Advancement of Science (AAAS)

A zoologist and ecologist by training, Dr. Shirley Malcom received the Public Welfare Medal of the National Academy of Sciences in 2003, the highest award given by the academy. Malcom has authored and co-authored a number of landmark publications, including the 1998 report *Losing Ground: Science and Engineering Graduate Education of Black and Hispanic Americans*, which pointed to an “unwelcoming environment” for underrepresented minority graduate students as a result of policy changes affecting minority education. Her current work is aimed at improving the quality of science education, increasing participation of underrepresented groups in the sciences, and raising public understanding of science and technology.

Samuel Myers Jr. (Ph.D., MIT '76)

Chair, Roy Wilkins Center for Human Relations and Social Justice, University of Minnesota

Dr. Sam Myers specializes in the impacts of social policies on the poor. He pioneered the use of applied econometric techniques to examine racial disparities and is the co-author of the study “Faculty of Color: Bittersweet Stories of Success,” about faculty at Midwest universities.

Paula Olsiewski (Ph.D., MIT '79, MIT Corporation Member)

Program Director, Alfred P. Sloan Foundation

Dr. Paula Olsiewski currently directs the bioterrorism program and the indoor environment program for the Sloan Foundation. She was the first alumna to serve as president of the MIT Alumni/ae Association.

Willie Pearson Jr., Ph.D.

Professor, History, Technology and Society, Georgia Institute of Technology

Dr. Willie Pearson is nationally recognized as a leading scholar in the sociology of science. His work has focused on the career experiences and patterns of Ph.D. scientists; human resources issues in science and engineering; and science policy.

Linda Sharpe (MIT '69, MIT Corporation Member)

Senior Associate for Booz-Allen-Hamilton, Inc.

Linda Sharpe was the first African American woman to serve as president of the MIT Alumni/ae Association.

Abigail Stewart, Ph.D.

Professor of Psychology and Women's Studies; Director of the ADVANCE Program at the Institute for Research on Women and Gender, University of Michigan

Dr. Abigail Stewart's current research centers on the study of race, gender and generation. Her work with the ADVANCE Program is dedicated to promoting institutional transformation with respect to women faculty in the science and engineering fields.

Richard A. Tapia, Ph.D.

University Professor, Maxfield-Oshman Chair in Engineering, and Director of the Center for Excellence and Equity in Education, Rice University

Dr. Richard Tapia is internationally known for his research in the computational and mathematical sciences. He is a national leader in education and outreach programs.

Lydia Villa-Komaroff (Ph.D., MIT '75)

Chief Executive Officer of Cytonome

Named one of the "100 Most Influential Hispanics in America" by *Hispanic Business Magazine*, Dr. Lydia Villa-Komaroff has held faculty and administrative positions at MIT, including vice president for research at the Whitehead Institute, Harvard, the University of Massachusetts and Northwestern University. She has served on review and advisory committees for NIH, NSF, NAS, IOM and AAAS.

APPENDIX C

Summary Notes of Academic Deans' Discussions with Members of Race Initiative for Each School

Members of the Initiative Committee met with each of the five academic deans at MIT to discuss individual school policies and efforts on diversity. During the meetings, each of the deans was asked about the following:

- What efforts, programs or initiatives have been implemented by the school to address minority faculty hiring?
- What efforts exist within individual departments?
- How is success measured with these efforts?
- Have the efforts been successful – why or why not?
- Are there informal efforts made with respect to minority diversity?
- Are there programs or resources available for increasing graduate student enrollment or postdoctoral scholars?
- What resources would be helpful?

In many cases, associate and deputy deans and other school staff were present at these meetings. Summary notes of the meetings are provided below.

School of Architecture and Planning

December 18, 2008

Attendees:

Adèle Naudé Santos, Dean

Mark Jarzombek, Associate Dean

Caroline Jones, Professor of Art History and Chair, SA+P Diversity Committee

Robbin Chapman, SA+P Manager of Diversity Recruiting

Provost Race Initiative Committee: Paula Hammond, Marcus Thompson, Les Norford

Dean Santos began by noting that SA+P is the only MIT school with a full-time position for minority recruitment, currently occupied by Dr. Robbin Chapman. At this time, the position is self-funded by the school, and Santos recommended that every school should have such a position. Chapman distributed copies of PowerPoint slides with school statistics about women and minorities, faculty search committee support, school diversity committee structures, administrative support of diversity efforts, a diversity roundtable that offers

lunch-time discussion sessions, and diversity snapshots on school plasma displays.

Chapman's statistics show that 23% of school faculty are women. URM's have been at 6% since 1997. She explained that these statistics for women and minorities exclude lecturers and professors of the practice. It was noted that the school uses many lecturers and that SA+P might account for them in a category separate from tenure-track faculty.

The school has used both formal and informal visits from minority scholars as a means of increasing diversity within the department. Chapman asserted that the MIT brand can sometimes be a drawback when recruiting minorities, who feel they won't be valued. Chapman encourages minorities to make informal visits not associated with a search, to give a talk and to visit MIT and Boston. Jones and Santos noted that a minority landscape architect made a strong contribution to recent M.Arch. thesis reviews and has been approached as a candidate for an MLK position.

There are few minorities in the practice, in academia and in the pipeline. A recent conference, Architecture Race Academe (<http://architecture.mit.edu/ara/>), which was sponsored by Architecture Professor Mark Jarzombek with alumnus Darian Hendricks '89, was meant in part to generate a means of contacting and interacting with minorities in architecture or those supportive of efforts to increase diversity in MIT's Department of Architecture.

It was pointed out that, in general, recruiting efforts need to be broadened. Yung Ho Chang, head of the Department of Architecture, attended the recent conference of the National Organization of Minority Architects. With the help of a distinguished minority architect and department alumnus who is being appointed as a professor of the practice, Chang met senior faculty from several HBCU architecture schools who may serve as critical contacts to minority candidates. Jones suggested that faculty searches be clustered, such that two to three positions are advertised at the same time. She noted that the Media Lab used this approach successfully to yield a more diverse set of faculty hires in recent years. Chapman advocated the generation of multiple short lists for a single search, with each list emphasizing separate criteria (e.g., teaching, publications), then taking the top candidates from each list before trimming to a single list. She noted that the University of Maryland has used this kind of approach.

Chapman described her lunch-time diversity roundtable sessions, which provide an opportunity to discuss issues of diversity in an open context. These sessions, which include practice dialogues, typically attract seven to 13 attendees with comparable numbers of faculty, staff and students. Chapman has trained staff at MIT Sloan, which now runs its own series. She also described the diversity snapshots that appear on SA+P video monitors; these snapshots give a short and personable first-person bio of faculty of all backgrounds, inviting others to appreciate the breadth of experiences present on the faculty. Chapman noted that dorms and MIT Human Resources have shown interest in this idea.

On the topic of promotion and retention, it was noted that SA+P mentoring efforts vary by

department. The Media Lab started a formal mentoring program in Fall 2008 for all junior faculty. Architecture has a long-standing mentoring program, including annual visits with the department head as well as matching junior faculty with senior faculty mentors. The culture in DUSP can make mentoring a challenge, because junior faculty are encouraged to “strike off” on their own; however, DUSP has more minority students and faculty than its sister departments and there may be a perceived, lesser need to do more in the area of mentoring. Jones described the difference between a mentor and evaluator, and that a mentor’s role should include advocacy. She identified a need for informal advice, as is provided in her discipline group. Jones concluded the meeting by noting that the SA+P Diversity Committee addresses diversity issues regarding both women and URM.

School of Engineering

September 30, 2009

Attendees:

Subra Suresh, Dean

Cynthia Barnhart, Associate Dean for Academic Affairs

Donna Savicki, Assistant Dean for Administration

Provost Race Initiative Committee: Paula Hammond, Leslie Norford

Paula Hammond began the meeting by discussing major findings of the Race Initiative, noting differences in AWOT promotion statistics for minority and non-minority faculty; the need for consistently excellent mentoring of all junior faculty; opportunities for more effective recruitment of minority faculty; a climate at MIT that in many cases makes it difficult to discuss diversity issues; and different views as to whether inclusion and excellence are mutually supportive or mutually exclusive. Donna Savicki noted that it is important to be precise about defining minorities, given questions about such issues as country of birth and possible differences between definitions used by the federal government and the Race Initiative. (Hammond explained that the Initiative has been using the broader definition used by MIT for its study, but has also kept track of the URM numbers based on nationality.) Subra Suresh asked about the national average for URM faculty, given the lack of a common understanding of what is meant by the term “underrepresented minority.”

Last year, the School of Engineering (SoE) actually hired more women faculty than men for the first time: in all, seven men and 10 women, the highest number of women faculty ever hired in a single year by the SoE. The previous recruiting year yielded four URM hires, the highest number of URM faculty ever hired in a single year by the SoE. In summary, over the past two years, the SoE had five URM hires and 10 women hires.

Over the last two years, the SoE has introduced several key elements into the recruiting process that add flexibility to recruitment and hiring, and thus enable the hiring of a more diverse group of faculty. These include: 1) Associate Dean Cindy Barnhart chairs the

school's Faculty Search Diversity Committee (FSCD), made up of the chairs of each of the school's faculty searches. The committee meets regularly during the recruiting season (from November through May); information about specific candidates is shared at the meeting, in part because some applicants apply to more than one search. Before interviews begin, interview lists are sent to the FSCD chair, along with the names and application materials of women and minorities who do not make the short list of candidates to be interviewed. Virtually all MIT-caliber women and URM candidates are interviewed. If the fit with the interviewing department is not right but another department's search represents a better fit, coordination between the search chairs occurs to place the woman/minority applicant in the search that represents the best fit. 2) The dean retains a few slots that can be used judiciously in the hire of a woman or a URM who is in the top list of candidates for a department, particularly when the lack of slots is at issue for the hire. This capability to offer a slot creates added benefit for the department and the school. 3) The ability of the dean and department heads to negotiate and offer competitive packages has helped in finalizing acceptances of offers to URM and women faculty. 4) A few slots are designated each year for school-wide searches that can be single or dual appointments. The introduction of a few such searches each year makes it possible to identify the best fit among all SoE departments. In the last recruiting year, four slots were allocated for school-wide searches in areas of interest to many departments, namely energy, transportation, computational engineering and green technologies. One search may result in an interdepartmental appointment, or even an inter-school dual appointment, shared between Engineering and any other school at MIT. The ability to hold some slots aside for school-wide searches makes it easier to find a fit for women and URM faculty in the appropriate department, particularly given the range of interdisciplinary areas of research that engage faculty. SoE is unique at MIT in its ability to conduct school-wide searches, because the school controls all vacant slots (a practice in place since 1996), rather than departments, labs and centers (DLCs). Engineering also benefits by its size and the number of hires, 35 in the last two years.

The strong role of the dean's office in assigning slots, and thus in recruiting and retaining faculty, requires delicate control and balance with the needs within departments and/or the presence of another bureaucratic layer. It has also made it possible for faculty at any career stage to move from one unit to another, or to split time between two units, which improves retention in the long run. Faculty need only make a case and obtain the permission of the head of the receiving unit in order to seek the approval of the dean to move to another departmental unit. Further, faculty hired with dual appointments now need only one of their department/division heads to bring the promotion or tenure case to Engineering Council, whereas previously, both units had to approve. Now, a single unit in favor can bring the case to Engineering Council. If the case is brought forward by only one of the unit heads and it is successful, the promoted faculty member switches to full time in the supporting unit.

Hammond expressed some concerns about the mentoring of dual appointees and the difficulty for junior faculty to successfully meet the needs, or requirements, of two departments at once — including increased duties with regard to faculty meetings, admissions and search committees, and other departmental functions — and their impact on pre-tenure

faculty. In response, Suresh noted that such junior faculty can move at any time with the new policies recently put in place, undoing the dual appointment if necessary.

Each of the engineering departments has cultivated its own approaches to mentoring practices with regard to junior faculty. Barnhart explained that SoE has created a new mentoring policy for departments that was introduced in the 2008-2009 academic year. This policy suggests that departments set up a mentoring committee consisting of three mentors in a junior faculty member's research field, and recommends the committee conduct annual reviews on the junior faculty member's progress. The mentoring committee members can be drawn from different units, and even different schools, but the chairs are typically drawn from the junior faculty's unit. Following the annual review, the committee must convey to the unit head(s) a summary of the advice provided to the junior faculty. The full policy was sent to Hammond and Leslie Norford after the meeting.

There are significant variations among departments in the execution of mentoring. Suresh mentioned that in DMSE, for example, mentoring committees have annual reviews with junior faculty members and report back to a given division of the department; this committee also serves as an evaluation committee in recommendations for promotion and tenure. Hammond noted that in chemical engineering, two or three mentors are assigned from within the department by the chair and these mentors meet periodically with the junior faculty during the year to provide suggestions, offer advice and help junior faculty in other ways such as setting up invited talks at peer institutions or recommending grant or other opportunities. These mentors give an annual presentation to all of the senior faculty members, followed by an open discussion on progress, advice and strategies to convey to the junior faculty members. Barnhart noted that some departments have separate mentoring and evaluation committees, while in smaller departments all senior faculty may serve as an evaluation committee. Conflicts may exist if mentoring and evaluation duties overlap.

There was brief discussion of mentoring beyond tenure. DMSE has an awards committee and SoE provides school-level attention. Suresh noted that it is helpful for those appointed as department heads to have recognition from their own fields, because such recognition makes it possible for them to nominate others for similar honors.

Suresh described SoE efforts in support of minority students, including his meeting with minority student organizations and the Graduate Student Council, as well as SoE's working with the MITES program. He also explained that if an SoE faculty member identifies an outstanding URM postdoc but doesn't have funds to support the postdoc, the faculty member may apply to the dean's office for help. Suresh concluded the meeting by noting that SoE benefits from funding associated with MIT's international programs and that such programs provide new sources of research funding that could potentially be important or meaningful for minority faculty.

School of Humanities, Arts and Social Sciences

Monday, December 15

Attendees:**SHASS Faculty Equity Committee**

Deborah Fitzgerald, SHASS Dean

Kai von Fintel, SHASS Associate Dean

Marc Jones, Assistant Dean (Finance and Administration)

Susan Mannett, Director of Human Resources SHASS

Sally Haslanger, Professor of Philosophy, Equity Committee

Marcus Thompson, Professor of Music, Equity Committee

Provost Race Initiative Committee: Paula Hammond, Marcus Thompson

The meeting began with general discussion initiated when Paula Hammond asked about SHASS procedures for addressing the recruitment of underrepresented minorities (URMs) and women. Marcus Thompson (representing SHASS) described search oversight procedures begun under previous Dean Philip S. Khoury. The SHASS Equal Opportunity Committee (EOC) was created as Dean Khoury's response to former Provost Robert A. Brown's directive to have a woman and URM on every departmental search committee. In the clear absence of numbers to fit that purpose, Khoury reconstituted the EOC to have school-wide scrutiny of each search and hire based on specific Institute-wide guidelines. The committee consisted of four faculty and four members of the SHASS administration and was to be headed by a faculty member. Each search began with the filing of a formal "Request to Search" that detailed how the search would be conducted. Each filing was scrutinized by the committee for the breadth of the position description, where it was advertised and the lists of proposed professional contacts (individuals, conferences and institutional). When approved by the EOC, the dean allowed the search to proceed. At the conclusion of the search, and before hiring could proceed, the departments were required to file a "Request to Hire" in which all the procedures approved for the search were compared with those actually used and resumes of the finalists. In addition, lists of all women and URM candidates were examined. When minorities and women were among the top finalists but not selected, a detailed explanation was required. Dean Khoury and Thompson (as EOC chair) would also privately visit with department heads in their offices to discuss issues, Institute initiatives and progress within a unit, or lack thereof.

Shortly after beginning her appointment, Dean Fitzgerald revised the oversight procedure, appointed herself as head of a new Faculty Equity Committee and kept the basic filing requirements intact. She reappointed Thompson from the previous Equal Opportunity Committee and added Professor Haslanger, who had chaired the SHASS Gender Equity committee, to create a three- to four-person Faculty Equity Committee. Dean Fitzgerald is also supported by members of her staff as listed above.

Members of the SHASS Faculty Equity Committee described newly installed search procedures that Dean Fitzgerald created to re-energize the process and to communicate to departments the depth of her commitment to faculty diversity. The first of these efforts was to appoint herself as head of the Equity Committee. The second was to require department heads and search committees to meet with her and the equity committee — prior to the start of a search — for a mini-seminar to discuss her expectations. The seminars included a slide presentation about schemas and hidden biases adapted by Professor Haslanger (from UMich ADVANCE effort, and further modified by MIT Sloan School Deputy Dean JoAnne Yates and Associate Provost Barbara Liskov), intended to inform all participants in a search to the shared potential for unintended biases. Following the slide presentation, meetings often included discussion about Institute initiatives for senior women or URM, such as Target of Opportunity and MLK, as additional means of achieving diversity beyond the search process. The topic of who appropriately falls within the MIT definitions for URM and eligibility often reveals confusion about how to proceed with diverse candidates.

The effectiveness of the new face-to-face strategy — and how it has been received and/or resisted — was considered, along with the need for a more flexible and thoughtful approach for each department. The dean pointed out that, as part of the new guidelines, a second meeting with each head and/or committee is scheduled, after folders are read and *before* candidates are invited, to talk about the reasons for exclusion of candidates early in the process. This may result in reversals of decisions and conveys the strong message that the process is under constant review. There are still places, however, such as a search for a native speaker of a particular language, etc., that may, by their nature, exclude URM.

In the case of one department in which there was active resistance by its representative and negative consequences as a result of the seminar, it was possible to see ways in which the dean and the committee learned from the encounter by adapting a strategy and approach that may be more productive in the future. Thus, the learning in these encounters can go both ways.

Professor Haslanger spoke about the need for finding allies for diversity beyond women and URM, whose advocacy for diversity is often more readily accepted among skeptics and resisters. The subject of retention and mentoring was deferred for another time, and was later taken up at a Fall SHASS School Council meeting discussing the recommendations for mentoring from the Initiative Committee, which took place in November 2009.

School of Science

January 9, 2009

Attendees:

Marc Kastner, Dean

Hazel Sive, Associate Dean

Provost Race Initiative Committee: Paula Hammond, Hazel Sive

The meeting began with a statement from Dean Marc Kastner regarding the fact that he has experienced enormous good will across the School of Science with regard to increasing the numbers of minority students and faculty. He considers this high level of commitment to be essential to increasing the numbers of underrepresented minorities in the undergraduate- and graduate-level and faculty positions.

With regard to faculty recruiting, Kastner explained that the communities are extremely variable in the School of Science depending on field, and – depending on the department or area – search committees may try to identify new candidates from the applicant pool (as is the case for biology), or may recruit from a fairly well-known pool (often the case for physics, math, EAPS). In either case, it can be difficult to generate a list of potential candidates. Part of this difficulty is due to the fact that science departments never recruit directly out of the Ph.D. graduate pool; typically, a faculty candidate has had one or two postdoctoral appointments. This means that a Ph.D. candidate or recent graduate may be as many as six years away from the point of hire, and it is likely that there is a smaller fraction of URM in the postdoc pool than the graduate student pool, especially in certain fields, such as math. It is difficult to determine the fraction of candidates in the pool of faculty candidates who are URM, because there are no reliable data on the composition of the postdoc pool. The lack of a broad accounting mechanism that might enable information sharing and greater accounting of faculty candidates makes recruitment of minority candidates difficult.

Kastner also noted that, in certain fields, any candidate who is hired is likely to have had his/her previous work known years earlier, and is often a person who has already been significantly recognized in the field, even as a postdoc. Often such candidates come from a relatively small set of well-established research groups around the world for a given area. This means that the few highly recognized URM candidates are well known to all in the field, however, and are heavily recruited by the leading research universities. Kastner noted that in the life sciences and chemistry this is somewhat less of an issue, but it still remains quite difficult to round up candidates.

In order to improve identification of candidates who will increase diversity, the School of Science has implemented several procedures during faculty searches. Prior to the start of the search, search chairs report to the dean the work done to identify potential candidates who are female or URM. Chairs discuss with the associate dean strategies to ensure that folders are carefully read to identify all qualified candidates. A faculty representative from a

relevant department, who is a member of the Faculty Search Oversight Committee, further examines folders of female and URM candidates not on the initial short list of invitees. This may identify additional candidates who fit the search criterion, as well as those who do not but may fit another search at MIT.

It was noted that academic studies and studies by professional societies find that some of the best students in science do not find academia an attractive career path; often students are lost to other disciplines following the science undergraduate degree, including law, finance, management consulting, etc. Since the latter fields heavily recruit outstanding URM students, it is likely that this reduces the URM fraction in the graduate student pool. This loss in the pipeline is something that might be counteracted somewhat through seminars or workshops for students about scientific research careers and academic futures; however, some fields of academic science require a great deal of personal sacrifice because research funding is scarce and the competition for faculty positions at research universities is fierce. Fields such as physics, math and earth science have become less appealing over the past decades.

