
Strategic Planning at Harvard Medical School

Phase I: September 2007–September 2008

Report by Jeffrey S. Flier, MD
Dean of the Faculty of Medicine

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Contents

Introduction	1
The Context	2
The Process	4
The Emerging Priorities	4
Revitalize the educational mission of the School	
Seize rapidly expanding opportunities in biomedical research to increase human well-being	
Lower institutional barriers to collaboration	
Create a more unified, supportive, and inclusive community	
Increase and coordinate strategic investments in tools and technology	
Other important areas	
The Implementation: First Steps	11
Education	
Biomedical research	
Lowering barriers	
Creating an inclusive community	
Tools and technology	
The Challenges	14
Financial	
Organizational and administrative	
Conclusion	16
Appendix I: Strategic Planning Advisory Groups	17
Appendix II: Timeline of Dean Flier’s Meetings with the Community	18
Appendix III: List of White Papers from the Advisory Groups	19
Acknowledgments	20

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Introduction

This report summarizes the yearlong strategic planning process that I initiated in September 2007 and formally launched in November, soon after being named dean. It has been my great pleasure to see our extraordinary community rise to this challenge and to personally get to know and work closely with so many wonderful individuals. I am deeply grateful to all who have contributed their good will, ideas, time, and energy to this important effort.

The Harvard Medical community is truly remarkable, with excellence that spans the full spectrum of biomedical education, clinical care, and research. This enviable position is the result of organic growth: the product of the ideas, initiative, and independent action of our students and faculty, our basic science and clinical departments, and the School and our partner institutions. This grassroots approach has served us well, and it is critical that we value the individual elements that collectively make us great. I am fully committed to nurturing our faculty, departments, and partners and the spirit of curiosity-driven learning and investigation—as well as the excellent clinical care—that they embody.

At the same time, we cannot rest on our laurels or be satisfied by individual accomplishments. Our mission is to serve society by making medical discoveries and translating them into improved public health, and by training the next generation of scientists and clinicians. All our efforts, including strategic planning, are founded on this mission. Our goals require not only that each of us thrive on his or her own, but also that we work together toward a larger purpose. While celebrating the successes of our past and present, we must also envision and prepare for the future that these innovations have created—the one in which our students and our children will live and work. Our hope

in embarking on strategic planning was thus to produce a vision for a vital, interconnected, discovery- and education-oriented academic community that creates a 21st century environment for scholarship and service to human health. I believe that, after the work of the past year, we now have a vision for such a community.

Many forces, both internal and external, set the stage for the School's strategic planning efforts. These forces include a revolution in biomedical research, the growing complexity of our Harvard Medical community, the need to participate in planning efforts by the University and our academic health care centers, and the mandate from the National Institutes of Health (NIH) to create a new structure for clinical and translational research to be organized by HMS.

Because success requires our entire community, it was critical that the strategic planning process similarly encompass the broad perspectives and diverse stakeholders of the School and its partner institutions. This approach was in fact a great reward of the planning process: by bringing people together—often for the first time—across departmental and institutional boundaries, we benefited from creative interactions, challenging of previously sacrosanct views, and increased understanding of one another's perspectives. More important, we each developed a richer, more nuanced, and informed understanding of the best that HMS has to offer and the best it might become.

As we end this phase of brainstorming and discussions and move toward implementation, we will need to make difficult decisions about priorities and craft initiatives to carry them out. It is a challenge that I welcome: our responsibility is to ensure that we leave to the next generation a Harvard Medical School and community that are stronger and healthier than those we inherited. Our task will not be easy, but it

is important. It will not be quick, but it is necessary. The promise of our common future requires us to put forth our own best efforts and also to work together as never before.

In the pages below, I describe key features of the first phase of our strategic planning: the context, the process, the emerging priorities, the implementation, and the challenges.

The Context

As we work to envisage the future of Harvard Medical School, we stand at a remarkable point in the history of biology and medicine. The scientific revolution that began in 1953 with the elucidation of the structure of DNA has culminated some 50 years later in the complete sequencing of the human genome. This crucial accomplishment is now leading to remarkable new insights and innovations with important implications for human health, and human genetics will indisputably be one of the major cornerstones of the next half-century of medicine.