Kastner also noted that effective tracking of MIT undergraduates could be useful in nurturing and increasing our own Ph.D.s, and that targeting schools and making connections between our faculty and those at specific schools may help as well. Hazel Sive mentioned that the recruitment and mentoring of students over a five- to 10-year time scale may be necessary to yield results. The use of resources to hire a person focused on recruiting issues at the graduate level, and perhaps the faculty level, was discussed. The example of a full-time hire in the Department of Biology to address URM graduate student recruitment was brought up. Kastner emphasized that, along with hiring such individuals, departments or schools need to learn how to best use such personnel while still maintaining the much-needed faculty voice and contact in engaging prospective URM students/candidates. The URM recruiter in biology is now also recruiting for BCS. In the School of Science it would not be possible to have a single recruiter because the sources of students who are recruited for graduate school in the life sciences are different from those who could be recruited for math or physics.

Discussion also included the Pappalardo Fellows, a postdoctoral fellowship program in the Department of Physics. The program traditionally appoints three new fellows per academic year, each for a three-year fellowship term. Fellows are selected through an annual competition for which candidates cannot directly apply, but must be nominated by a faculty member or senior researcher within the international community of physics, astronomy or related fields. This program quickly became one of the most prestigious postdoctoral programs in the field. Although the program does not specifically target URM or women, it has been able to attract top scholars that include a relatively sizable number of women. Over the past few years, the fellows program led to five MIT faculty hires, two of whom are women. Kastner notes that a strength of this program is that it does not specify diversity as a part of its target, but it is extremely effective in bringing women to MIT who might not otherwise come to campus. The interview process is a key component of the selection process,

which may also broaden the pool of fellows as it enables a broader range of experiences and backgrounds to be considered via direct contact with the candidate, compared to those that are evident in the paper application. In addition, the program hires three or four fellows per year, enabling the selection of a broader group that fit the criteria. Some of the women hired have turned out to be the best faculty candidates a few years later. Unfortunately, there have been no qualified URM candidates nominated for the Pappalardo Fellows program.

There are initiatives in several of the School of Science departments that are making significant progress toward increasing diversity with respect to race and gender. The dean indicated that in some departments, such as math, a tractable challenge seems to be the recruitment of female faculty, whereas the recruitment of minority faculty may need to wait until the pipeline has been increased at the graduate and postdoc level.

A URM strategic group focused on graduate student issues has been formed and is chaired by Associate Dean Hazel Sive. This group includes representatives from all departments and has made multiple strong recommendations regarding URM representation in the school. The overriding recommendation is that emphasis should be placed on recruitment and retention of minority graduate students. URM graduate student recruitment efforts in all SoS departments are receiving strong attention. For example, the Department of Biology has vastly increased URM graduate enrollment through recruitment from a wider pool of schools. Biology also draws candidates from the MSRP (MIT Summer Research Program), and students from this pool generally go on to top-tier graduate or medical schools.

Other efforts to increase the URM graduate pool include setting up post-baccalaureate bridge programs in the fields of physics and biology for URM undergraduates who may not have had the appropriate preparation to attend graduate school at MIT or other top-tier schools. The SoS also sets aside funding for URM graduate students, guaranteeing three full years of funding: one year of funding is provided by the dean of science, one by the dean of graduate education and one by the department. The dean of science will also fund any qualified URM postdoctoral fellow.

With regard to retention, Kastner stated that every department has its own formal mentoring program, with some input from Sive as associate dean to ensure junior faculty understand expectations for promotion and to support the individual faculty member. The SoS initiated and is sponsoring discussions concerning hidden bias, run by Professors Sally Haslanger and Tommy DeFrantz, for all faculty in each of the departments. These discussions are designed to improve awareness of bias issues and could improve departmental climate, recruitment and retention efforts.

Kastner noted the Department of Physics is among the top 10 schools granting Ph.D.s in physics to URM students; development of the pipeline should increase the pool of faculty candidates in the long term. The department head of chemistry initiated, organized and co-sponsored a “Future Faculty” workshop for URM graduate students and postdocs, with sponsorship and faculty participation from the MIT Departments of Chemical Engineering,

Materials Science and Engineering, along with Carnegie Mellon and the University of Massachusetts, Amherst, to prepare students for an academic track.

MIT Sloan School of Management

December 12, 2008

Attendees:

David Schmittlein, Dean

JoAnne Yates, Deputy Dean for Programs

Robert Freund, Deputy Dean for Faculty

Provost Race Initiative Committee: Lotte Bailyn, Leslie Norford

The meeting began with a discussion of the definition of minority. It was clear from the discussion that there were concerns or questions about who counts as an underrepresented minority, self-identification, etc. The discussion then moved to recruiting efforts.

Dean Schmittlein explained that the strategy employed at MIT Sloan has been to recruit URM and women senior faculty. This was advocated because MIT Sloan was the only school that had never made a senior female appointment in its history. The school had tried to address this issue by recruiting senior faculty one at a time, only to be turned down at the point of offer; as an alternative approach, JoAnne Yates recommended seeking multiple appointments. This approach was further motivated by attempts to retain a current senior woman who asked for senior colleagues in her field. These considerations led the previous deputy dean for faculty to approve eight senior target of opportunity appointments. This experience and the results of the consequent hiring are described more fully in Section G.

Dean Schmittlein gave examples of minority faculty who had made significant and substantive improvements into areas of marketing research in a unique manner which he did not think a white man would necessarily have done – hence he sees some connection between diversity and excellence.

The dean noted that there are risks involved in hiring minority faculty and expressed frustration around the retention of minority faculty. When cases end badly, there is a real concern for many people. Senior hires lower this particular risk and also provide mentors for junior women and minorities. With regard to gender differences, it was noted that URM men may be better able to protect their time from excessive committee work and other duties than women, who can be at risk to fill stylized gender roles.

The deans have reached out to their group heads, who understand the need to increase diversity. Yates has given presentations to search committee chairs about implicit bias and other issues, which she feels may have done some good.

On the retention side, MIT Sloan has a formal mentoring system but has also made an attempt to provide non-field informal mentoring. The dean is aware of the need to be sure that people are comfortable in the environment, and that this can be problematic for minorities (and women); the school is discussing these issues with candidates they are recruiting. MIT Sloan does not have a system for the deputy dean for faculty to meet with each junior faculty member on a regular basis, hence official feedback comes primarily at review times. The general impression was that there are clear advantages to having deputy deans who can focus on and understand the issues at hand.

APPENDIX D

Summary of Minority Faculty Forums

The minority faculty forums (MFFs) were set up as informal and open discussions with small groups of minority faculty. Each forum was attended by two or more faculty members of the Initiative Committee. The MFFs were held in 2008 on 1) February 20, 2) February 28, 3) March 12, and 4) April 7; in the notes below, they are referred to as MFF #1 through #4, numbered chronologically. It should be noted that the April 7 meeting was added to the original schedule to accommodate requests from junior faculty who could not make the other dates. The brief notes below are meant to capture key points of discussion during the forums and are not attempts to record complete minutes of these informal, open discussions. The comments from the minority faculty greatly contributed to the understanding of key issues to address at MIT and also helped shape some aspects of the research component. The meetings were established to enable discussion with groups of junior and senior faculty as listed below; they are summarized in the sequence shown below as well:

Junior and Senior Faculty:

MFF #1 held on February 20, 2008 from 8 to 10 a.m.

Junior Faculty:

MFF #2 held on February 28, 2008 from noon to 2 p.m.

MFF #4 held on April 7, 2008 from 11:30 a.m. to 1 p.m.

Senior Faculty:

MFF #3 held on March 12 from 8 to 10 a.m.

The notes below are a listing of topics covered, as well as the major points made and further elaborated on during the forums, used here as a means to convey significant issues and ideas. They are not meant to be comprehensive minutes of these discussions.

MFF #1

URM attendance: 2 senior faculty, 2 junior faculty:

This forum was attended by two senior minority faculty members and two junior ones, as well as three members of the Initiative Committee (one of whom was also a senior minority faculty member). For this reason, the discussion touched on topics key to both tenured and untenured faculty, and included exchange about means of supporting untenured faculty.

Issues discussed:

- 1) Concerns raised about access to the system – the MIT academic infrastructure, how to

get funding, the appropriate resources or space, students, etc. – these things are critical. It is often not clear how to become engaged in and gain access to these things, nor is it clearly understood early in junior faculty years that these kinds of problems and issues must be addressed soon to be effective.

- 2) Mixed messages of tenure – quantity versus quality of things such as publications, funding, etc. – are prevalent. The degree of importance of each aspect is not made clear in the beginning, and the issue of quality can be much harder to discuss and define.
- 3) Concerns around insider issues – is information about tenure and academic success shared equally among faculty?
- 4) Discussion around research problem choice – what if a faculty member is in a non-traditional area or picks research topics that address more service to the community/ (local or global) than what is viewed as “pure science/technological achievement?”
 - Negative vibe from faculty
 - Feeling that MIT does not “do” social justice, equity or related issues
 - Little or no resources for exploring these kinds of problems at MIT — why? Why not, e.g., cancer in Harlem?
 - If problem choice is not connected to areas of good funding, fewer papers result for what in many respects may be tremendous work.
 - Result is less physical space and resources, less respect from peers, lower priority in department.
 - MIT could market people and projects that contribute to key global and societal issues rather than burying them.
- 5) Uneven or inconsistent access to information – how to get around the Institute, make a case for success:
 - Inefficiency of the Institute in providing models and better examples of routes to success, lack of sharing of key information within departments and schools.
 - e.g. — How to get allies and advocates on campus and in research community? Whom to try to avoid with regard to political riffs or issues? How to form mentoring relationships and manage them?
 - It is often not shared that there are things you do and things you don’t spend as much time on (or at least don’t get rewarded or recognized for):
 - o e.g., advising — including additional advising UG’s of color or women outside of the normal assigned advising duties
 - o Service
 - o Teaching
 - o Problem choice and how you are rewarded for it

- 6) There are only a few models for gaining tenure and a thousand ways to lose your chances at it. Is there a way of dealing with some of the reasons why people don't get tenure? Can we better understand losses as well as successes? Senior minority faculty can help in addressing some of these mentoring and information issues.
- 7) Data one should be collecting as part of the study:
 - Monitor the turnover and attrition rates (related and not related to tenure)
 - Who left and why did they leave?

MFF #2

URM attendance: 8 junior faculty

This forum was advertised as a junior faculty forum, and six to eight junior URM faculty were present at the forum at any given time during the course of the meeting, along with three members of the Initiative Committee (all of whom were also members of the minority faculty). In general, the junior faculty were highly energized and expressed a strong interest in graduate student recruitment of minority students to MIT as well as increasing the pipeline.

On Grad Recruiting

- 1) Several key questions were asked and discussed regarding graduate student recruiting (note: faculty showed very strong interest in this topic, in particular):
 - How can we have a larger effect on the numbers of minority grad students?
 - MIT should exhibit leadership and be at the forefront of the charge for diversity in elite institutions and institutions of science/engineering.
 - Recruiting of grad students, if done in a serious manner, requires real manpower — who is going to do the work? Who will pay to ensure the work is done? Resources and committed person/hours are needed.
 - There is fertile ground for recruiting at conferences like NSBE, Black Physicists, etc.
 - Programs like (Graduate Student Office's) Converge to bring in potential candidates for a visit beforehand — is it effective? Can we begin to grow our own future faculty?
- 2) Seems that for grad student recruiting there is an aversion among fellow faculty members/departments to really act on bringing in students of color as long as we are rated as good as or better than our peers.
- 3) Note that established white male colleagues often step out of the kind of work needed for recruiting students/faculty of color in favor of other academic or management pursuits in the department. This leaves additional work for minority faculty.

- 4) How to get graduate school applicants of high quality — fellowships, scholars programs, etc. like PPIA, Ford Fellows.
- 5) MIT can take a leadership role by tapping into large pockets of talent at other schools.
- 6) Communications network for identifying URM students/faculty for recruiting/mentorship, etc. Time to step up to the plate and invest in networks and activities like this, network with faculty across the city, state, U.S., create pipeline K-tenure, track kids from MITES through college and grad programs.

Faculty Recruiting:

- 1) Note that *being approached by a university* (department head, search committee chair, individual faculty member) to apply to MIT has a large impact on bringing in diverse faculty.
- 2) Tracking outstanding students from undergrad and grad levels (or earlier) really works to make connections with and bring in talent, also mentors students and lets them know possibilities of academic career.
- 3) Must “get beyond the gray persona” that MIT might appear to project to some of the young people applying to (or deciding not to apply to) MIT. Also some prospective grad students think of MIT as institutional, cold, less involved or engaged in the real world, a less warm, often too harsh environment.
- 4) Perception by some prospective faculty candidates is that only “super brains” survive here; idea that the bar is too high and that the playing field is unforgiving.

Other:

- 1) Sensitivity around how we (the faculty) are used as statistics to pump up MIT’s rep — this only works if it is done with sincerity/genuine desire to continue to improve.
- 2) How are we (minority faculty) counted? Should be an awareness of our many categories, international, national, other — and how many times do we get counted for a given category or unit (1x? 2x? 3x?).
- 3) Mentoring network for minority faculty — this requires the formation of a critical mass of diverse faculty.
- 4) How we think about diversity: consider it a fundamental and essential source for renewal; regeneration in the academic environment; a key to future human resources.

Things to ask/learn in the study:

Any statistical correlations between minority faculty numbers in a department and URM graduate students in that department.

MFF #4

URM attendance: 4 junior faculty

This meeting was attended by four junior faculty and two Initiative Committee members. Each one of these faculty was very positive toward MIT — and emphasized that — but did express some concerns:

- 1) Student interactions/student teaching evaluations — do students appreciate diversity in their faculty? Are they bothered by difference (e.g., gender, race, accent, etc) — when teaching evaluations comment on person being a brand new faculty person — would that happen to a young white male? Are students less tolerant or respectful of women or URM faculty (or both)? Maybe this should be checked — but there is not a way for the individual person to know whether any of this makes a difference.
 - Is the Institute looking at teaching evaluations and how they may correlate with gender, race, ethnic groups?
 - Authority in the classroom — challenge, implied or direct — can be an issue especially for young minority faculty.

Important to note that diversity of faculty also pleases some students; also, that students are not a monolithic population, either.

- 2) SHASS — These can be somewhat devalued areas of study at MIT, sometimes not viewed as core to the Institute. A benefit of smaller schools is usually small classes — this makes the classroom experience comfortable and positive — but how are the small numbers seen by the rest of the Institute?
- 3) If one is in a developing and unique field — i.e., very few are practicing in it, and not many universities, particularly not our usual bunch of peer schools, have this field in their departments, fair evaluation from peers can be difficult to get. Sometimes fields such as these might exist mainly in state universities with lower rank — under these conditions the usual processes of soliciting referees will not yield a positive response. How do we get departments to think differently about finding a network, evaluating letters from “lesser” ranked places, etc. when actually field-appropriate — how indeed to generate a network for junior faculty under those conditions.
- 4) Building networks — Networks inform people of what the possibilities are in securing what one needs from the infrastructure, and in situations that promote success. A short list of what junior faculty don’t know and/or feel uncomfortable asking about:
 - How does one know what one can ask for, whether one is being treated fairly, how does one find this out?
 - Not aware of what other people are getting (startup, housing, salary, space, teaching considerations, time off or assistance with teaching).
 - Women and minorities don’t want to rock the boat by asking for too much or asking too many questions.

- 5) Issue of target of opportunity minority hiring — i.e. coming in on a provost's line. Some questions about how we handle this situation — i.e. should the hired junior faculty member be told? Who, in fact, knows about use of this hiring tool? And does the use of it affect the perception people have of you? This could have negative impact if presumed to be an affirmative action appointment, both on others' perception as well as self-perception. There is a distinction between using a search, finding good people, and then using the provost target of opportunity to get them (maybe getting to hire more faculty than had been allotted) — vs. looking specifically for provost target people. It seems that different schools handle this differently — i.e. is one chosen for one's work or for one's identity? Procedures within departments about how to go about using special hire opportunities should be carefully addressed. Also, resources should be addressed and at least well understood, i.e., only salary and slot can be accommodated, no allowance for startup and space, which must be the responsibility of the department.
- 6) Hiring people is always challenging — what does the “best person” mean during a search? There is an overemphasis on outside indicators for success when recruiting when in fact MIT may be losing people who seem less obvious but who would contribute and succeed if given proper support. Maybe we need to broaden what we are going for (e.g., look at other feeder schools, de-emphasize the schools of letter writers, etc.) as we may be missing out with this fairly narrow sense of “the best.” We also may miss people working in a different way who may turn out to be most creative — don't get caught up in quantitative indicators (e.g., H-factor from citation index) — if we want to be at the frontier and do new things we have to take risks — rethink what is meant by excellence — need also to alert the newly tenured to these risks of strict adherence to narrow indicators. Maybe we should take a look at the recently tenured and see how they looked, e.g., on H-factor, other such things, when they were newly hired?
- 7) Since there were three women in this group, it was possible to talk about the intersection of race and gender. Bearing these minority labels gives an added sense of responsibility and of being needed — URM women get lots of invitations to represent various identities on committees, at meetings, councils, outside professional organizations, community, etc. Attendees noted that gender often makes a difference in what people (i.e. fellow faculty) want to casually talk to you about in the sort of daily-to-weekly interactions in the department. This may be especially true with some senior white male professors — they tend to talk more about personal or home/family issues rather than about work/career issues. Sometimes this creates a situation in which the woman faculty needs to make a conscious strategy to switch the topic, etc. [This is something that could be discussed further in women's groups or women of color groups.] The issue came up of ‘like’ vs. ‘respect’ from fellow male faculty members; the idea of warmth vs. competence — warmth is always nice, but can't get you advancement, respect is needed to make tenure and achieve, get recommended for awards, etc. One participant expressed it as getting caught in the “like monster.”

8) Pluses of being at MIT — The faculty described many of the positive things they've experienced at MIT:

- Money and research funds
- Colleagues
- People being creative, fresh and new, willing to change
- Community
- People's belief in one another; feeling special and welcome
- Energy
- Flexibility of arrangements
- Cohort
- Support for research

MFF #3

URM attendance: 4 senior faculty

This meeting was advertised as a senior minority faculty forum and was attended by four senior faculty and four Initiative Committee members, two of whom were also senior minority faculty members. It should be noted that an additional senior faculty meeting had been scheduled for March 17, 2008, from noon to 2 p.m., but the Initiative Committee received only two RSVPs and neither of those two faculty members were able to attend on that day.

The issues described by the senior faculty indicated greater concern about the tenure and post-tenure experiences of minority faculty, including some level of frustration around the rate of progress at MIT and the attitudes of some of the general faculty toward increasing diversity of the faculty.

Issues that came up included:

- 1) The trap of considering diversity and quality as intrinsically negatively connected, whereas in fact they are orthogonal — it was expressed that the persistence of this notion among MIT faculty is quite irritating, but is part of the pushback from majority faculty on attempts to increase the diversity.
- 2) The problem of looking only at our competitor schools for faculty candidates — this is too narrow. We have not been going to the biggest producers of minority engineers/scientists for recruiting purposes. Always go to the same five to 10 schools for faculty talent instead. Broader searches are key to improving faculty recruiting.
- 3) MLK is a way to bring in people from a wider net. MLK Visiting Scholar — postdoc program could have some real potential to develop minority faculty talent. Downside is extreme screening of person who has been offered the MLK can make it a negative experience involving premature or prolonged examination of the potential candidate,

and a level of scrutiny that is not the norm in a standard search. An upside is that by giving MLK scholars the MIT name we might become a good source for other peer institutions — in some fields it's the place of postdoc that is important, less the Ph.D. — but in general narrowness of recruiting is still a problem. Unfortunately, department head survey done recently indicated that many DH and lab directors are clueless about the MLK; others may not buy into it or may even disparage it, rather than utilize it.

- 4) Can we introduce a postdoctoral lectureship series that brings young talent in to speak in university setting as well? Can there be more events to get acquainted with new MLK scholars with regard to their work in the field?
- 5) The pool is simply not the only issue — the MIT faculty also pose a real problem. Some faculty have strong opposition to anything that they view or label as 'affirmative action' and have no commitment to diversity. There is a fear of embracing diversity or even in some cases, considering it. Examples were given of highly negative remarks made by colleagues regarding diversity efforts, and in some cases of minority junior faculty of high quality not given tenure. The MIT faculty, for these reasons, is often a problem, as they do not reflect on their actions or admit to past mistakes. Champions of those URM faculty or faculty candidates who are not selected or successfully brought through tenure are effectively "hit" with regard to loss of respect and voice at future faculty discussions (as opposed to champions of majority people who do not make it). There was a question of the extent to which the Academic Council overrides departments and schools on recommendations, though realization that some recommendations can be faint praise.
- 6) Many missed opportunities have been observed by some of the senior faculty — (both recruiting opportunities as well as some tenure opportunities, based on discussions). We need to be more careful, to become better stewards of diversity and to learn from past mistakes.
- 7) Problem that minority faculty report having to work harder as a faculty member at MIT, and that this is not acknowledged on the important levels that make a difference. There is a (often self-imposed) dedication to issues of diversity, mentoring of students and junior people. URM faculty often have to step up and do the things that just wouldn't get done otherwise — especially to help students make it — and they do this extra advising and outreach without getting any recognition or relief from other duties.
- 8) There was recognition of the isolation of minority faculty, the fact that they are always the point person — also the notion of spending a whole career as the lone minority faculty is wearing, and gets more and more unappealing. Even if one is initially happy in a departmental home, one begins to resent this notion over time and the rest of the department doesn't realize this as an issue. Being the point person for diversity in the department, and wearing it for an entire career, can get tiring, isolating, especially if no further progress is made. There is also an issue of intellectual isolation, especially for those who study in areas around diversity, equity, international or national justice, related to people of color.

- 9) Being in a positive environment where lots of people are already committed to diversity issues (independent of race and gender) can make a big difference (SHASS given as example here).
- 10) MIT still has a bad reputation in that it is not perceived as a place where one can flourish as a URM — and there is cognizance in the academic community of the failure rate — Boston also plays a role here.
 - We should benchmark more successful places — e.g., Georgia Tech.
 - Importance of getting the senior faculty to set the tone — need to talk about intangibles, social relationships, discomfort in communication in daily interactions.
- 11) Need to see URM reach leadership positions that enable true leadership or opportunity to impact and implement change: department heads, deans, etc. Also need to make sure that deans hold department heads accountable on issues of diversity — how do DHs get picked? How are these issues taken into account in determining new leadership at the DH level and higher?
- 12) These issues do not show up as a major topic at Academic Council or even at School Councils, when they should be a primary topic. Having a full-out discussion of gender matters in Engineering Council was very helpful and insightful.
- 13) Things to consider in the study:
 - Benchmarking of successful places, positive environments like Georgia Tech.
 - How do we address senior faculty attitudes, particularly majority faculty members, who don't understand or are not particularly vested in diversity, in particular in cases such as recruiting, promotion, mentoring?
 - For the study — try to address the intangible experiences, including social relationships, unease and communication. Get at how faculty of color may adapt or deal with communications with colleagues to help others feel more at ease, or to explain aspects from their perspective, how it may impact faculty of color on a daily basis.
 - Ensure those appointed to DH and dean positions are really committed to diversity and are willing to take action. This is in sharp contrast to a stance of minimal effort, or use of the same old broken (but easy) strategies, then complaining about how small the pipeline is.
 - How do we ensure accountability on the dean level?

PART II: RESEARCH REPORT

A. INTRODUCTION

In April 2007, MIT Provost Rafael Reif charged a committee of faculty, each representing one of the schools at MIT, “to help develop the Institute’s new initiative to study how race affects the recruitment, retention, professional opportunities and collegial experiences of underrepresented minority [URM] faculty members at MIT.” In July of that year, this team submitted its preliminary report and provided “detailed recommendations on how MIT can undertake a comprehensive, rigorous, and systematic study of these issues.”¹ This part of the report presents the findings of that study.

We conducted a multi-method study that explored the experiences of racial/ethnic minority faculty members at MIT. The overarching research question that guided the study was how does race/ethnicity affect recruitment, promotion and retention at MIT and how is the MIT environment experienced by this group? The collection of the data for this report started in summer 2007 and was completed in summer 2009. A complete description of the research design and the methods used in this study are given in Section B. The data were used to:

- Capture a comparative snapshot of faculty attitudes and perceptions regarding key issues affecting recruitment and retention;
- Explore the experiences of current and former URM faculty members and their perceptions on key indicators;
- Compare the experiences of White and Asian faculty members to current URM faculty members and locate any differences;
- Compare hiring, promotion and salary trends across all racial/ethnic groups.

The report is organized around three sections, starting with an introduction and a review of the literature. The study is informed by higher education literature on faculty diversity, as well as literature on ethnic minorities in Science, Technology, Engineering and Mathematics (STEM). Section B presents the research design and methods of the study. This is followed by a discussion of the research findings, presented in two parts. Section C provides findings on hiring and career trajectories, as well as the salary equity study. Section D asks the question whether faculty, particularly the URM faculty, see MIT as an institution of excellence and inclusion. In both sections we use multiple data sources, both quantitative and qualitative. The report ends with summary and conclusions.

Research Literature

The United States population has increasingly become more diverse in the last 20 years as has the number of students attending colleges and universities (Ryu, 2008). Despite these trends the diversity of the faculty has not kept pace. Some have observed that little has changed in the diversity of the faculty in the last 30 years (Perna, 2001; Trower & Chait, 2002). And, although the numbers of underrepresented minority college age students and

¹ From a July 16, 2007 Letter to the Community by Provost Rafael Reif

doctoral recipients has increased, MIT's URM faculty population remains at 6% (NSFb, 2006; MIT Facts, 2008).

Higher education research traces the slow progress of affirmative action hiring practices designed to diversify the professoriate and the institutional elements that contribute to low numbers of ethnic faculty representation. This scholarship has examined the education pipeline and decreasing pool of candidates (Allen, Epps, Guillory, Suh, & Bonous-Hammarth 2000; Jackson, 1991; Mickelson & Oliver, 1991; Solmon & Wingard, 1991; Turner, Myers, Jr., & Creswell, 1999; Washington & Harvey, 1989;), unwelcoming climates at predominantly White institutions (Turner & Myers, Jr., 2000; Turner, Myers, Jr., & Creswell, 1999; Washington & Harvey, 1989), inequity in hiring and promotion practices (Menges & Exum, 1983; Perna, Fries-Britt, Gerald, Rowan-Kenyon, & Milem, 2008), and the presumption that minorities who do not earn their doctoral degrees in the most prestigious and elite universities are less qualified (Mickelson & Oliver, 1991). Many of the early studies in higher education chronicled the barriers in the academy (Antonio, 2002) and the pervasive effects of institutional and societal racism. Recent scholarship is beginning to examine the unique contributions of minority faculty to the academy (Antonio, 2002; Umbach, 2006). This new line of inquiry holds promise for expanding the discourse on the importance of diversity in the academy.²

Overall, though there has been growth, the progress is slow. The number of faculty of color increased by 40% between 1993 and 2001, however, they comprised less than 15% of all faculty in 2001 (Harvey and Anderson, 2005). Efforts to increase their numbers in higher education have been uneven with greater progress in the numbers of Asian/Pacific Islanders than for Blacks and Hispanics (Cataldi, Fahimi, Bradburn, & Zimbler, 2005). Moreover, Hispanics and Blacks tend to be less represented at four-year institutions as compared to their numbers at two-year colleges. In 2003, Blacks represented only 4.3% of the full-time faculty at public doctoral universities but they were nearly 7% at two-year institutions. Similarly, Hispanics represented only 2.2% of faculty at not-for profit baccalaureate institutions but were nearly 6% at public two year schools (Cataldi et al., 2005).

The story, however, is not told by numbers alone and higher education literature suggests that African American/Blacks, American Indian/Alaska Natives, and Latina(o)/Hispanics continue to face barriers to their successful participation in academe (Allen, Epps, Guillory, Suh, Bonous-Hammarth, & Stassen, 2002). Hurtado, Milem, Clayton-Pedersen & Allen (1999) argue that other important elements of the campus such as the psychological climate, behavioral climate and even the campus' history are important factors to consider when improving the climate for racial/ethnic diversity in higher education. There is also a growing body of research suggesting that academic structures, policies and practices create significant barriers for faculty of color (Cooper & Stevens, 2002; Fenelon, 2003; Turner, 2003).

In his research of institutional practices and procedures such as promotion and tenure, Fenelon (2003) found that social stratification is often replicated in higher education

² The importance of student diversity to the later careers of minorities was extensively studied by W.G. Bowen and Bok (1998). And D.M. Bowen (forthcoming) shows that minority students in science experience more hostility, encounter more stigma and endure more silencing in states that bar affirmative action in admission than in those that permit it.

institutions and is part of the ideology used to rationalize and justify disparities in academia. These practices maintain the status quo and prevent meaningful discussions that can lead to change. In higher education, mainstream ideologies of meritocracy and academic freedom are most readily tested during promotion reviews (Fenelon, 2003; Padilla, 2003). Institutional micropolitics, academic interests and attitudes become key to the final tenure decisions (Padilla, 1994). In citing Baez (2002), Turner (2003) explained that as part of a practice and norms that produce conflicting situations with differential rewards for faculty of color, recruitment and retention in academia must be reexamined.

Turner and Myers (2000) refer to faculty of color in academe as experiencing “bittersweet success.” They document the underrepresentation of faculty of color in American universities and the complicated experiences these faculty have in predominantly White institutions. Acknowledging how difficult it is to change cultures and structures — and universities may be particularly resistant to change — they conclude nonetheless that such change will be necessary. As they put it in their final conclusion: “Business as unusual; not business as usual.”

Turning to science and the STEM fields, we see an even greater underrepresentation. STEM research relates these issues more directly to the norms of science and how minority faculty are affected by these norms. First, understanding degree attainment is essential. Doctoral degrees in STEM fields awarded to underrepresented minorities increased by 34% from 2001 to 2008 (AAAS, 2009). Despite a growing number of underrepresented minorities completing their Ph.D.s in STEM fields, they are still underrepresented among tenured faculty (Allen, Epps, Guillory, Suh, & Bonous-Hammarath, 2000). According to a study of research universities by Beutel and Nelson (2006), underrepresented minorities account for only 3% of faculty in mathematics, chemistry, physics, biology, and astronomy (engineering numbers are slightly higher at 4.6%). Moreover, the higher the rank, the lower the proportion of women and minorities. Research to track and better understand the experiences of minority faculty in STEM disciplines, including attrition, is limited. One finding, however, is consistent across all the studies: URM faculty in STEM disciplines are less likely to get tenure than White faculty in the same disciplines, and URM women are the least likely to get tenure of any group (Nelson, 2002; Beutel & Nelson, 2006).

Research has investigated a number of factors that might account for these low numbers and high attrition.

Doctoral Origins. Research on doctoral origins of STEM faculty shows that minorities do differ from Whites in their doctoral origins. In particular, Blacks are more likely to receive their doctorate from lower-ranking departments and take longer to complete their degrees (Pearson 1985; Leggon & Pearson, 1997; NSFa, 2006). Overall, men and women minority faculty have similar doctoral origins, but research suggests they appear to be disadvantaged by the lack of prestige of their institutions. And little is known about the process by which they were admitted to graduate programs and university faculties or their experiences once admitted (Leggon & Pearson, 1997).

Leaky Pipeline. The paucity of URM faculty in STEM disciplines is well documented. There are many reasons offered as to why there are so few URMs in STEM fields, but the “leaky pipeline” issue is one that has been debated for years. The leaky pipeline is the name given to the effect whereby at increasingly higher levels of education and academia, underrepresented minorities drop out. Bias, discouragement, lack of educational opportunity, inadequate educational training, racism, lack of role models and the perception that a career in STEM is not a viable option are all reasons suggested for the underrepresentation. Just where in the pipeline do the leaks occur? The most recent data on URMs receiving STEM Ph.D.s show steady increases, challenging the notion that the problem is only a supply side issue (Myers & Turner, 2004). But increases in the supply of URM doctorates in STEM disciplines do not necessarily translate into increased faculty representation. Survey findings by Turner & Myers (2000) of current URM faculty suggest that concerns about tokenism and a “chilly climate” in academia arise, making faculty careers less attractive than other options.

Culture of University Science. Science, technology, engineering, and mathematics have been characterized as the most neutral, standardized and universalistic of fields (Ferreira, 2003; Bergvall, Sorby, & Worthen, 1994). While debate persists about the objective and disinterested nature of science, it is true that science is an area in which inequality exists in career attainments, particularly among college and university faculties (Zuckerman, 1991; Pearson, 1985; Pearson & Fechter, 1994; Long & Fox, 1995). A close look at STEM faculties in educational institutions is important because academia is central to science. Educational researchers have argued that differential participation and success in STEM faculty careers has been perpetuated by the culture of university science (Fox 1991, 1994). That is, STEM culture is dominated and better fitted to White, particularly middle-class men than to women or minorities. Seymour and Hewitt (1997) describe university science learning as an “institutionalized national (possibly international) teaching and learning system which has evolved over a long time period as an approved way to induct young men into the adult fraternities of science, mathematics and engineering” (p. 259). According to this view, particularistic norms — masked as universalistic and meritocratic — influence individual performance, experience and productivity (Cole, 1992).

Science is often presented as though individual and group characteristics — including but not limited to race — are irrelevant. What is important is one’s scientific acumen and talent. But the best intentions of neutrality can backfire. Silence surrounding race can lead to an atmosphere where some question whether issues of race should be brought up at all. If race has nothing to do with science, talking about it in science is taboo. This race neutral discourse, however, obscures points of unequal treatment for faculty of color — for example, being misidentified as a student or wait staff rather than as a professor, or additional student advising responsibilities. The assumption that race is not permitted to play a role in who succeeds in science coupled with the idea that success in science is based only on merit can conflict with the racial dynamics that shape how faculty experience the workplace and interact with one another. Research in this area suggests that it is critical to establish a safe and inclusive work environment that allows URMs to successfully engage in their research, creating opportunities to network with peers and increasing opportunities

to connect to the institution (Turner and Myers, 2000; Bianchini, Whitney, Breton, & Hilton-Brown, 2001; Steele, 1997; Smith, DiTomaso, Farrias, & Cordero, 2001; Astin, Antonio, Cress, & Astin, 1997).

Disciplinary Hierarchy. It is widely held that quantitative methods are weighted more highly than other kinds of work in STEM disciplines. Respect, rewards and pay are often heavily reliant on mathematical training perceived as easily evaluated by universal standards. In contrast, work that emphasizes qualitative methods, as is often the case in the social sciences, is perceived to be subjective, harder to evaluate and subsequently less valued in the university culture of science (Mahoney & Goertz, 2006; Rihoux, 2003). Personal and professional interests often influence URM faculty's decisions to study and conduct research on issues related to race and gender (Kulis & Miller, 1988). Additionally, there is typically a higher concentration of URM faculty in the social sciences within the academy. Hence, inequities may exist in terms of pay and prestige based on discipline and race. Recent research suggests that an academic culture that treats URM faculty as tokens devalues their work and questions their place in the academy, which also contributes to an often unspoken hierarchy and "chilly climate" for URM faculty (Aguirre, 2000). Further, university cultures perceived as inhospitable by URM faculty can contribute to faculty attrition by triggering feelings of marginalization and isolation, which can ultimately affect research productivity and denial of tenure (Turner & Myers, 2000).

Women of Color

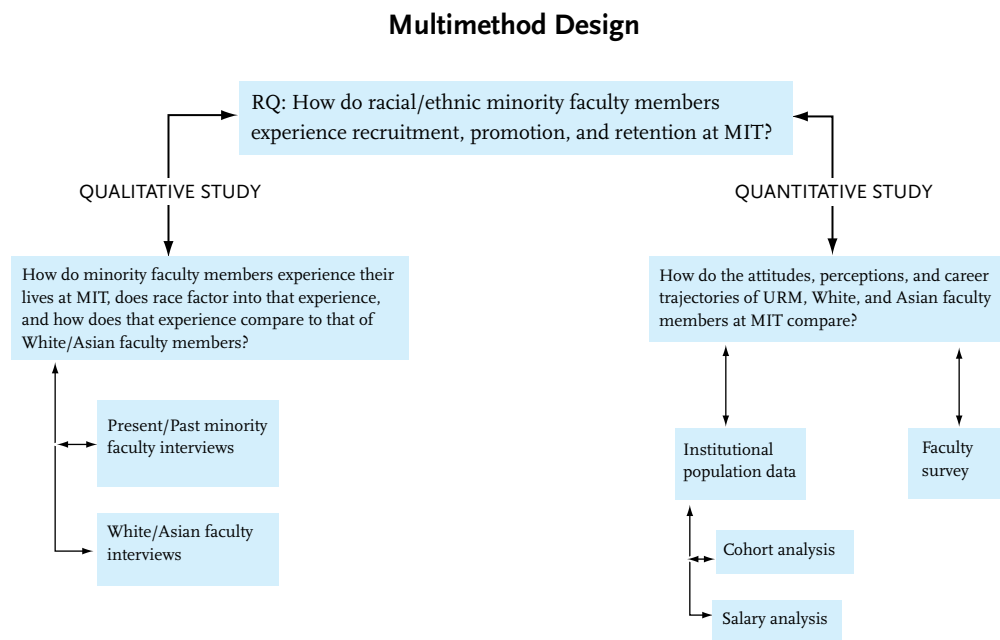
A great deal of research has been conducted investigating why women are underrepresented in STEM faculties (see Blickenstaff, 2005; National Academies, 2007, forthcoming). There is a much smaller research base on Black, Hispanic and Native American scientists (Russell & Atwater 2005; Johnson 2006). Still less attention has been paid to the particular experiences of Black, Hispanic and Native American women in science (Jordan 2006; Caroline & Johnson 2007; Chinn 1999). Historically, women of color fit even less easily than White women into university science settings. Difficulties include reports of loneliness and self-doubt resulting from the isolation of being a woman of color in science (Thomas, 1993; Ambrose, Dunkle, Lazarus, Nair, & Harkus, 1997) as well as negotiating differences between home community and the scientific community (Malcolm, Hall, & Brown, 1989). Negotiating a "double consciousness," life in two different realities, is a common theme. In the occupational world, these women face barriers because of both race and gender, and research about their experiences in STEM disciplines represents a serious gap in the academic literature.

B. RESEARCH DESIGN

This research project seeks to understand the complexity of faculty behavior and experience by using a multi-method design — simultaneously employing qualitative and quantitative methods — to discover whether there are local or institutional aspects native to MIT’s culture, procedures or environment that affect the Institute’s ability to recruit and retain under-represented minority faculty,³ and to show how these factors may have influenced or shaped this group of faculty and their opportunities and experiences at MIT. The study uses information from four different data sets: a faculty quality of life survey, a cohort study of faculty hired between 1991 and 2009, nine-month salary data and 93 one-on-one faculty interviews. The faculty survey was administered in January 2008. Data for the cohort study were compiled throughout the study period. The salary analysis is based on salaries effective January 2009. Interviews with 47 current and 11 former URM faculty, and a comparison group of 25 White and 10 Asian faculty members, were conducted between June 2008 and June 2009.

³ The term minority is used to refer to faculty members who self-identify as African American/Black, American Indian/Alaska Native, or Hispanic/Latino(a). Occasionally a person who has not self-identified will be classified on the basis of other knowledge. But a faculty member’s self-identification always takes precedence.

This multi-method design ensures that this study, by triangulating the various research approaches, can successfully address the overarching research question: “How do racial/ethnic minority faculty members experience recruitment, promotion and retention at MIT?” It allows us to bring together data on statistical trends, attitudes and perceptions, as well as individual meanings and experiences. Figure B.1 illustrates this multi-method approach.



S. Valladares

Figure B.1

Qualitative Data

One-on-one interviews were used to discover how URM faculty members experience their lives at MIT and the role of race in that experience. Interviews with White and Asian faculty allowed us to compare the URM experience to that in the non-URM groups. There are three sets of interviews that provide the data for this qualitative analysis. The primary set is the interviews with 47 current MIT URM faculty members. Then there is a comparison group of interviews with 25 White and 10 Asian faculty. Finally, there are 11 interviews with URM faculty who have left the Institute.

Current URM Faculty. The population for the interviews with current URM faculty was identified as underrepresented minority (URM) faculty members — faculty members who self-identified as African-American/Black, American Indian/Alaska Native or Hispanic/Latina(o). At the time that the population for this study was identified (January 2008), MIT employed a total of 1,009 faculty members (i.e. assistant, associate, and/or full professors). Only 59 of those faculty members identified as URM. All members of this group were targeted to be interviewed and 80% participated: three faculty members declined to be interviewed and nine faculty members did not respond to repeated invitations. The final sample consists of 26 Black faculty members, 20 Hispanic, and one Native American. Further details on this sample are available in Appendix 2.

Comparison Sample. The comparison sample of non-URMs was chosen randomly from faculty lists, constrained only by the distributions of the URM sample on sex, tenure/non-tenure and field. Since the URM sample's distribution on these factors is different from that of the majority group, the comparison sample is useful only for comparison and is not representative of the White or Asian faculty. Two such random samples were initially chosen in order to have substitutions available for faculty who did not respond or refused an interview. If it was necessary to go beyond these two, then another random choice (subject to the same constraints) was made. As Table B.1 shows, the distributions along the selected variables are quite similar.

Former MIT URM Faculty. There are 11 interviews of URM faculty members who have left MIT. They comprise those who were willing to be interviewed from a collectively arrived at list of possibly interesting people who have left MIT, a list compiled in consultation with current MIT URM faculty members. Ten of these former MIT URM faculty members identified as either Black and/or African American and one identified as Hispanic. Four of these were affiliated with the School of Engineering, four with the School of Science, two with SHASS and one with MIT Sloan. Two left after tenure (one retired), four left as associate professors without tenure (AWOTs), and five left as assistant professors. Their time at MIT spans a long period, from the 1970s through the 1990s and into the early 2000s. The modal path was to arrive in the 1990s and leave in the early 2000s. Typically, untenured faculty left after four to seven years (within the probationary period), though a few left much earlier, and a few stayed for nine to ten years before tenure.

Table B.1
Comparison of URM and non-URM samples

	URM (n=47)	White (n=25)	non-URM Asian (n=10)
Sex:			
Male	35 (74%)	19 (76%)	8 (80%)
Female	12 (26%)	6 (24%)	2 (20%)
Tenure:			
Tenured	21 (45%)	11 (44%)	5 (50%)
Not tenured	26 (55%)	14 (56%)	5 (50%)
Field:			
Ec/EFA	4 (8.5%)	2 (8%)	1 (10%)
Engineering	20 (43%)	10 (40%)	4 (40%)
Science	5 (10.5%)	3 (12%)	1 (10%)
(other) SHASS	9 (19%)	5 (20%)	2 (20%)
SAP	4 (8.5%)	2 (8%)	1 (10%)
(other) Sloan	5 (10.5%)	3 (12%)	1 (10%)

Interview Protocol and Analysis. The interview protocol for this study was developed with guidance from the research literature on the experiences of URM faculty in academia, and is shown in Appendix 1. Basically, the same protocol was used in all groups, with only minor necessary modification to meet the circumstances of the comparison group and those who have left MIT. Background information was sought to create a basic profile for each interview participant; this background information included age, field of study, year of hire, tenure year, awards won, education and family commitments. In addition, the final protocol focused on four domains: 1) coming to MIT and experience over time, 2) racial experiences, 3) climate of inclusion, and 4) family, community and social life.

In accordance with recommended research practice, interviewers for the current URM sample, as well as for those minority faculty who have left MIT, were either African American or Latina. Two White interviewers conducted the comparison interviews with the White faculty, while the Asian faculty were interviewed by an Asian interviewer.

Interviews were digitally recorded, if the participant granted consent, and each interview was transcribed verbatim. Transcriptions were supplemented by field notes and interview memos. All interviews took place at a location of mutual accord between the research participant and the researcher. Most faculty members chose to meet on campus in their offices, with the exception of two who asked to be interviewed in a conference room. On average, each interview lasted two hours, although there were some interviews that took up to three or four hours.

All interview transcripts and notes were managed through ATLAS.ti, a qualitative software package that lends itself to an interpretative and iterative analysis. The coding system to organize data consisted of a preliminary review of all data for re-occurring topics and patterns in order to generate overall coding categories. This was followed by an inductive, line-by-line coding of each interview. Through ATLAS.ti it was then possible to create coding families — i.e. summaries of all the statements made on a particular topic. Analysis of these data was a step-wise process. It consisted, first, of abstracting general themes from the coding families including the quotes that provided the basis of the theme. Based on this listing of themes and quotes related to the topic in question it was then possible to prepare a memo on the relevant findings for that topic. The final analysis, reported here, was based on these memos.

Quantitative Data

Quantitative methods were used to compare the attitudes, perceptions and career trajectories of minority and majority faculty. This analysis was based on institutional population data as well as on the sample that answered a faculty quality of life survey.

Faculty Survey. In early 2008, MIT faculty and other instructional staff were invited to respond to a survey about faculty work life. The survey, commissioned by the Office of the Provost and administered by the Office of Institutional Research, examined a number of issues concerning quality of life at MIT, including workload and work-related stressors, climate, mentoring, the tenure and promotion process, and the integration of work and personal/family life. Several items, particularly in reference to climate, were added by the Faculty Race Initiative. The survey was based on the core survey developed by schools in the Association of American Universities Data Exchange (AAUDE). The survey invitation came from the provost and included reminders from the chair of the faculty and individual school deans and department heads. Survey responses were treated as confidential.

The overall response rate for tenured and tenure-track faculty was 69% (708 total responses). Ethnicity is defined as three discrete groups: underrepresented minority, which includes faculty identified as Black, Hispanic/Latino and American Indian/Alaskan Native; Asian, which includes the Far East, Southeast Asia, the Indian subcontinent and Pacific Islands; and White. Within the URM group, when sufficient numbers of respondents exist, distinctions are also made between Blacks and Hispanics.

Table B.2 shows the individual response rates by gender, school, rank and race/ethnicity. As the rightmost two columns show, the final sample was close to the distribution of the larger population, hence the responses were not weighted in subsequent analysis. Furthermore, the response rate for URM faculty was similar to that of White faculty (72% vs. 69%), though Blacks had a higher and Hispanics a lower response rate than the average.

Of those who responded, 78% of White faculty are tenured compared to 62% of Asian and

Table B.2
Response rates by rank, school, gender, and race/ethnicity

	# of respondents	Response rate	% of respondents	% of population
Overall	708	69%	100%	100%
Rank				
Tenured	519	67%	73%	76%
Non-tenured	189	77%	27%	24%
School				
SAP	60	73%	8%	8%
Engineering	264	70%	37%	37%
SHASS	125	80%	18%	15%
Science	185	64%	26%	28%
Sloan School of Management	63	61%	9%	10%
Whitaker	8	57%	1%	1%
Other	3	60%	0%	0%
Gender				
Female	153	79%	22%	19%
Male	555	67%	78%	81%
Race/Ethnicity				
URM*	39	72%	5.5%	5.3%
Black or African American	24	80%	3.4%	2.9%
Hispanic or Latino	14	61%	2.2%	2.0%
White/Not Hispanic	572	69%	80.8%	81.1%
Asian or Pacific Islander	79	66%	11.2%	11.6%
Other**	18	86%	2.5%	2.0%
Overall	708	69%		

*Note: Includes Black, Hispanic, and American Indian/Alaskan Native (n=1) faculty.

**Note: "Other" includes: Chooses not to self identify, Not available, and Other.

44% of URM faculty. Hence we controlled for tenure status in most analyses. Regarding rank, 15% of White faculty are at the assistant professor level compared to 29% of Asian faculty, 46% of URM faculty, 46% of Black and 43% of Hispanic faculty.

Appendix 3 provides further details on this sample.

Cohort Analysis. The cohort data set lists every person who was hired into a faculty position from 1991 to 2009. The data were obtained through the Office of Institutional Research and

provide information on hiring, promotion, and retention as well as demographic characteristics like race/ethnicity, gender, country of origin, hiring department (including dual appointments), the rank at which people were hired, and subsequent promotions, including the dates of promotion and tenure, or date of leaving MIT. This was a difficult data set to compile and some variables of interest, such as doctoral degree institution, are not yet included; nor was the “productivity” measure used in the salary analysis available historically. One of the recommendations of this report is not only to update this data set continuously, but to expand the information in it. Nonetheless, it does allow one to compare the basic career trajectories of the URM faculty to the non-URM groups.

Eighty percent of those who entered during these years came in as assistant professors, and much of our analysis will deal with their career trajectories.

Further details on this group are available in Appendix 4.

Salary Analysis. Salary data from 9-month salaries as of January 2009 were analyzed by regressing log salary on the following variables: entry cohort, time at MIT, age, gender, race/ethnicity, country of origin, current rank, department, initial rank, and if they had ever held an administrative position. Further, for the schools of Science and Engineering, a subsequent analysis also included research volume as a possible, though not entirely satisfying, proxy for productivity.

C. HIRING AND CAREER TRAJECTORIES

Results from Cohort Analysis

Even though MIT has made a real effort to recruit minorities, as shown later, the numbers are still small. Between 1991 and 2009, 77 underrepresented minority faculty members were hired — 8.5% of the total hires during that period, although three departments and one division made no minority hires at all during this time. Twenty-three (30%) of these minority hires were women; 42 (55%) were Blacks; 33 (43%) were Hispanics; and two were of other ethnic groups. Thirty-eight percent of the Black hires were female, compared to only 15% women among the Hispanic hires.

Although 8.5% of the hires were URMs, they currently comprise only 6% of the MIT faculty. This is one of our key findings: we disproportionately lose minorities in the early years. Table C.1 shows the 554 people hired as assistant professors between 1991 and 2004, all of whom should have had enough time for the first promotion to associate professor without tenure (AWOT). But, as the table shows, fewer URM than Whites or Asians were promoted to AWOT.

Table C.1
Promotion to AWOT
(of those hired as assistant professors 1991-2004)

Group	Promoted to AWOT	Left without promotion	N
White*	75%	23%	436
URM**	55%	45%	38
Black	61%	39%	23
Hispanic	50%	50%	14
Asian*	79%	19%	80
Total*	74%	24%	554

* 11 people did not get promoted but are still here (all hired after 2000), hence all totals do not equal 100%

** includes also 1 Native American

Note: There is a significant difference between promotion rates of White and URM faculty, $\chi^2 = 7.0$, $p < .01$

Further, women are less likely to be promoted than men (66% vs. 76%) and this is more pronounced among URM faculty (43% of URM women promoted compared to 63% of URM men) and the difference is even greater among Black faculty (44% of 9 Black women promoted compared to 71% of 14 Black men).

The picture varies by schools. The schools of Science and Engineering promote faculty to AWOT at a higher rate than do the other schools (81% vs. 67%). In both sets of schools, however, the difference between URMs and the dominant groups remains, and the difference between URM and non-URM is larger in the non-science/engineering schools. In SAP,

SHASS and Sloan, 67% of Whites and 68% of Asians get promoted to AWOT, compared to 48% of URMs.⁴

Using promotion to AWOT as the dependent variable in a regression analysis and controlling for sex, year of hire, department, ethnicity and country of origin, we find a significant negative coefficient for URMs, as is evident in Table C.2. Compared to White men, URMs are less likely to be promoted to AWOT no matter what year they came to MIT or into which department they were hired, and this is particularly true for U.S.-origin URMs. An analysis including separate effects for Blacks and Hispanics shows that both groups have negative coefficients, with the Hispanic one somewhat larger, though they are not significantly different from each other. In Appendix 4.2 we also report logit marginal effects; they are virtually indistinguishable from the linear probability coefficients in Table C.2.

Women also have a negative coefficient, though without statistical significance.

Table C.2
Linear probability model results of effect of URM on promotion to AWOT
(assistant professors hired 1991-2004)

VARIABLES	(Model 1)	(Model 2)	(Model 3)	(Model 4)
URM	-0.187* (0.083)	-0.172* (0.072)		
Asian	0.039 (0.050)	0.033 (0.050)	0.033 (0.050)	0.034 (0.050)
Female	-0.074 (0.045)	-0.048 (0.045)	-0.046 (0.045)	-0.049 (0.045)
URM non-U.S. Origin			-0.127 (0.135)	
URM U.S. Origin			-0.188* (0.084)	
Black				-0.145 (0.091)
Hispanic				-0.186 (0.118)
		(Year of Hire) (Department)	(Year of Hire) (Department)	(Year of Hire) (Department)
t-test			(Non-U.S.=U.S.) t=1.71, p=0.06	(Black=Hispanic) t=0.283, p=0.777
R-squared	0.02	0.039	0.183	0.182
observations	554	554	554	554

Note: "U.S. origin" in this and all tables in the research report includes non-responses to the country of origin question; hence this category may include a few foreign countries of origin.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Robust standard errors in parentheses.

4 It is primarily the School of Engineering that has a somewhat higher than average promotion rate to AWOT, and the Sloan School that has significantly lower promotion rates at all levels. The other schools are all pretty much the same: about three quarters of entering assistant professors get promoted to AWOT and about half of them get tenure.

Sample survival functions, which show the probability that a newly hired assistant professor still works at MIT as a function of time since hire, are graphed in Appendix 4.3. They show that the survival probability for URMs, compared to non-URMs, begins to decrease at about three years, some two years before the median time to AWOT, and then remains lower for the rest of the time. In contrast, women's survival probability is very close to that of men, and only drops below the male curve at about 14 years. Put together, we see that URM women have a lower probability of survival compared to URM men until about the seventh year. After that, the survival probability of URM men drops below that of URM women. Non-URM men and women have similar survival probabilities until about year 14, when those for women begin to decrease.

Given the attrition between hiring and first promotion to AWOT, it is not surprising that there are also differences among groups in the proportion getting tenure. For this we limit the cohort to those who entered between 1991 and 2000, thus giving them time to have obtained tenure. Forty-eight percent of entering White assistant professors and 45% of entering Asian assistant professors attained tenure during this time, compared to only 31% of URM assistant professors. Blacks fare somewhat better than Hispanics in achieving tenure (39% vs. 20%). If, however, we limit the analysis to those who did get promoted to AWOT, the difference between URM and non-URM is reduced but nonetheless persists: 63% of Whites and 60% of Asians attain tenure compared to 58% of Blacks, but only 40% of Hispanics.

In all cases, for URMs as well as non-URMs, when a faculty member enters MIT as an associate professor without tenure (AWOT), the probability of attaining tenure increases. Entering as a senior professor (i.e. as tenured), of course, is best of all. A difference remains, however, between URMs and non-URMs in rank at entry: 21% of our current tenured White faculty and 23% of our current Asian faculty arrived at MIT with tenure, compared to only 12% of URM faculty (all male). Similarly, when we look at all those hired between 1991 and 2009, 14% of White and 13% of Asian faculty came in tenured, compared to 5% of URMs.

As to timing, the mean time to AWOT is 4.7 years, with a median of 5 and a mode of 4. URMs are somewhat higher, with a mean of 5.0 and a mode of 5.⁵ The overall mean time to tenure is 6.4 years (median=7; mode=7); URMs take longer with a mean of 6.9 years; Asians have the shortest time, with a mean of 6.2. The mean time from tenure to full professors is 3.6 years (mode, median=3) and there is little difference among the race/ethnic groups (see Appendix 4.3). There is almost a year's difference, however, between men and women in the time it takes to go from tenure to full professor. Women have a mean of 4.4 years compared to 3.4 years for men, and the median for women is 4 compared to 3 for men (mode for both=3). This difference in timing to get to full professor when one has already been granted tenure is something that should be examined further.

In sum, we tend to lose URM faculty and women during the early years, prior to the first promotion, and minority faculty are somewhat slower in the timing of their promotions. Blacks

⁵ Blacks are somewhat slower than Hispanics (5.1 years compared to 4.7), but the numbers involved are very small.

tend to fare better than Hispanics, though among Black faculty who entered as assistant professors, the women have considerably lower promotion rates than the Black men hired in that position. Hispanic women are notable for their absence.

Experiencing Academic Practices: Interpreting Hiring and Career Trajectories

Much of what determines the representation of URM faculty has to do with recruitment, mentoring, promotion and retention, what we described above as career trajectories. In analyzing what the faculty *tell* us in the interviews about their experiences with these academic practices, we can see how these aggregate patterns are differentially experienced by URM and non-URM faculty.

Recruiting. Typically, a job is advertised and people apply. But, we know that this is not always the way that the applicant pool is compiled. Indeed, one of the most common suggestions to increase the number of minorities and women applying for an opening is to actively recruit them. On the basis of how the faculty described their coming to MIT, we see that they were about evenly distributed in three modes: the normal, blind application process; encouragement to apply; and active recruitment.⁶ The women in the URM interview sample (25% of the whole) are proportionately represented among those who were encouraged to apply. They are overrepresented, however, among those who applied in the normal, blind application process and underrepresented among those who were actively recruited.

This picture seems quite different in the non-URM comparison group, although specific information in this group is sparse. Of the 28 non-URM faculty who gave sufficient information on how they came to MIT, 22 applied and 6 were recruited to some degree. In other words, there is a key difference here: non-URMs are about 3.5:1 times more likely to apply than to be recruited, compared to an opposite ratio for URMs, who are about 1.5:1 more likely to be recruited. MIT is clearly making an effort to recruit URM faculty, and without this effort the situation would no doubt be worse than it currently is. Nonetheless, more efforts may still need to be made in order to increase the diversity of the faculty.

One issue that needs to be carefully thought about concerns the target of opportunity hires. Few of the URM faculty knew whether or not their minority (or gender) status had anything to do with their recruitment, though some surmised that it did: *“I wonder if I would have this job if I had been a White male...”* Others were fairly sure that race/ethnicity/gender had nothing to do with their hiring: *“People are hired because they are excellent”; “I believe I came as a regular hire; race or gender was not mentioned.”* A few knew they were target of opportunity hires but hoped they were hired for *“what I do, not just...whatever I bring in the way of identity and networks, as many faculty of color do.”*

For some people, the fact that race played a role in their hiring was quite negative. For example, one faculty member reported that he had heard that his department went to the provost to ask for a slot:

6 Fifteen of the 41 URM faculty who were specific about their recruitment reported that they applied for their jobs in the usual manner. Twelve were encouraged to apply (i.e. they were told about the ad, or someone suggested they apply) and 12 were actively recruited (i.e. someone kept after them with specific information and advice, beyond mere encouragement). Two URM faculty members (both male Hispanics) pushed to be considered. Thirteen in this group had MIT connections (all of whom were either encouraged to apply or actively recruited); three were senior appointments (who were actively recruited); two had MLK connections (both of whom were actively recruited).

“That is the absolute last thing in the world that I wanted to have, to be labeled like that. At MIT, colleagues only respect you if you are very good at what you do, and it is hard to have their respect if you are perceived as having had favorable treatment. [He continued by saying that] this made life difficult for me in the beginning. How could I expect them to respect me if I was a special appointment? [He commented later in the interview] I hope MIT is doing this in a more thoughtful way. MIT should just say yes or no, we want this person because of their technical excellence or not...one should not need a special slot.”

Three other URM faculty, who knew they were opportunity hires, also felt that it contributed to less than optimal treatment, particularly regarding staff support. In one case, the URM faculty member reported difficulty getting administrative and material support because the administrative officer *“is not sure I have research funds because of the way I was hired, even though [the AO] has my appointment letter.”*

A key issue has to do with the way the target of opportunity system is mobilized in the hiring procedure. There was concern that the system of opportunity hires means that *“for institutions that do have these target of opportunity funds, there will almost never be a chance that I [minority] would actually come out as a number one in the [search] position because the interest of the department [is] to get as many people as possible.”* This person feared that the search committee will always rank the White applicant higher and then go for an extra slot for the URM. To combat the consequence of this gaming for assessments of candidates, one respondent suggested that search committees should put candidates into groups, rather than ranking them. In this way there would be a top group instead of a top person; with grouping, a URM could be categorized within that top tier, rather than always viewed as an add on and never ranked as the very top.

Mentoring. Mentoring varies considerably across the Institute. There are examples of superb mentoring in our sample and examples of dismal failure. They vary across schools, across fields, and across race/ethnic and gender categories. Judging from these data, the critical factor in providing supportive mentoring depends on holding the mentor accountable for the mentee’s movement through the process of promotion and tenure. This complements what research elsewhere has shown (Kalev, Dobbin, and Kelly, 2006).

One example of a first-rate mentoring experience comes from a URM faculty member. In this person’s school, two to three mentors are assigned to all junior faculty, one to two in their field and one outside. These mentors then have to present the case for the junior person annually to the department. It is their job to make the junior person’s work accessible to the rest of the department, many of whom might be in different areas, and to create a case for the importance of that work. These mentors’ connections with their mentees, therefore, reflect back on the mentors, which leads to more engaged support. The essence here is that the mentor is personally involved in the success of the mentee. This process also provides annual feedback to the junior faculty member which means that if things go wrong and they do not get tenure, the junior faculty member should, at least, not be surprised.

Without a formal process driven by a dean or department head, however, the situation is different. *“I didn’t know that I actually had a formal mentor assigned until I had been here almost two years.”* In other cases a mentor is seen as “clueless”; *“I didn’t have a graduate student for a few years, because, somehow, I didn’t know how that worked, and nobody said, ‘Gee, you should get a graduate student.’”* Most of the complaints about lack of helpful mentoring come from the URM sample, and the difference in the mentoring experience of the URM and non-URM faculty is striking. Since formal mentoring is relatively new at MIT, our analysis of differences in experience centers on the untenured faculty.

In our analysis of the transcribed interviews, we identified statements about mentoring. From this information, we could determine whether a respondent: had a mentor or mentors; if they were formal or informal, if there were other people who supported the faculty respondent; what was positive about their mentoring; and, finally, what was negative. From these abstracted comments from the interviews of both URM and non-URM, we classified each non-tenured faculty’s mentoring experience into three groups: average experience, above average and below average. The final counts for all groups are given in Table C.3.

Table C.3
Comparison of URM and non-URM untenured faculty on mentoring experiences

	URM (n=25)*	non-URM White (n=13)**	Asian (n=5)	Total non-URM (n=18)
Above Average	7 (28%)	6 (46%)	4 (80%)	10 (55.5%)
Average	15 (60%)	7 (54%)	0	7 (39%)
Below Average	3 (12%)	0	1 (20%)	1 (5.5%)

* One Hispanic AWOT talked about the downside of mentoring, mentions 2 minorities who suffered from mentoring, and reports he didn’t need any. He is excluded from the table.

** One White assistant professor provided no information about his mentoring experience and is excluded from the table.

Note: Chi-square (3 major groups; 2 categories) = 5.06, $p < .10$; Fisher’s Exact Test: $p = .07$ ⁷

As a group, URM faculty have fewer good mentoring experiences, although there are group differences even among URM faculty. Of the seven URM faculty with positive mentoring experiences, five are Hispanic and one is a woman, compared to the below-average group in which none is Hispanic and all are women. Indeed, everyone in the below-average mentoring group, regardless of race/ethnicity, is female. It would seem, therefore, that mentoring is most problematic for Blacks and women.

This conclusion holds even when looking at the entire sample, not only the untenured faculty. Importantly, the school with the least formal mentoring and the most emphasis on informal mentoring has the worst experience. All but one of the below average group are from this school. Again, this holds for the entire sample.

⁷ Because of small numbers, the categories of Average and Below Average have been combined. For Fisher’s Exact Test, the comparison is between URM and non-URM.

In summary with regard to mentoring, it seems fairly clear that the non-URM sample has more favorable mentoring experiences than the URM group, and that the most difficult experiences are among Blacks, women and those from schools that rely on informal mentoring.

Promotion and Tenure. Promotion and tenure create anxiety for all. Nonetheless, there are distinct differences across racial and ethnic groups in perceptions of the process, as well as the advantages and disadvantages of tenure. Achieving tenure at MIT is perceived as extremely difficult and, many think, increasingly so. It is particularly difficult for those who might be considered risky. One respondent echoed statements made by several others concerning MIT's absolute commitment to recruiting and retaining the very best in any field: *"They [MIT] would rather turn someone down for tenure and then have them go on to [a] brilliant career than the reverse, to give tenure to someone who turns out to just be dead weight."* Respondents commented that the Institute's unwavering commitment to excellence works against those among the URM and non-URM faculty who are not superstars but, think some, this seems to have a disparate impact for URM scholars, both at hiring and promotion. *"As long as you're hiring average White chemists, then you can hire an average Black chemist...why hold the Black chemist to the Nobel standard and hold the White candidate to the good-enough standard?"*

In the URM sample, a small but vocal set (n=5, 9%) explicitly talked about the subjective nature of promotion and tenure decisions, with a large number implying less explicitly that subjective judgment plays a significant role in the tenure process. Often this came from faculty in fields outside of science and engineering, fields where criteria for evaluation are less consensual and clear (Lamont, 2009). There was a sense that to impose clear criteria from the most dominant forms of scholarship on other areas and styles of work — *"to insist on orthodoxy"* as one URM faculty member speculated — *"stifles one of the pillars of MIT which is to encourage innovation and entrepreneurship of ideas."* Such worries among the URM faculty contrast with the comparison group: not one person in the Asian or White groups mentioned any such concern about the subjectivity of the tenure process.

There were clear differences in the reported post-tenure experiences of 20 URM and 12 non-URM faculty who came up through the ranks.⁸ Two White male faculty looked back on the pre-tenure years as a *"more idyllic"* time where they could do unencumbered research; where they *"didn't know all the things I'd end up having to do"*; *"they were the best years I've had here."* No URM, women or Asian faculty expressed this attitude in quite this way, although a number did indicate (four URM, three non-URM) that with committees and other administrative duties they now had more work, and, in some ways, there had been more support, if also more tension, in earlier days.

Among faculty, particularly URM faculty (five URM, one non-URM), there was an articulated sense that tenure came with both positives and negatives. With tenure, there is less tension, things are more relaxed and the insecurity is gone (four URM, four non-URM). There is also considerably more freedom; four URM and two non-URM were specific about this aspect of

8 Among the 11 tenured White faculty, one (9%) came here already tenured, a similar proportion to the URM faculty (2 of 21, 10%) who came with tenure. But both contrast sharply with the three of five tenured Asian faculty who came already tenured (60%).

their experience. With tenure, however, also came increased committee and administrative work which took time. In that sense, there was a loss in autonomy, but tenure also allowed more access to information, more opportunity to learn the culture, and to have more influence and power. Interestingly, the advantage of additional access, leverage and influence was more frequently and clearly mentioned by URM faculty. There was, however, one discordant note of a URM faculty member who actually felt marginalized by not being appointed to the leadership positions that would provide this advantage.

Notably, across all groups, faculty felt that tenure did not dramatically reduce the pressure to produce. *“MIT continues to send signals about what it wants, especially in research...It’s ongoing, and it’s never completely easy at MIT, even after tenure. MIT has a stressful face.”*

Retention. The faculty experiences already portrayed involve issues of retention implicitly and explicitly. We have, however, another data set of interviews with 11 URM faculty who left MIT that can shed different light with more explicit focus on the retention issue for URM faculty.

Although a small group, there is a remarkable consistency in the interpretations of the MIT experiences of the 11 former faculty interviewed. Of the five who left as assistant professors, only one was a recent faculty member (who left after 2000). Atypically, he said that he was aware that his publications were low and admitted that he *“had trouble hitting on all cylinders while I was on the MIT faculty.”* Those from the earlier group were more likely to blame the system and two reported highly negative experiences. They cited lack of feedback, lack of mentoring, unfilled promises of resources and a lack of awareness on the part of MIT that race is an important aspect of the faculty experience. One, in particular, felt strongly that URM faculty experienced exclusion at MIT, and that this experience was not taken into account at promotion and tenure decisions.

“However it’s [tenure] being defined now, it’s definitely not an inclusive reality. It wasn’t that you were excluded in an obvious way; it was just this really, really racist kind of exclusion, of alienation that went on ... I don’t think Whites have any, my White colleagues have any idea. And they don’t care because they don’t ask, they just assume. You know, so, when you talk about inclusion, the different realities and the different worlds that we experience in academic institutions, many of our White colleagues aren’t asking. When it’s time for tenure, they don’t put that on the table. They don’t care.”

Specifics detailed by this group include: lack of interactions with colleagues, a changed environment with a new department head, difficulty of getting graduate students and a promised lab that never materialized (all from people in the earlier group). These kinds of reasons could well be given by anyone who did not get tenure at MIT, and without a comparison group we cannot be sure. We can tell, however, that the people from the earlier period are more negative, find fault with the system, and attribute their situation more specifically to race. This fits with indications from forums and from the survey that older, more senior

URM faculty seem to be less satisfied than those who are younger (see Appendix 3.3). Perhaps MIT is improving.

Salary Analysis

A salary analysis was conducted including all faculty members as of January 2009 with the exception of the president, provost, chancellor and the five deans. The final N was 834. In this regression analysis, the dependent variable was the log of the nine-month faculty salary in January 2009. Independent variables were cohort of entry, age, gender, time at MIT, race/ethnicity, country of origin, current rank, department, initial rank and administrative position. The resulting regression accounted for 84% of the variance in salaries (see Appendix 5.1). Rank, department, being hired as a full professor and previous administrative experience were the strongest predictors of salary.

Results indicate that URM faculty are not paid less than White male faculty with comparable characteristics. An initial non-significant negative coefficient reflects the disproportionate number of URM in the lower paying departments of SHASS. With controls, the URM coefficient turns positive (larger for URM of U.S. origin) and is statistically significant at the .05 level, though remains quite small (.041).

The URM coefficient is further reduced and loses its statistical significance when research volume (money brought in from grants) is added to the equation (see Appendix 5.2). We do not have a good measure of research productivity that covers all the schools, nor is it clear that money brought in from grants captures the quality and impact of the research. Nonetheless, in the absence of a better and more universal indicator, we used a smaller population consisting of 489 members from departments in the Schools of Engineering and Science where research volume was meaningful, i.e. where there was a non-zero average over three years. In this group there is no significant difference in salaries between URM and White male faculty, once controls are introduced.⁹

Summary of Section C

It is clear from this analysis that even though MIT is actively recruiting minority faculty, their numbers are still low, with URM assistant professors leaving disproportionately in the early years before promotion to AWOT. Opportunity hires clearly help, but some of their inadvertent consequences suggest a rethinking of the procedures involved.

We have also seen that the mentoring experience of URM faculty (and women) is less positive than that of White or Asian men. What seems to work well is a formal system with two to three mentors who are accountable to their school councils for the progress of the mentee.

Further, URM faculty have some concerns about the objectivity of the tenure process, which

⁹ In this smaller sample, research volume is a statistically significant predictor of salary ($p < .001$), even though the coefficient itself is small (.023) and adds hardly anything to the variance explained.

will become clearer in the next section. Their lives are less likely to be seen as “idyllic,” even though the influence accorded with tenure is very much welcomed. Those who have left MIT, especially those from earlier years, are likely to blame the system and to see race as involved in its deficiencies.

Finally, as far as we can tell with the variables we have available, there is no salary imbalance between minorities (or women) and White men.

D. MIT: A MERITOCRATIC INSTITUTION OF EXCELLENCE AND INCLUSION?

Almost all American universities are trying to increase the presence of minorities on their campuses and to improve the environment in which they live. This is certainly true of MIT, as is obvious by the commitment to this Initiative. MIT has been working for a long time to reach the goal of a more diverse faculty, but it, like other universities, has not been highly successful in this endeavor. Mitchell Chang (2000) reports on a project from AERA and the Center for Comparative Studies in Race and Ethnicity at Stanford which concludes that while this is not unusual, it should not invite complacency.

When the notion of race ... becomes an integral aspect of institutional life, it has multiple effects, both exposing competition among institutional interests and aggravating the tension between them. When these effects are left unresolved, they not only neutralize diversity-related efforts but also exacerbate intergroup tensions (p. 162).

Among the key competing interests that Chang analyzes is the tension between excellence and inclusion. The presence of this tension — between what we have labeled diversity and excellence — is a key finding of the study.

Diversity and Excellence

When our faculty were asked in the survey whether they felt that “a diversified faculty (one with a critical mass of ethnic diversity representation) is important for MIT’s continued academic excellence,” 69% agreed with this statement and 39% agreed strongly.¹⁰ This opinion differs significantly, however, between URM and non-URM faculty. While 36% of White and 38% of Asian faculty strongly agreed with this statement, a full 82% of URM faculty agreed strongly. Women are also more likely to strongly agree: 53% of women vs. 35% of men.¹¹

This item was one of a battery of items about cultural climate and opportunities at MIT. A factor analysis of this battery showed that this item loads positively on a factor on which the following items load negatively:

I feel that the climate and opportunities for minority faculty are at least as good as those for non-minority faculty.

I feel that the climate and opportunities for female faculty are at least as good as those for male faculty.

In other words, those who believe that diversity is important for MIT’s academic excellence are less likely to believe that the climate and opportunities at the Institute are as good for minority and women faculty as they are for the dominant groups. For this reason, we labeled

¹⁰ There is no difference between tenured and non-tenured faculty on this item.

¹¹ These differences are all statistically significant (by chi-square tests) at $p < .001$.

this factor “missed excellence” and formed a scale of these three items with this name.¹² Thirty-nine percent of URM faculty were in the “high” category on this scale, compared to 22% of White and 18% of Asian. Forty-nine percent of women, compared to 15% of men, were in the “high” category. Using this scale as a dependent variable in a regression analysis controlling for other demographic variables, we find that these results hold and are statistically significant for women and underrepresented minorities. When the URM category is disaggregated, the coefficient for Black faculty is higher than for Hispanic, the latter not attaining statistical significance. In other words, URM (especially Black) and women faculty believe that MIT is missing the chance to enhance excellence through diversity, because they see the environment for URM and women as less good than it is for White men. They are more likely to believe that MIT’s continued excellence demands a more diverse faculty but, at the same time, feel that the Institute does not provide them with as supportive an environment as it does for White men.

These survey results reflect some of the intellectual tension in discussions of diversity and excellence. The story becomes more complex, yet nuanced, when we look at what the URM and non-URM faculty tell us in the interviews. Both non-URM and URM faculty affirm that excellence and diversity are intertwined, although URM are more likely to articulate the connection.

White and Asian faculty repeatedly indicate their sense of the Institute’s belief that you cannot have excellence without diversity: *“The overall climate here is to positively correlate excellence and diversity”; “I think they see it as highly linked”; “I think everyone would agree that intellectual diversity is central to excellence ...”; “In general the attitude here is that ... excellence is compatible with diversity.”*

“I get the impression that the majority of people here see that having a diverse environment is important to being a place that is excellent. Most would argue that those two things are reasonably, strongly connected.”

Notably, these faculty are referring to the Institute’s commitments. Less often but nonetheless also represented among the non-URM faculty is a sense of personal conviction about the connection. *“It’s a really strong connection and that excellence requires diversity and diversity produces excellence, or helps to produce excellence.”*

“I think that in the long run they have to be intertwined. You cannot say, ‘I’m hiring for excellence here and I’m hiring for diversity here,’ because [otherwise] there’s an implicit notion that people who are hired for diversity are not excellent. I would like to think that while we place a very strong emphasis on diversity, the two have to be linked together. ... And ultimately for diversity to succeed, excellence and diversity have to be not only in practice but in principle, and in perception, seen as an integral part. And so, while we push for diversity, we also keep emphasizing excellence.”

¹² The Cronbach alpha for this scale is .7. Scale scores reach the maximum (15), and those greater than 11 (between 12 and 15) were considered “high” on this scale.

Despite these assertions of connection, some cautions and doubts are also expressed:

“I think there has to be balance”; “Is MIT really thinking about what comes out of that collective experience of having people from these different backgrounds ... I think the university is very open to seeing diversity as part of excellence, but how deeply are they thinking about it?”; “There’s this clear commitment to excellence and diversity ... but it hasn’t been resolved; how exactly do you achieve both at the same time?”

“One might make the argument that until deans, particularly department heads, really feel motivated to do something, that not much is going to get done. Things need to change at that level ... I would say some faculty probably see that there’s a conflict [between diversity and excellence], and others don’t.”

URM faculty also see this connection. *“Diversity is not incompatible with excellence, and homogeneity is not synonymous with excellence ... the way I see it, diversity and excellence go together”; “I want an MIT in which excellence is recognized, that everybody who does good work is recognized”* and the only way to do that *“is to have a diverse faculty.”*

Unlike the non-URM faculty, URM faculty are more explicit about why diversity makes for excellence. You will have more ideas and try more things. *“Excellence is about the intellectual pursuit. If we are going to have intellectual pursuit, then we need to hear from all of the members of our community and our society”; “There is a connection between your life experience and your intellectual interest, the kind of questions you ask and pursue ... diversity, life experience, matters for the quality of one’s research”; “Having a diverse faculty will lead to more excellence and better research, because you will be more innovative.”*

Problems can be defined differently in various fields of knowledge and by people with different kinds of experiences.

“I think that there is a difference in problem choice. I think there is a difference in perspective. I believe there are cultural differences in problem solving, and that there’s not a better or a worse way, but that there are different ways. And I think people who are more successful are people who think beyond their own box. But you can’t do much if you’re not exposed to other systems of thought ... the more diverse you are the greater you’ve improved your excellence level on everything.”

Instead of holding everyone to one “orthodoxy,” a variety of approaches and of experiences enhances the excellence of an institution. *“I think it is better for an institution when the general assumption is that everybody who’s here is capable of being here. So you’re bringing sort of a wealth of different types of experiences, backgrounds, et cetera, to a level playing field. That’s the way it should be.”*

We have the situation, therefore, where both URM and non-URM faculty affirm the connection of excellence and diversity, but the tension remains because some URM faculty are skeptical about the genuineness of the non-URM assertion. URM faculty attribute to non-URM faculty

the belief that standards are lowered when MIT hires minority faculty and thus diversity undermines excellence. *“Whenever we talk about diversity, the conversation immediately goes to ‘we have to maintain excellence’ ... people see a tension ... can’t say ‘diversity’ and assume excellence is included.”*

“Many White faculty here think they are upholding MIT as an institution by resisting these calls for more minorities. It’s not just racism, direct blatant racism. It’s that they don’t want to undermine MIT ... I think many minority faculty perceive [that for non-URM faculty] bringing in minorities means lowering standards.”

There are reports of hiring committees where bringing up “excellence” is a code for dismissing a minority candidate.

Meritocracy and Standards of Excellence. But what are those standards for excellence? How do we know it when we see it? *“Nobody wants to lower their standards in order to achieve diversity. However I don’t know if we always have the right standards”; “I don’t know if they do it on purpose, but I do think they have a view of what excellence is, and that excellence doesn’t really feed the multiplicity of ways that excellence can be achieved.”*

MIT is seen as a meritocracy, but, as already mentioned, a number of URM faculty see this principle applied easily to their “superstars” but less well to others.

“There are two different kinds of minority candidates, the kind that’s such a star that you’re like, whoa, and then everyone wants to get them [and they get swooped up]. And then there’s the kind of person who is a good candidate but not a star. And those candidates I think end up getting rated lower than White candidates who are [also] good candidates but not a star.”

A total of 30 URM faculty talked about a strong meritocratic ethos at MIT where faculty are judged and rewarded on merit without regard to race. But, within this strong consensus, there is further differentiation and controversy. About one-third (n=9) of these 30 faculty (mostly Hispanic) embrace the idea that MIT is indeed a meritocracy and fear that explicit attention to race in hiring and promotion will lead to preferences for candidates with less intellectual capacity.

“I don’t think there is any overt racial discrimination. I just think there’s an inherent culture that says, ‘Anything like race, any social construct like that, that may be important to you as an individual, is unimportant here.’ So, it’s not like it’s bad that you’re Hispanic, it is just not relevant in this culture. What is relevant are your ideas, empirical tests and other intellectual pursuits.”

The remaining two-thirds of these URM faculty challenge the mindset that a commitment to increasing the number of faculty of color means considering less-qualified candidates.

"I think that MIT believes very deeply in itself as a meritocracy. And I think that complicates efforts to really be proactive ... There's a lot of fear over giving tenure to somebody who turns out to be a bust. They would rather make the mistake the other way ... And I think that kind of thinking plays into hiring for graduate students. I think it plays into taking a bet on junior faculty."

Even though White and Asian faculty tell us that they think diversity and excellence are intertwined, we need to analyze the skepticism voiced by URM faculty that non-URMs' commitments are genuine. Here, our interviews with URM faculty about race suggest that if not explicitly stated as a tension between excellence and diversity, racialized experiences underwrite URM faculty's doubts about the Institute's and faculty's claims *"that everybody who is here is capable of being here."*¹³

These varied accounts of the relationship between excellence and diversity have more implications than we can pursue. At the most surface level, as in all social action, there is a difference — greater or smaller — between what people say and what they do. Somewhat below the immediate surface are the varying degrees of appreciation of the subtler dynamics of social interaction as essential components of doing science and engineering. Some faculty suggest that because MIT is an institution dominated by science and engineering — and because these fields rely so heavily on objective indicators and measures — a community of engineers and scientists simply does not pay sufficient attention to the social organization of their work in labs, in departments and in the schools that constitute the Institute.

"MIT's crowning achievement is that it's a quote unquote meritocracy. That's indisputable. Who's going to argue with that? It's completely unobjectionable. That's grounded, I think, in science in some kind of way. That the numbers will sort it all out. ... Any way in which the subtleties, the interactions that make scientific production possible are ignored. All people are concerned about is the end product, it seems. But there are labs. There are dynamics within labs. There's funding. There's all of these kinds of things which inform what happens. But somehow that all gets pushed to the side, purposely. We're not going to look at that because we are somehow committed to the scientific method. I think in other places there's just more cognizance of a more complex world."

Findings here suggest that URM faculty grapple with the idea and the reality of whether MIT is a true meritocracy in which people are rewarded solely according to their ability. URM voices suggest that there is disguised inequality embedded in an organizational culture deeply rooted in the belief that it functions according to merit-based practices.¹⁴ Findings suggest, further, that in the MIT culture which embraces the scientific ethos — and claims that science is itself beyond identity and race — race, racialization and racism, or the perception of them, are very difficult for many to recognize, address and discuss honestly.

¹³ In a study of scientists in R&D labs, DiTomaso, Post, Smith, Farris, & Cordero (2007) show that White U.S.-born men get more favorable task assignments and evaluations, whereas most others fall into an average zone on these aspects of their work. Only U.S.-born Black women were actually less favorably evaluated and had less access to the work experiences that are related to performance: "Our findings suggest that in science and engineering, the relative structural position of U.S.-born White men provides them with greater access to favorable work experiences...as well as giving them the benefit of the doubt in the evaluation of their performance." (p. 197)

¹⁴ Through a lab experiment, Castilla (2008) has shown that a merit-based system, compared to one that makes evaluations more casually, actually enhances the societal biases that people bring into the workplace, probably because people in the casual system are more alert to the possibility of such bias than they are when the system is described as specifically merit based.

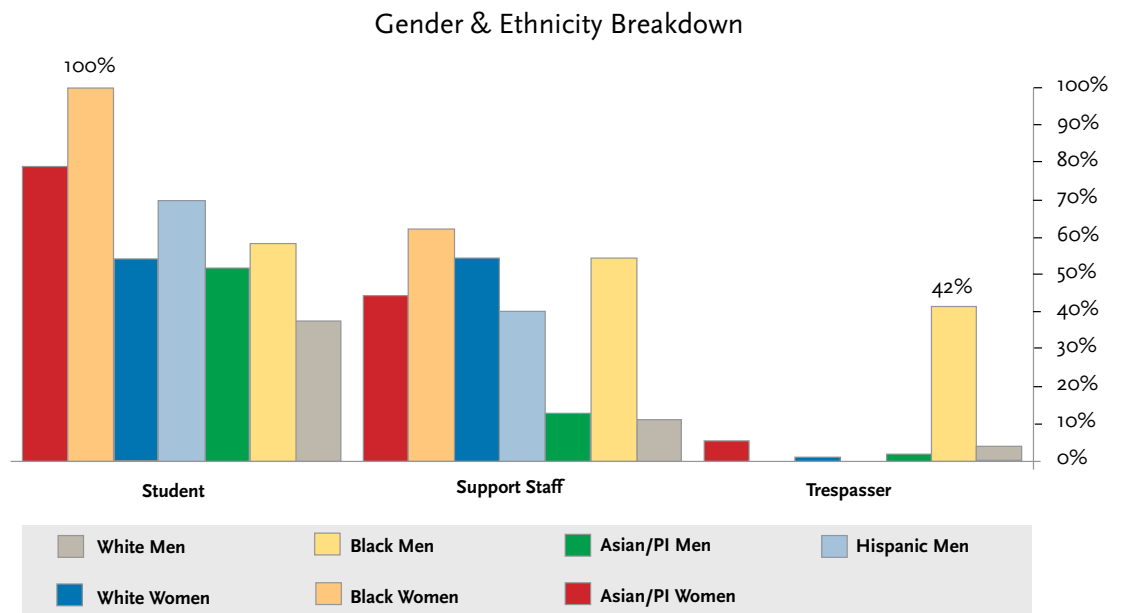
Experience of Race

Because of this deep-seated belief that MIT works as a meritocracy, minority faculty have racialized experiences that remain invisible to most non-URM faculty. Here is a first bit of evidence of these racialized experiences, as reported in the survey. Respondents were asked the following question:

In your daily encounters on the MIT campus, has anyone ever assumed that you were a student, support staff or trespasser?

Women were more likely than men to be assumed to be a student or a support staff. White men were least likely to be assumed to be a student or support staff. All Black women faculty who responded to this question (n=8) reported having been assumed to be a student. And, while most groups had never been assumed to be a trespasser — someone who did not belong on the MIT campus, i.e. was trespassing — a shocking 42% of Black men reported having experienced this. Black and Hispanic men were also assumed to be support staff. (See Figure D.1.)

Figure D.1
In your daily encounters on the MIT campus, has anyone ever assumed that you were a student, support staff or trespasser?



Clearly, some of MIT's minority faculty live in a different world from the rest. Their daily interactions are fraught with experiences most of the faculty cannot fathom.

"In terms of the faculty, there are still so few of us that one's presence is still different. Or I would say a person seeing me might not automatically assume I was a faculty member here, but perhaps in some other capacity. [And later in the interview] I was sitting at one table waiting for someone to come have lunch. It was kind of towards the edge of the seating area. And someone came up to me that asked to give me money to pay for their lunch and where they should be going to get their food."

Marginalization (i.e. excluded, ignored or valued less, relegated to the periphery of a group) is a common theme in the literature about race and is a common theme in the experiences recounted by the URM faculty participants. Ten URM faculty members referenced feeling marginalized by race personally, as scholars, or as a part of their department or school within the Institute. At MIT, departments in the humanities, social sciences and the arts are marginalized within the larger Institute that elevates departments in the sciences, in engineering, and in departments that have an economic, technological or scientific focus. Moreover, faculty of color within the humanities, social sciences and the arts are further marginalized within their peripheral homes in the Institute structure.

Of course, there is the other side of this dilemma, referred to in the literature as racial taxation, meaning the extra service work that people of color (and women) bear. For example, from the survey we learn that URM faculty are involved with significantly more committees than are non-URMs (8.67 vs. 5.95, $p < .05$). In the interviews, 25 URM faculty raised the issue of racial taxation, i.e. being more heavily burdened with students or committee responsibilities. Although many URM faculty report that they enjoy service work, especially that which seeks to help students succeed at MIT or contributes to substantive change at the Institute, this group reports participating in more service-related activities than their White peers while also receiving little credit for this work.

"I think I'm one of the token minorities in the department. And so, when there is a committee that involves something for racial diversity, I'm volunteered for it. Which is fine by me because I actually enjoy working on those things, but ... I guess I don't like the idea that I'm nominated because of my ethnicity. Like, on the one hand, I'm happy to be involved in the committee. I would volunteer for it if they asked for volunteers, but I don't like the idea that I'm being chosen on the basis of being a token minority."

"I've done a lot of committee work and search work. I think women have historically done more than their share of service. You are pressed to take this on, and then you wonder if you really get any credit for it. It takes a lot of energy and time and in some sense it isn't really the thing that influences promotion. That's true for women, and it's even more true for women of color, as when we serve,

a committee gets both a woman and an underrepresented minority: two for the price of one."

Perhaps the most difficult, unpleasant and demeaning aspect of this work is that it types a person only by the characteristic of race. One faculty member reflects on being asked, as a junior faculty, about a potential candidate for the department:

"It stuck with me because I thought, oh, brother. These people are grown. They evidently are completely unaware of the racial dynamics and the burden. So I felt burdened. I said to myself, 'You wouldn't have gone into anyone else's office. You did not prance into any other junior faculty's office asking them about what you thought about that faculty member, and you'd never do it if he were White. The only reason you came in here to ask me was because he was Black.' It really angered me, because I thought it's unfair. It's an unfair burden that you're placing on me, and nobody else in my rank has to deal with this."

If there are extra burdens from being a representative or having to be the spokesperson educating the non-URM faculty, there is a simultaneous disenfranchisement of being invisible, especially if race is not the salient category of the interaction. One Black woman described this invisibility in a situation when she was on a dissertation committee as a junior faculty with two senior White men:

"So I make a suggestion, give her [the student] an interpretation of her work and make suggestions about how she may move forward. It seemed to be a good idea. One of the other faculty members looks at the other White guy and says, 'So you're saying--?' The other guy says, 'No, I didn't say that. XXX said that.' The other one says, 'So you're saying--.' I thought I was in some movie or something. This can't be for real. I wish I had a camera ... And I thought, what the hell? These two guys are senior people, I'm giving a suggestion that's useful to a student, it's a good idea. I can't get the credit and I'm sitting in the room, with the other guy saying, 'I didn't say it!'"

Together, the extra taxation and invisibility reinforce the suspicion of URM faculty that they are valued only for their race. And, if matters are not already racialized, or race has not surfaced as a relevant issue, URM faculty may be invisible.

And there are more subtle dynamics as well.

"One reason I keep all these books on the wall is because I really do feel that here, as well as everywhere else, until people get to know you they assume you don't read. They assume you're ... an affirmative-action kid who just got in. That you're not a real scholar. I have this here to show them."

People even experience curiosity and judgmental evaluation about the food they eat, as evidenced by a URM faculty member who brought a special energy drink into a faculty meeting: *"I popped it open at one of my first faculty meetings in the department here. Two people told me you can't drink beer in a faculty meeting. As if I don't know enough not to pop open a Colt .45 in a faculty meeting? That's what it's like being Black, day-to-day."*

These experiences cumulate into different routines, different expectations walking the corridors, and different standards of normal for URM and non-URM faculty.

"People have a lowered expectation of minority faculty when they walk in the door, something not spoken or even perceived. So it's sort of like when the African American or Hispanic professor walks in the door, people think 'Well, we'll just be happy if this person publishes something by a reasonable time.' I think that there is a dialogue that goes on in people's heads. 'We'll be happy if we can foster this person enough that they will be able to stay here and be tenured. We'll just be happy with that.' And they may be even feeling good about themselves when thinking that."

Unless they are "superstars," URM faculty are constrained by doubts about their abilities. They, and sometimes the content of their research, are marginalized on the one hand, burdened with race-specific assignments on the other.

A number of URM faculty feel that the non-URM group — particularly White men — have no understanding of current racial dynamics.

"I think many of our faculty that are not minorities often don't fully appreciate the nuances of what it is to be a minority. They may understand what it was 30 years ago or 40 years ago. The racial issues that society had then are not the issues of today. Racism is more subtle now. I've never experienced a place as good as MIT but there can still be a problem. Addressing the problems of this decade and the next decade will require a different approach. These problems are less dire, more subtle, but they still exist and therefore they must be dealt with. The perception that 'it's a lot better now so we can throttle back our attention and effort' is uninformed, inappropriate."

Differences in Racial Orientation Within the URM Group. Although we differentiate between non-URM and URM faculty, we must remember that the URM faculty are themselves not a homogenous group. Indeed some differences between Blacks and Hispanics, and men and women, have already been mentioned. One can also differentiate among URM faculty by the interpretative repertoires they mobilize concerning issues of race at MIT. These orientations, or cultural repertoires, echo patterns researchers have observed elsewhere. In particular, there is a common dominant orientation characterized by racial apathy and color blindness, and an alternative orientation that sees race as more of a sociopolitical and historical construct, as indicated in Table D.1. Rather than set opinions or decisions, these are clusters

of linguistic schema and interpretations that are often, not exclusively, mobilized with each other as faculty try to make sense of their experiences and ambitions for themselves and the Institute.

Table D.1
Dominant and alternative racial orientations at MIT

Dominant (Racial Apathy/Color Blind) (Bonilla Silva, 2003; Forman, 2004)	Alternative (Sociopolitical & Historical Construct) (Omi & Winant, 1994; Eseed, 2002)
<ul style="list-style-type: none"> • Equal opportunity exists for all who choose to seize it. • Denial that racism affects life experiences and opportunities of people of color, often against a backdrop of meritocratic ideals. • Issues pertaining to race are often transformed into more palatable discussions about gender or broader issues of equity and diversity. • Discussions about diversity stop short of discussing race and racism. (N=16; 11 Hispanic, 5 Black)	<ul style="list-style-type: none"> • Race is a sociopolitical and historically contingent reality that matters and has meaning. • How race is experienced is linked to meanings, constructed by relations within the Institute AND relations that exist in the larger society. • Willing to engage the meanings of race and the consequences of those meanings. (N=19; 4 Hispanic and 15 Black)

To the extent possible, we coded the MIT URM respondents according to these racial orientations and found differences within this group. Results show that Black faculty are more likely to articulate a more critical conception of the role of race than is true for Hispanics ($p < .01$).¹⁵ Women also show a preponderance for the alternative, counter-dominant orientation (5 of 7, 71%), while men are evenly split, but the difference is not statistically significant. Finally, 11 of 18 (61%) tenured URM faculty, as opposed to 8 of 17 (47%) untenured, display the alternative orientation — again not statistically significant.

Here are some examples of the dominant orientation from our interviews:

“I mean, I like to think of us as beyond the race issue. And I know that’s idealistic ... I don’t think we should not concentrate our efforts in trying to improve or increase inclusion, but trying to again get rid of the remains of those bad things that are stopping our very egotistical and at the same time great objective, which is to get the best people here for a greater purpose.”

“We’re very proud of the fact we’re a meritocracy. There are actually many good things to say about that. Ideally, in a meritocracy, people should be blind to race

¹⁵ Chi-square with Yates correction = 6.2, $p = .01$; Fischer’s exact test, $p = .006$.

and gender. Why does that matter? All that matters is how good you are by some measure."

And some examples of the alternative orientation from the interviews with MIT minority faculty:

"I mean, I think it's just a fact of life at MIT or elsewhere. Race does matter. And I think — I am of the view that people should acknowledge that and deal with it, rather than deny it or have different expectations. It did have impact on what I experience around here."

"The three ways that race relates to the university: one is that we do a lot of analysis where race is a factor ... We also ought to help students understand the organizational and dynamic aspect of race in organizations. And then third, we ought to help students understand race as part of their own personal experience and their professional effectiveness, and so forth. And there ought to be opportunities for them to learn something about themselves on those last two points so that they leave the university better off and more sophisticated than they came. Universities do a very good job at number one. Not every faculty member in every university, but in general, universities do a very good job on number one. And, in general, we do a lousy job on two and three. We tend not to pay much attention."

Summary of Section D

So is MIT a meritocratic institution of excellence and inclusion? The answer is complicated. Most faculty, URM and non-URM, buy into the idea that diversity and excellence should and do go together. But not many, particularly not the non-URM faculty, try to understand the mechanisms that lie behind this connection: what diversity brings to intellectual creativity and innovation and how diversity makes this contribution. Despite this common belief that excellence and diversity are intertwined, the experiences of the minority faculty, particularly of Black faculty, are different from the rest; race is a significant part of their identity and they can articulate how it plays out in their lives at MIT. But it is disregarded by most of the community; they are both invisible and have extra demands placed on them. They live in a world where excellence is presumed, though sometimes not for them.

E. SUMMARY AND CONCLUSIONS

Our multi-method study has shown that URM experiences at MIT differ in significant ways from White and Asian faculty, even though, for the most part, there is the best intent from the Institute as a whole. Minority faculty are more likely to leave early, before the first promotion, and have less satisfactory mentoring experiences. Within the URM group there are also notable differences. Blacks, compared to Hispanics, seem to have a more successful career trajectory at MIT, and yet their experiences at the Institute are more negative. Black women's career trajectories are not as favorable as those of Black men, and their mentoring experiences are even worse. Hispanic women are so few that it is difficult to say anything significant about them, except to highlight their low number. While URM faculty gain from the privileges of their position at MIT, some among them are treated less well and work in a less welcoming environment, with their very belonging here occasionally questioned. These findings suggest that despite many encouraging attempts at MIT to diversify the faculty, there still are aspects of climate and culture that need to be examined.

While almost everyone at MIT would like the Institute to be an institution of merit and inclusion, it will be difficult to reach this ideal if race and ethnicity are ignored and presumed irrelevant. Granted, it is not easy to discuss issues of race, but a climate of silence may impede this goal. What complicates the situation is that the practices seen as problematic by the minority faculty are deeply embedded assumptions – taken for granted – at MIT, and their connection to race is not obvious. These assumptions need to be examined to understand their intended and unintended consequences. When seen through the eyes of the minority faculty, the practices that flow from these embedded assumptions are not always as objective or race-neutral as many hope and assume. For example, our practice, typically, is not to pay much attention to service. But if we ignore the racial taxation — the extra race-specific service of minority faculty — it not only discourages the faculty, but may also have a negative “trickle down” effect on minority students. If these students do not see the work of their teachers appropriately recognized, they may be less inclined themselves to join the academy. To make MIT a place that works equally well for all, and minimizes the risk that minority faculty are not seen or treated as equal, full members of the community, we may all have to become more aware of our tacit assumptions about race.

We hope that this report will help everyone to be more self-reflective, to better understand the lives of the URM faculty at MIT and to appreciate how race plays into their experiences. It is important to resolve the tension between excellence and inclusion, and to recognize how significantly they are connected. In Part I of this report we outline recommendations to undo the tensions around race, to improve the lives of minority faculty and to increase their number, recommendations that will also create a better climate for all. The implementation of these recommendations – informed by the research and input from faculty as well as efforts already in place – promises to enhance the academic excellence of MIT through the diversity of its faculty.

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REFERENCES FOR RESEARCH REPORT

- Aguirre, A. (2000). *Women and minority faculty in the academic workplace: Recruitment, retention, and academic culture*. ASHE-ERIC Higher Education Report, 27(6). San Francisco: Jossey-Bass.
- Allen, W., Epps, E., Guillory, E., Suh, S., & Bonous-Hammarth, M. (2000). The Black academic: Faculty status among African Americans in U.S. Higher Education. *The Journal of Negro Education*, Winter, 69: 112.
- Allen, W., Epps, E., Guillory, E., Suh, S., Bonous-Hammarth, M., & Stassen, M. L. A. (2002). Outsiders within: Race, gender, and faculty status in U.S. higher education. In W. A. Smith, P. G. Altbach, & K. Lomotey (Eds.), *The racial crisis in American higher education*. Albany, NY: State University of New York Press.
- American Association for the Advancement of Science. (2009, March). The AGEP program has led to dramatic increases in the annual number of URM students receiving STEM PhDs from 2000/01 to 2007/08. AAAS. Info Brief VII.
- Ambrose, S., Dunkle, K., Lazarus, B. B., Nair, I., & Harkus, D. (1997). *Journeys of women in science and engineering: No universal constants*. Philadelphia: Temple University Press.
- Antonio, A. L. (2002). Faculty of color reconsidered: Reassessing contributions to scholarship. *The Journal of Higher Education*, 73(5): 582-602.
- Astin, H.S., Antonio, A.L., Cress, C.M. & Astin, A.N. (1997). *Race and ethnicity in the American professoriate*. Los Angeles: Higher Education Research Institute, UCLA.
- Baez, B. (2002). *Affirmative action, hate speech, and tenure: Narratives about race and law in the academy*. New York: Routledge Falmer.
- Bergvall, B. L., Sorby, S. A. & Worthen J.B. (1994). Thawing the freezing climate for women in engineering education: Views from both sides of the desk. *Journal of Women and Minorities in Science and Engineering*, 1: 323-346.
- Beutel, A., & Nelson, D.J. (2006). The gender and race-ethnicity of faculty in top social science research departments. *The Social Science Journal*, 43(1): 111-125.
- Bianchini, J., Whitney, D., Breton, T., & Hilton-Brown, B. (2001). Toward inclusive science education: University scientists' views of students, instructional practices, and the nature of science. *Science Education*, 86(1): 42-78.
- Blickenstaff, J. C. (2005). Women and science careers: Leaky pipeline or gender filter? *Gender and Education*, 17(4): 369-386.
- Bonilla Silva, E. (2003). *Racism without racists: Color-blind racism and the persistence of racial inequality in the United States*. Lanham, MD: Rowman and Littlefield.

- Bowen, D.M. (forthcoming). Brilliant disguise: An empirical analysis of a social experiment banning affirmative action. *Indiana Law Journal*. Seattle University School of Law, Research Paper No. 09-08.
- Bowen, W.G., & Bok, D. (1998). *The shape of the river: Long-term consequences of considering race in college and university admissions*. Princeton, NJ: Princeton University Press.
- Caroline, H., & Johnson, A. (2007). Understanding the science experiences of successful women of color: Science identity as an analytic lens. *Journal of Research in Science Teaching*, 44: 1187-1218.
- Castilla, E., (2008). Gender, race, and meritocracy in organizational careers. *American Journal of Sociology*, 113(6): 1479-1526.
- Cataldi, E. F., Fahimi, M., Bradburn, E., & Zimble, L. (2005). 2004 National study of postsecondary faculty (NSOPF:04) Report on Faculty and Instructional Staff in Fall 2003, National Center for Education Statistics, U.S. Department of Education, Washington, DC.
- Chang, M., (2000). Improving campus racial dynamics: A balancing act among competing interests. *The Review of Higher Education*, 23(2): 153-175.
- Chinn, P. W. U. (1999). Multiple worlds/mismatched meanings: Barriers to minority women engineers. *Journal of Research in Science Teaching*, 36(6): 621-636.
- Cole, S. (1992). *Making science: Between nature and society*. Cambridge, MA: Harvard University press.
- Cooper, J. E. & Stevens, D. D. (2002). *Tenure in the sacred grove: Issues and strategies for women and minority faculty*. Albany, NY: State University of New York Press.
- DiTomaso, N., Post, C., Smith, D.R., Farris, G.F., & Cordero, R. (2007). Effects of structural position on allocation and evaluation decisions for scientists and engineers. *Administrative Science Quarterly*, 52: 175-207.
- Essed, P. (2002). Everyday racism: A new approach to the study of racism. In P. Essed & D. Goldberg (Eds.), *Race critical theories*. Malden, MA: Blackwell.
- Fenelon, J. (2003). Race, research, and tenure: Institutional credibility and the incorporation of African, Latino, and American Indian faculty. *Journal of Black Studies*, 34(1): 87-100.
- Ferreira, M. (2003). Gender differences in graduate students' perspectives on the culture of science. *Journal of Women and Minorities in Science and Engineering*, 9: 119-135.
- Forman, T. (2004). Color-blind racism and racial indifference: The role of racial apathy in facilitating enduring inequalities. In M. Krysan & A. Lewis (Eds), *The changing terrain of race and ethnicity*. New York: Russell Sage.
- Fox, M. F. (1991). Gender, environmental milieu, and productivity. In H. Zuckerman, J. Cole, & J. Bruer (Eds.), *The outer circle: Women in the scientific community*. New York: Norton.

- Fox, M. F. (1994). Women and scientific careers. In S. Jasanoff, G. E. Markle, J. C. Peterson, & T. Pinch (Eds.), *Handbook of science and technology studies*. Thousand Oaks, CA: Sage.
- Harvey, W.B., & Anderson, E.L. (2005). Minorities in higher education: Twenty-first annual status report 2003-2004. Washington, DC: American Council on Education.
- Hurtado, S., Milem, J., Clayton-Pedersen, A., & Allen, W. (1999). Enacting diverse learning environments: Improving the climate for racial/ethnic diversity in higher education, ASHE-ERIC Higher Education Report, 26(8). Washington, DC: The George Washington University, Graduate School of Education and Human Development.
- Jackson, K. W. (1991). Black faculty in academia. In R G. Altbach & K. Lomotey (Eds.), *The racial crisis in American higher education*. Albany, NY: SUNY Press.
- Johnson, A. C. (2006). Policy implications of supporting women of color in the sciences. *Women, Politics and Policy*, 27(3/4): 135-150.
- Jordan, D. (2006). *Sisters in science*. West Lafayette, IN: Purdue University Press.
- Kalev, A., Dobbin, F., & Kelly, E. (2006). Best practices or best guesses? Assessing the efficacy of corporate affirmative action and diversity policies. *American Sociological Review*, 71: 589-617.
- Kulis, S. S., & Miller, K.A. (1988). Are minority women sociologists in double jeopardy? *The American Sociologist*, 19: 323-39.
- Lamont, M. (2009). *How professors think: Inside the curious world of academic judgment*. Cambridge MA: Harvard University Press.
- Leggon, C. B., & Pearson, W. Jr. (1997) The baccalaureate origins of African American female Ph.D. scientists. *Journal of Women and Minorities in Science and Engineering*, 3(4): 213-234.
- Long, J.S., & Fox, M.F. (1995). Scientific careers: Universalism and particularism. *American Review of Sociology*, 21: 45-71.
- Mahoney, J., & Goertz, G. (2006). A tale of two cultures: Contrasting quantitative and qualitative research. *Political Analysis*, 14 (3): 227-249.
- Malcolm, S., Hall, P. & Brown, J. (1976). The double bind: The price of being a minority woman in science. American Association for the Advancement of Science, AS report No.76-R-3
- Massachusetts Institute of Technology Facts. Faculty and Staff. Retrieved December 15, 2008 from <http://web.mit.edu/facts/faculty.html>.
- Menges, R. J., & Exum, W. H. (1983). Barriers to the progress of women and minority faculty. *Journal of Higher Education*, 54: 123-144.

- Mickelson, M. L., & Oliver, M. L. (1991). Making the short list: Black candidates and the faculty recruitment process. In P. G. Altbach & K. Lomotey (Eds.), *The racial crisis in American higher education*. Albany, NY: SUNY Press.
- Myers, S. L. Jr. & Turner, C. (2004). The effects of Ph.D. supply on minority faculty representation. *American Economic Review*, 94(2), 296-301.
- National Academies. (2007). Beyond bias and barriers: Fulfilling the potential of women in academic science and engineering. Washington DC: National Academies Press.
- National Academies. (forthcoming). Gender differences at critical transitions in the careers of science, engineering, and mathematics faculty. Washington DC: National Academies Press.
- National Science Foundation. (2006a). U.S. doctorates in the 20th century. NSF 06-318. Arlington, VA.
- National Science Foundation. (2006b). Academic institutions of minority faculty with S&E doctorates. NSF 06-319. Arlington, VA.
- Nelson, D. J., (2002) The Nelson diversity surveys. Norman, OK; <http://cheminfo.chem.ou.edu/faculty/djn/diversity/top50.html>
- Omi, M., & Winant, H. (1994). *Racial formation in the United States*. New York: Routledge.
- Padilla, A.M. (1994). Ethnic minority scholars, research, and mentoring: Current and future issues. *Educational Researcher*, 23 (4): 24-27.
- Padilla, A.M. (2003). Acculturation, social identity, and social cognition: A new perspective. *Hispanic Journal of Behavioral Sciences*, 25 (1): 35-55.
- Pearson, W. Jr. (1985). *Black scientists, White society, and colorless science: A study of universalism in American science*. New York: Associated Faculty Press.
- Pearson, W. Jr. & Fechter, A. (1994). *Who will do science? Educating the next generation*. Baltimore, MD: Johns Hopkins University Press.
- Perna, L. (2001). Sex and race differences in faculty tenure and promotion. *Research in Higher Education*, 42(5): 541-567.
- Perna, L.W., Fries-Britt, S.L., Gerald, D.S., Rowan-Kenyon, H.T., & Milem, J. (2008). Underrepresentation in the academy: A study of race equity in three southern states. *Journal of the Professoriate*, 3(1): 5-28.
- Rihoux, B. (2003). Bridging the gap between qualitative and quantitative worlds? A retrospective and prospective view on qualitative comparative analysis. *Field Methods*, 15 (4): 351-365.
- Russell, M.L. & Atwater, M.M. (2005). Traveling the road to success: A discourse on persistence throughout the science pipeline with African American students at a predominantly white institution. *Journal of Research in Science Teaching*, 42(6): 691-715.

- Ryu, M. (2008). Minorities in higher education: Twenty third status Report. American Council on Education.
- Seymour, E., & Hewitt, N. (1997). *Talking about leaving*. Boulder, CO: Westview Press.
- Smith, D.R., DiTomaso, N., Farrias, G.F., & Cordero, R. (2001). Favoritism, bias, and error in performance ratings of scientists and engineers: The effects of power, status, and numbers. *Sex Roles*, 45: 337-358.
- Solmon, L. C. & Wingard, T. L. (1991). The changing demographics: Problems and opportunities. In P. G. Altbach & K. Lomotey (Eds.), *The racial crisis in American higher education*. Albany, NY: SUNY Press.
- Steele, C.M. (1997). A threat in the air: How stereotypes shape intellectual identity and performance. *American Psychologist*, 52 (6): 613-629.
- Thomas, G. (1993). Theoretical perspectives on the participation of minority faculty in predominantly white institutions. IMPART: *Journal of OPENMIND* 1, 97- 109.
- Trower, C. A., & Chait, R. (2002). Faculty diversity: Too little for too long. *Harvard Magazine*, 104(4): 33ff.
- Turner, C. S. (2003). Incorporation and marginalization in the academy: From border toward center for faculty of Color? *Journal of Black Studies*, 34 (1): 112-125.
- Turner, C., & Myers, S.L. Jr. (2000). *Faculty of color in academe: Bittersweet success*. Upper Saddle River, NJ: Allyn and Bacon.
- Turner, C. S., Myers, S. L., Jr., & Creswell, J. W. (1999). Exploring underrepresentation: The case of faculty of color in the midwest. *Journal of Higher Education*, 70: 27-59.
- Umbach, P. (2006). The contribution of faculty of color to undergraduate education. *Research in Higher Education*, 47: 317–345
- Washington, V., & Harvey, W. (1989). Affirmative rhetoric, negative action: African-American and Hispanic faculty at predominantly white institutions. Report No. 2. Washington, DC: School of Education and Human Development, George Washington University.
- Zuckerman, H. (1991). The careers of men and women scientists: A review of current research, in H. Zuckerman, J.R. Cole & J.T. Bruer (Eds.), *The outer circle: Women in the scientific community*. New York, Norton.

APPENDICES

Appendix 1 – Interview Protocol

Appendix 2 – Details of the Minority Interview Sample

Appendix 3 – Details of the Survey Sample

Appendix 4 – Details of Cohort Analysis

Appendix 5 – Salary Analysis

APPENDIX 1

Interview Protocol¹⁶

During this interview I will ask you about the circumstances that brought you to MIT, your experiences at this institution, your observations about the campus climate (climate of inclusion) at MIT, your family and social life. I anticipate that this interview will take 90-120 minutes. Unless you have any objections, I would like to record this interview. Only the members of the research team will have access to the audio-recorded interviews and at no time will your name or any identifying information be disclosed. Before we begin, do you have any questions for me?

FACULTY INFORMATION

«Full Name»

Name (last, first)

«Age»

Age

«Gender»

Gender

«Ethnic Origin in HR»

Racial Background

Country of Origin

Years in U.S.

«Position Title»

Academic Rank

Discipline/Academic Field

Position Title(s) _____

«Date To Faculty»

Years as Faculty Member at MIT

«Tenure Date Year»

Tenure Year

Y/N

Served as Department Chair

«HR Department Name»

Academic Department

Do you have a chair? (Y/N)

Please indicate what kind of chair? _____

Where did you get your undergraduate degree(s)? _____

Where did you get your graduate degree(s)? _____

¹⁶ Categories in bold were pre-assigned from institutional data.

Do you have a spouse/partner? (Y/N)

Do you have any children? (Y/N)

Do you have children under the age of 18 living with you? (Y/N)

COMING TO MIT

1. Describe your educational history/trajectory? (tie back to first page)
2. How were you first introduced to «*name of field from first page*»? (What attracted you to the field and to teaching in the field?)
3. I understand that you joined the MIT faculty in «**Date To Faculty**»? What were the circumstances that led to you joining MIT? (applied or recruited?) (did race play any role?)
4. Tell us about your subsequent experiences upon joining MIT. (What was your experience when you first arrived? Were you welcomed? Mentored? Resources provided?)

EXPERIENCES OVER TIME

1. What has life at MIT been like since you arrived? (Work group, department, school, institute)
2. What critical incidents or specific environments have shaped your experiences at MIT? (Work group, department, school, institute? Promotion and tenure?)
3. Since coming to MIT have you been mentored? (may have been answered by question 4 in first section)
4. Have your experiences changed over time? If so, how? (pre-tenure vs. post-tenure)
5. Now that you have tenure, what is your life like? How does it compare to pre-tenure?
6. Do you feel there is a difference between the ways your work is perceived at MIT as opposed to the national or international arena of your field? Are you and your work (research, teaching and service) valued at MIT? How do you know that they are or are not?
7. Do you perceive your presence at MIT to be under continual challenge? If so, how do you maintain perspective about yourself and your work?
8. Have you received other offers since arriving at MIT? Did MIT make a counter-offer? What led you to stay?

RACIAL EXPERIENCES

1. Does race factor into your experiences at MIT? If so how?
2. Can you characterize the ways in which you have experienced racial incidents? Have you ever faced/experienced difficulties at MIT/in your department you feel/felt were related to race? (Do you feel/have you ever felt isolated?)
3. What role did race play in your hiring/coming to MIT?
4. Have you witnessed the impact of race in the experiences of other colleagues of color at MIT? (Please give specific examples/no names necessary)
5. Do you have any formal/informal ways that you work with URM students?

CLIMATE OF INCLUSION

1. How would you characterize the climate of inclusion (campus climate) at MIT? (Would you say the same for your work group, department, school, and institute?)
2. How do you think MIT sees the connection between diversity and excellence? How do you see it?
3. In what ways have you witnessed changes in the climate of inclusion (campus climate) at MIT?
4. Are there unique challenges in the MIT culture that shape the climate of inclusion (campus climate)? If so what are they?
5. How can the climate of inclusion (campus climate) be improved at MIT?
6. Have you ever worked at an educational institution other than MIT? If you have, how is the campus climate (climate of inclusion) similar/different from that other institution? (Note that for many a relevant comparison may also be the alma mater of the interviewee)
7. Do you have any thoughts/reactions to the use of currently available MIT initiatives such as MLK or Target Opportunity hires by your department? (Affirmative Action)

FAMILY, COMMUNITY AND SOCIAL LIFE

1. Has your family life impacted your work life at MIT? If so, how?
2. Do you feel you've achieved a comfortable integration between home and work life? How do you negotiate the two? Describe your social life within the dept, school, city? How do you negotiate life at MIT/outside of MIT?
3. What informed your decisions about where you live? (length of travel?) (How did race play into these decisions?)

4. Who is in your support system? How did they get there?
5. Do you have a community outside of MIT/has this changed over the time you are at MIT? Do you feel your achievements have created a distance between you and the people in your earlier life?

FINAL QUESTIONS

1. In your opinion, if this research could ensure one result/outcome, what would that be?
2. Some people have brought up the James Sherley incident? Do you have any thoughts on that?
3. Is/Are there any other topic(s) or issue(s) that come to mind that you would like to share with us, or that I should have addressed, but overlooked?

APPENDIX 2

Details of the Minority Interview Sample

2.1 Descriptive statistics

2.2 Graduate schools feeding faculty in interview sample

Table 2.1
Descriptive statistics¹⁷

	Black (N=26)	Hispanic (N=20)
Sex		
Women	9 (35%)	2 (10%)
Men	17 (65%)	18 (90%)
Rank		
Assistant	10 (38.5%)	9 (45%)
AWOT	2 (8%)	4 (20%)
AWIT	4 (15%)	1 (5%)
Full	10 (38.5%)	6 (30%)
Has a chair	7 (27%)	11 (55%)
School		
Engineering	12 (46%)	8 (40%)
Science	1 (4%)	3 (15%)
SHASS	8 (31%)	2 (10%)
SAP	3 (11%)	1 (5%)
Sloan	2 (8%)	6 (30%)
Country of Origin		
USA	20 (77%)	8 (40%)
South America (U.S. undergrad)		1 (5%)
South America (So. Am. undergrad)		6 (30%)
Africa	3 (11%)	
Non-U.S. islands (U.S. undergrad)	2 (8%)	1 (5%)
Mexico		3 (15%)
Europe	1 (4%)	1 (5%)

¹⁷ One Native American faculty member is excluded from this table.

Table 2.2
Graduate schools feeding faculty in interview sample (n=47)

Institution	Frequency	Percentage
MIT	10	21%
Harvard	9	19%
Stanford	9	19%
Yale	2	4%
Univ. of Chicago	2	4%
UC-Berkeley	2	4%
International	2	4%
Other	11	23%

Note: Applies to schools from which faculty received a Ph.D. If faculty member has more than one degree from any institution, the institution was counted only once.

Note: "Other" includes Caltech, Cornell, CUNY, Julliard, Northwestern, NYU, Princeton, UCSB, Univ. of Michigan, Univ. of Pennsylvania & Univ. of Virginia

APPENDIX 3

Details of the Survey Sample

- 3.1 Descriptive statistics
- 3.2 Faculty background
- 3.3 Satisfaction data

Table 3.1
Descriptive statistics*

	White (N=572)	Asian (N=79)	Black (N=24)	Hispanic (N=14)
Sex				
Women	117 (20%)	21 (27%)	9 (38%)	1 (7%)
Men	455 (80%)	58 (73%)	15 (62%)	13 (93%)
Rank				
Asst	87 (15%)	23 (29%)	11 (46%)	6 (43%)
AWOT	40 (7%)	7 (9%)	1 (4%)	3 (21%)
AWIT	70 (12%)	14 (18%)	4 (17%)	2 (14%)
Full	359 (63%)	34 (43%)	8 (33%)	3 (21%)
PWOTR**	16 (3%)	1 (1%)	0	0
School***				
Engineering	212 (38%)	32 (42%)	10 (42%)	5 (36%)
Science	152 (27%)	20 (26%)	1 (4%)	4 (29%)
SHASS	103 (18%)	10 (13%)	8 (33%)	2 (14%)
SAP	47 (8%)	8 (10%)	3 (12%)	0
Sloan	51 (9%)	7 (9%)	2 (8%)	3 (21%)

* One Native American respondent is not included, as are the 18 people who did not self-identify or chose a different race/ethnicity category altogether

** Professor Without Tenure, Retired – counted as tenured

*** Nine people (seven White and two Asian) did not provide information on school

Table 3.2.
Faculty background

Note: The survey has the best information on faculty background that we have available, though there are some system records on citizenship. Sadly, though, the response rate was not as high as we would like, especially not among Hispanics, and a number of respondents did not even answer some of these questions. Hence this table is incomplete but presents the best data we have.

Country of birth	White (n=478)	Asian (n=69)	Black (n=20)	Hispanic (n=11)
U.S.	319 (67%)	15 (22%)	15 (75%)	5 (45%)
Citizenship*	(n=551)	(n=75)	(n=22)	(n=14)
U.S.	416 (75%)	39 (52%)	20 (91%)	5 (36%)
If not U.S. born, when arrived in U.S.?	(n=157)**	(n=53)***	(n=5)	(n=6)
<= high sch	18 (11%)	7 (13%)	1 (20%)	0
college	12 (8%)	12 (23%)	1 (20%)	0
grad school	83 (53%)	31 (58%)	3 (60%)	6 (100%)
1 st profsl job	38 (24%)	3 (6%)	0	0

* Citizenship came from system records

** Two White faculty not born in the U.S. did not answer this question; six White faculty answered "other"

*** One Asian faculty not born in the U.S. did not answer this question

Table 3.3
Overall, how satisfied are you being a faculty member at MIT?*

Tenured faculty	White (n=431)	Asian (n=47)	Black (n=12)	Hispanic (n=5)
Dissatisfied**	66 (15%)	10 (21%)	3 (25%)	2 (40%)
Neutral	14 (3%)	2 (4%)	0	0
Somewhat satisfied	129 (30%)	12 (26%)	3 (25%)	1 (20%)
Very satisfied	222 (51%)	23 (49%)	6 (50%)	2 (40%)
Untenured faculty	(n=127)	(n=30)	(n=12)	(n=8)
Dissatisfied**	23 (18%)	1 (3%)	2 (17%)	0
Neutral	7 (6%)	0	0	1 (12.5%)
Somewhat satisfied	37 (29%)	12 (40%)	2 (17%)	2 (25%)
Very satisfied	60 (47%)	17 (57%)	8 (67%)	5 (62.5%)

*One Native American respondent is not included

**Includes very and somewhat dissatisfied

Note: 17 people (14 White, 2 Asians and 1 Hispanic) did not answer this question

APPENDIX 4

Details of Cohort Analysis

- 4.1 Descriptive statistics
- 4.2 Estimates from linear probability and logit models of effect of URM on promotion to AWOT
- 4.3 Survival analysis
- 4.4 Hiring over time
- 4.5 Timing to AWOT, tenure, and from tenure to full
- 4.6 Leaving MIT over time

Note: The leaving figures do not come from the cohort data set, since they display people who have left MIT independent of when they were hired. The cohort data set is limited to those who were hired between 1991 and 2009.

Table 4.1
Descriptive statistics
(cohort data set: all those hired 1991-2009)

	URM* (N=77)	White (N=698)	Asian (N=135)	Black (N=42)	Hispanic (N=33)
Sex					
Women	23 (30%)	166 (24%)	38 (28%)	16 (38%)	5 (15%)
Men	54 (70%)	532 (76%)	97 (72%)	26 (62%)	28 (85%)
School**					
Eng'ing	25 (32%)	205 (29%)	43 (32%)	14 (33%)	11 (33%)
Science	8 (10%)	191 (27%)	38 (28%)	4 (10%)	3 (9%)
SHASS	22 (29%)	135 (19%)	21 (16%)	14 (33%)	7 (21%)
SAP	6 (8%)	78 (11%)	15 (11%)	4 (10%)	2 (6%)
Sloan	16 (21%)	87 (13%)	17 (13%)	6 (14%)	10 (30%)
Rank at hire					
Asst	65 (84%)	547 (78%)	112 (83%)	35 (83%)	28 (85%)
AWOT	8 (10%)	47 (7%)	5 (4%)	4 (10%)	4 (12%)
AWIT	0	31 (4%)	6 (4%)	0	0
Full	4 (5%)	73 (10%)	12 (9%)	3 (7%)	1 (3%)
% still at MIT	38%	37%	30%	40%	33%

*Includes 2 Native Americans

**Two White and 1 Asian faculty are not in any school

Table 4.2
Estimates from linear probability and logit models
of effect of URM on promotion to AWOT
(assistant professors hired 1991-2004)

Linear Probability Model	(Model 1)	(Model 2)	(Model 3)
URM	−0.187* (0.083)	−0.172* (0.072)	
Asian	0.039 (0.050)	0.033 (0.050)	0.033 (0.050)
Female	−0.074 (0.045)	−0.048 (0.045)	−0.046 (0.045)
URM non-U.S. origin			−0.127 (0.135)
URM U.S. origin			−0.188* (0.084)
		(year of entry) (department)	(year of entry) (department)
R-squared	0.020	0.183	0.183
Observations	554	554	554
Logit Marginal Effects†			
URM	−0.184* (0.083)	−0.197* (0.086)	
Asian	0.040 (0.052)	0.03 (0.054)	0.036 (0.054)
Female	−0.075 (0.045)	−0.051 (0.049)	−0.050 (0.050)
URM * non-U.S. origin			−0.160 (0.151)
URM * U.S. origin			−0.213* (0.102)
		(year of entry) (department)	(year of entry) (department)
Observations	554	518††	518††

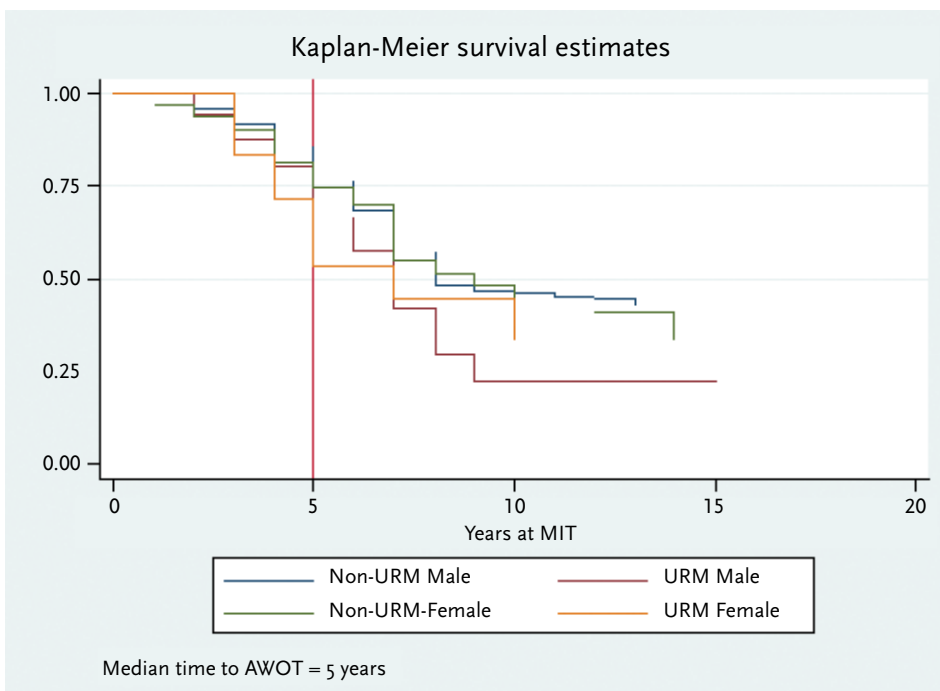
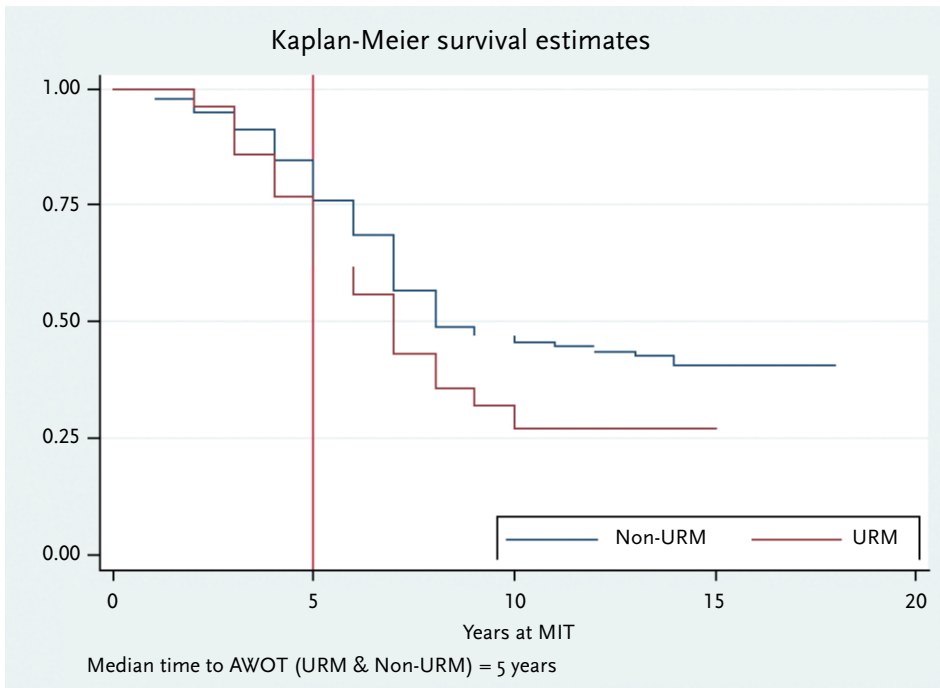
Robust standard errors in parentheses.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

† Logit marginal effects are average derivatives derived from the estimated logit conditional mean function.

†† Logit estimates exclude department/year cells where the model fits perfectly.

Figure 4.3
Survival probability plots
(Those who began as Assistant Professors, 1991-2009) (N=715)



Note: These graphs show the probability that a newly hired Assistant Professor still works at MIT as a function of time since hire.

Figure 4.4.1
Faculty hired from 1991–2009 by race/ethnicity
 (Rolling 3-year sums)

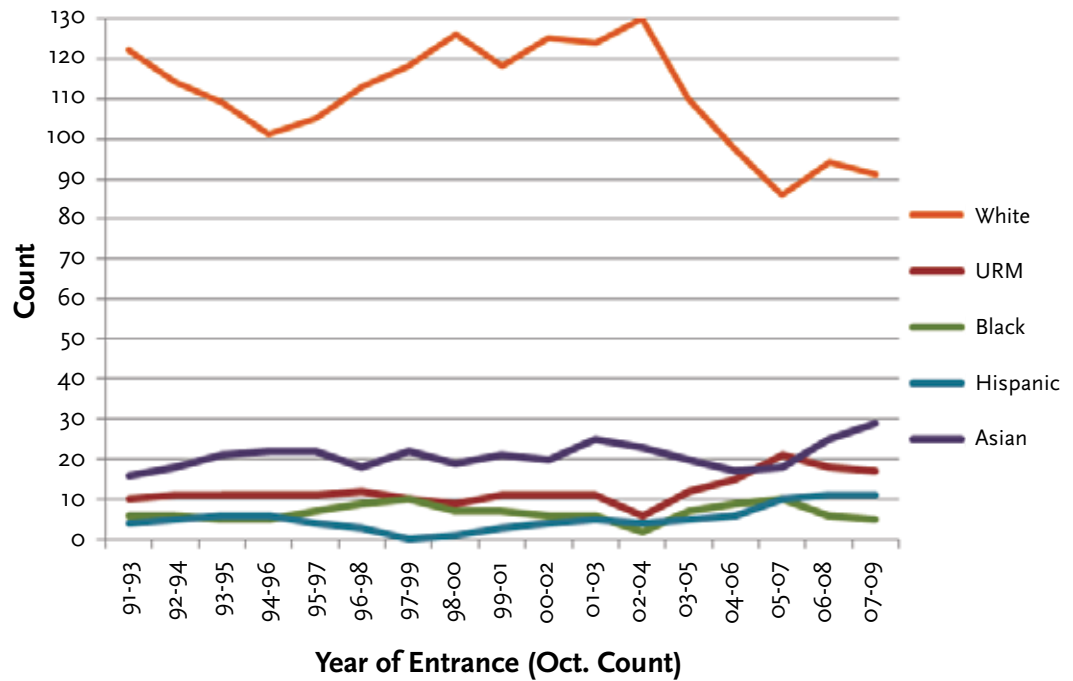


Figure 4.4.2
Faculty hired from 1991–2009, URM faculty
 (Rolling 3-year sums)

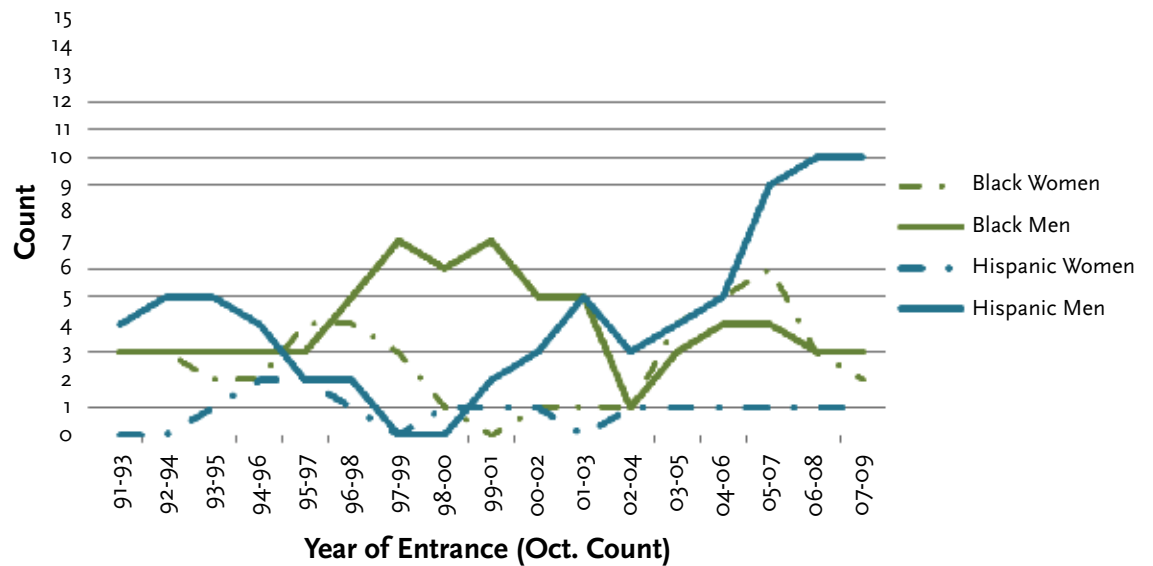


Table 4.5
Mean times to AWOT, tenure, and from tenure to full
(of those hired as assistant professors)

	Time to AWOT	Time to tenure	Time from tenure to full
Cohort used	(1991-2004)	(1991-2000)	(1991-1997)
URM	5.0 (n=21)	6.9 (n=9)	3.5 (n=2)
White	4.7 (n=327)	6.6 (n=145)	3.7 (n=77)
Asian	4.7 (n=63)	6.2 (n=25)	3.0 (n=10)

Figure 4.6.1
Faculty who have left, 1991–2009 by race/ethnicity
(Rolling 3-year sums)

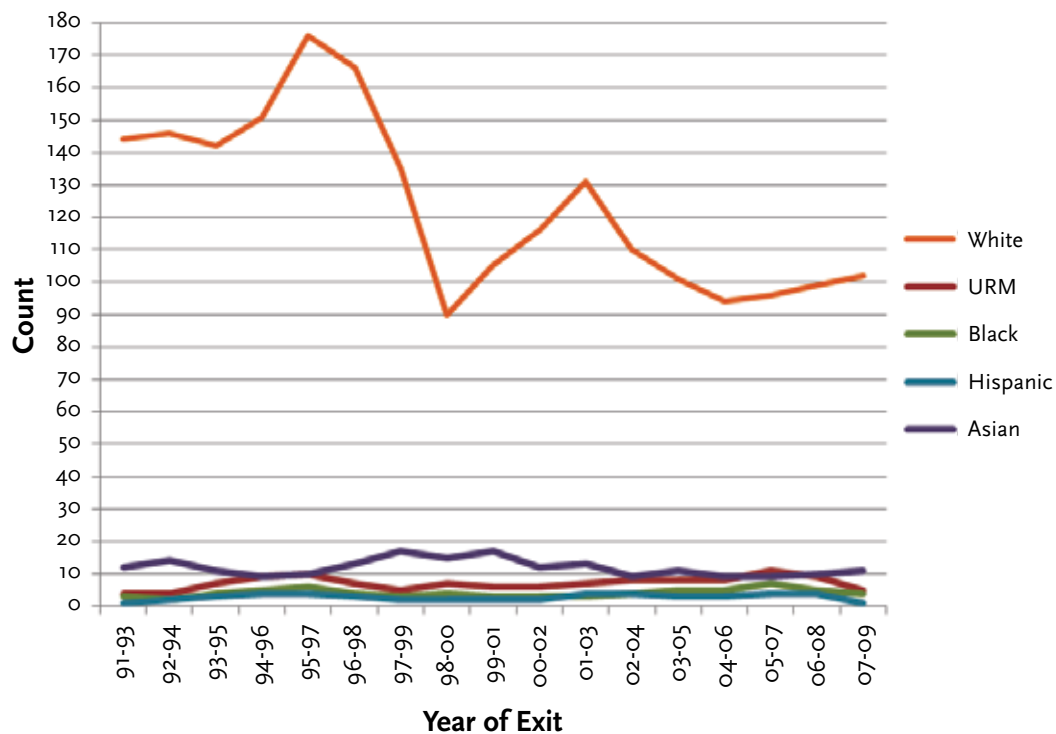


Figure 4.6.2
Faculty who have left 1991–2009, by race/ethnicity and gender
 (Rolling 3-year sums)

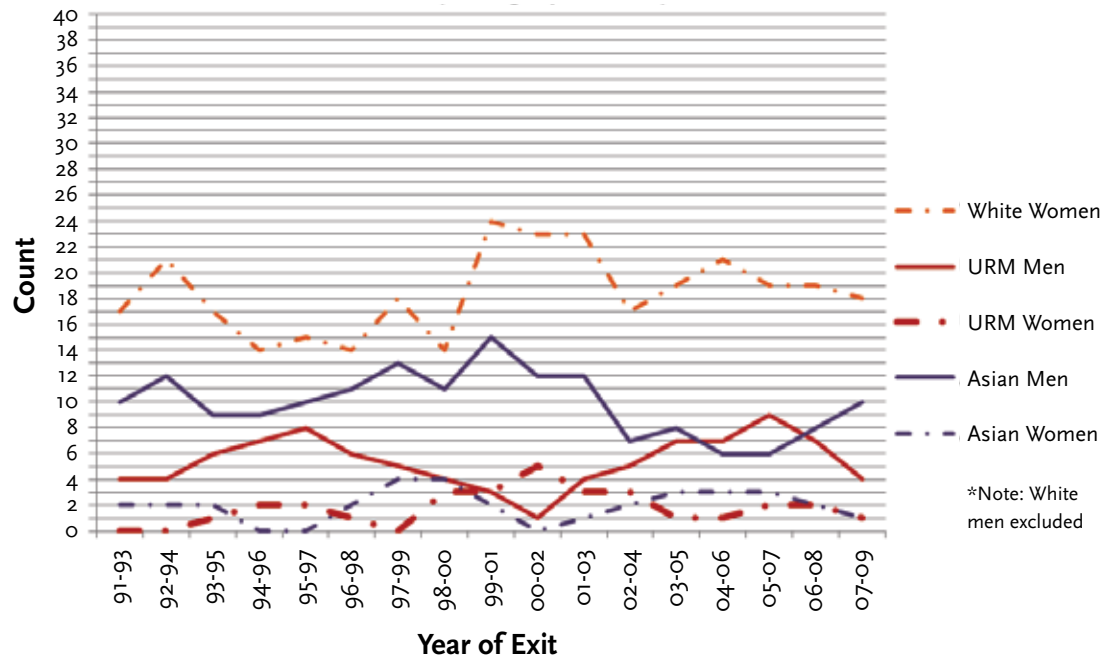
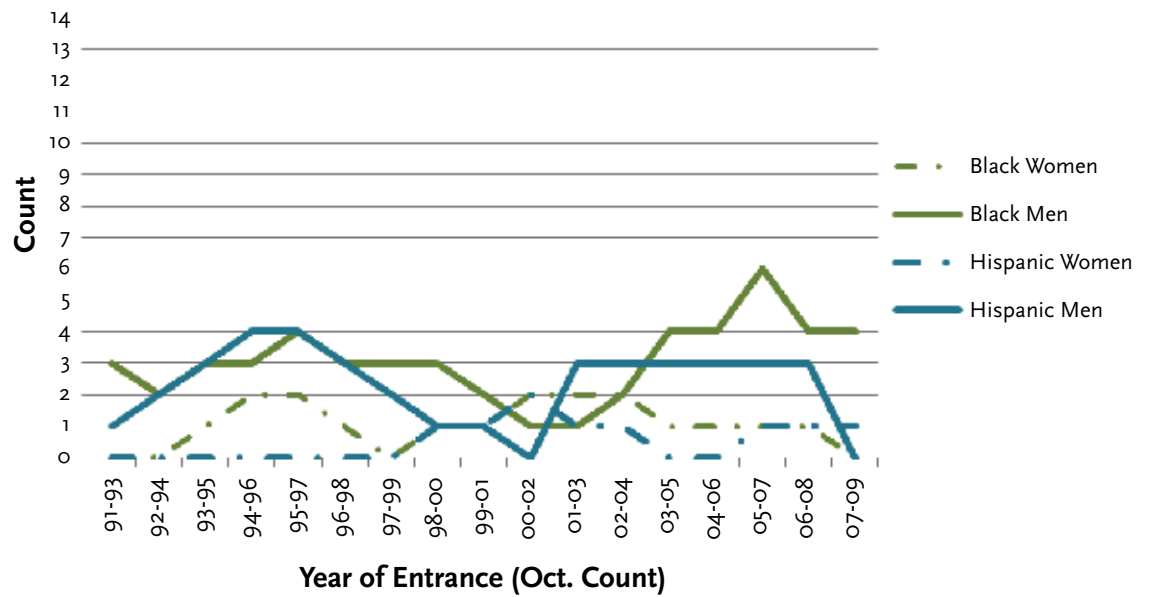


Figure 4.6.3
URM faculty who have left, 1991–2009
 (Rolling 3-year sums)



APPENDIX 5

Salary Analysis

- 5.1 OLS regression model results of effect of URM status on salary (natural log).
All current faculty as of January 2009.
- 5.2 OLS regression model results of effect of URM on salary (natural log),
science & engineering subsample with research volume.

**Table 5.1 OLS regression model results of effect of URM status on salary (natural log).
All current faculty as of January 2009.**

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Department controls		X	X	X	X	X
5yr cohort controls		X	X	X	X	X
URM	-0.082 (0.050)	0.034 (0.030)	0.032 (0.027)	0.041* (0.018)		
Asian	-0.090** (0.031)	-0.016 (0.021)	-0.018 (0.019)	-0.005 (0.015)	0.001 (0.015)	-0.005 (0.015)
Female	0.101*** (0.027)	0.000 (0.015)	-0.011 (0.014)	-0.002 (0.011)	0.000 (0.011)	-0.002 (0.011)
Age (centered)		0.015*** (0.001)	0.001 (0.002)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)
Age (centered) squared		-0.000*** (0.000)	-0.000*** (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Time at MIT		0.001 (0.001)	0.002*** (0.001)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Time at MIT squared		-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Non-U.S. origin		0.022 (0.014)	0.025 (0.013)	0.018 (0.010)		0.018 (0.010)
Started as AWOT			0.071** (0.027)	0.022 (0.021)	0.023 (0.021)	0.022 (0.021)
Started as Associate			0.115*** (0.032)	0.006 (0.028)	0.006 (0.028)	0.006 (0.028)
Started as Full			0.350*** (0.036)	0.185*** (0.029)	0.183*** (0.029)	0.185*** (0.029)
Current rank: Asst				-0.505*** (0.026)	-0.509*** (0.026)	-0.505*** (0.027)
Current rank: AWOT				-0.380*** (0.023)	-0.381*** (0.023)	-0.380*** (0.023)
Current rank: Assoc				-0.228*** (0.020)	-0.227*** (0.020)	-0.228*** (0.020)
Previous admin. Experience				0.171*** (0.016)	0.171*** (0.016)	0.171*** (0.016)
URM * non-U.S. origin					0.031 (0.027)	
URM * U.S. origin					0.056* (0.023)	
Black						0.044* (0.019)
Hispanic						0.044 (0.031)
R-squared	0.030	0.696	0.739	0.839	0.838	.839
Observations	834	834	834	834	834	834

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Robust standard errors are in parentheses.

Note: Post-estimation t-tests confirm that differences between the Black/Hispanic and U.S. origin/non-U.S. origin coefficients are not statistically significant.

Note: A Blinder-Oaxaca decomposition confirms that the uncontrolled salary gap in favor of non-URM is explained by a few covariates, department and cohort.

Table 5.2 OLS regression model results of effect of URM on salary (natural log), science and engineering subsample with research volume

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Department controls		X	X	X	X	X	X
5yr cohort controls		X	X	X	X	X	X
URM	−0.096 (0.062)	−0.001 (0.048)	0.010 (0.046)	0.009 (0.034)	0.018 (0.032)		
Asian	−0.055 (0.033)	0.017 (0.021)	0.011 (0.018)	0.009 (0.015)	0.012 (0.015)	0.018 (0.014)	0.013 (0.015)
Female	0.074* (0.032)	−0.021 (0.018)	−0.025 (0.016)	−0.011 (0.012)	−0.018 (0.012)	−0.014 (0.012)	−0.018 (0.012)
Age (centered)		0.017*** (0.002)	0.003 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)
Age (centered) squared		−0.000*** (0.000)	−0.000*** (0.000)	−0.000* (0.000)	−0.000* (0.000)	−0.000* (0.000)	−0.000* (0.000)
Time at MIT		0.002 (0.001)	0.003** (0.001)	−0.000 (0.001)	−0.000 (0.001)	−0.000 (0.001)	−0.000 (0.001)
Time at MIT squared		−0.000 (0.000)	−0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Non-U.S. origin		0.028 (0.017)	0.030* (0.015)	0.019 (0.012)	0.016 (0.012)		0.016 (0.012)
Started as AWOT			0.072* (0.034)	0.026 (0.026)	0.027 (0.025)	0.028 (0.025)	0.027 (0.025)
Started as Associate			0.110** (0.042)	−0.009 (0.028)	0.002 (0.028)	0.005 (0.029)	0.002 (0.028)
Started as Full			0.325*** (0.036)	0.168*** (0.030)	0.164*** (0.029)	0.163*** (0.029)	0.165*** (0.029)
Current rank: Asst				−0.465*** (0.030)	−0.432*** (0.029)	−0.441*** (0.029)	−0.432*** (0.029)
Current rank: AWOT				−0.353*** (0.025)	−0.334*** (0.025)	−0.336*** (0.025)	−0.334*** (0.025)
Current rank: Assoc				−0.194*** (0.021)	−0.175*** (0.018)	−0.176*** (0.018)	−0.175*** (0.018)
Previous admin. experience				0.178*** (0.018)	0.165*** (0.019)	0.165*** (0.019)	0.165*** (0.019)
ResVolumeEngSciLog					0.023*** (0.006)	0.023*** (0.006)	0.023*** (0.006)
URM * non-U.S. origin						0.002 (0.046)	
URM * U.S. origin						0.042 (0.037)	
Black							0.021 (0.032)
Hispanic							0.022 (0.055)
R-squared	0.022	0.611	0.671	0.800	0.809	0.808	.809
Observations	489	489	489	489	489	489	489

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Robust standard errors are in parentheses.

Note: Post-estimation t-tests confirm that differences between the Black/Hispanic and US origin/non-US origin coefficients are not statistically significant.



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