A second cornerstone must be a focused effort to utilize discoveries from the revolutions in molecular and cell biology to create a new science of therapeutics. Innovations in this field are allowing researchers to more effectively create drugs and vaccines to prevent and treat diseases, as well as to pursue once-futuristic approaches to regenerative medicine that are now well within the realm of reality.

The third cornerstone of the next period of biomedical advances may well be the coming revolution in neuroscience, building upon the recent discoveries in molecular biology and a new capacity for computation and systems analysis. Research on the human nervous system and its diseases is extraordinarily challenging, and for many years it seemed that deep understanding and effective treatments might prove elusive during our lifetimes. But with the new innovations have come new possibilities for real progress in this field with the ability to make a major impact on human health.

Finally, the fourth cornerstone is systems biology and bioengineering, which offer a potential means for connecting biology with the parallel revolutions in computer science and materials science of the past half-century. I believe that these fields and the other cornerstones form a foundation for the future of biomedical science—not unlike the famous HMS Quadrangle, the foundation and hub of the Harvard Medical community.

This remarkable community is already an active and recognized participant in the new biomedical future. In just the past few weeks, for example, one of our genetics faculty members won the prestigious Albert Lasker Award for Basic Medical Research; an HMS neurobiologist was awarded a MacArthur “genius” grant; and five HMS faculty members won major awards (the Director’s Pioneer Award and the New Innovator Award) from the NIH. Insights generated by these and our other world-class faculty offer great promise for improved understanding of biology and disease and for meaningful advances in patient care.

Yet, despite these remarkable accomplishments in science, the translation of new knowledge into improvements in health remains slow. Few of our Quad-based basic science faculty are directly engaged in disease-oriented research, and more important, those in basic science have little day-to-day interaction with their clinically oriented colleagues. Moreover, the enormity of our research enterprise threatens to overshadow the core educational mission of HMS. An equally central part of our mandate is providing MD and PhD students the best possible educational program to prepare them for careers as practitioners, innovators, and leaders. Because the discoveries of today shape the medicine and science of tomorrow, it is impossible to separate these two elements of our mission. Thus, at the same time that advances in diverse fields promise great hope for patients, HMS’s very scale and complexity have become a challenge as much as an advantage.

If we are to spearhead the new revolutions in biomedical science—and we must, if Harvard is to be the leading university in the world—we will need to

respond to a number of challenges. While curiosity-driven research by brilliant and innovative scientists has brought us to this exciting juncture and will certainly remain a core element of the School, we face the increasing complexity, cost, and interdependence of research activities—and this at a time of shrinking NIH budgets for research. These conditions mean that we must consider new ways of organizing some of our approaches to research, to leverage both our scientific capacities and our investments. The obligation of HMS and the University to address issues of global health in the broadest sense will surely affect other decisions and initiatives as well.

Another key motivation for engaging in an ambitious strategic planning process was the need to contribute to and respond to planning processes under way at the University and at our academic health care centers. These efforts include University planning for the Allston campus and for science more broadly, such as the work of the Harvard University Science and Engineering Committee (HUSEC), Harvard's initiative promoting cross-University science. HUSEC and the deans of the "Science Schools" will play a critical role in ensuring that planning for Allston and University-wide science initiatives is productive, and HMS has a large stake, both organizationally and financially, in the success of these efforts. The strategic planning initiative was necessary to my ability to represent the views of our faculty in University-wide planning discussions and to ensure that the School's key scientific priorities align, to the greatest extent possible, with those of others in the University.

Regardless of the developments in Allston, the Longwood campus will remain the central venue for HMS activities. Concerns about space in the Longwood Medical Area—both the amount and the quality—remain intense. Moreover, the exciting scientific goals that have emerged from our planning are large in scope, and several of them call for a geographic home to serve as a nucleus for our faculty, promote research, and build community. At the same time, a consensus emerging from planning efforts both at HMS and on the University level is that if the Allston campus is to be a net gain for Harvard and for HMS,

it must have a compelling scientific theme and be both self-sufficient and closely integrated with the existing science campuses. The opportunity to expand into the new Allston campus thus requires a concerted effort to plan internally and with our partners across Harvard.

In parallel to our strategic planning at HMS, and strongly aligned with the goal of increasing our commitment to the translation of science into medicine, the School successfully applied for a major grant from the National Institutes of Health to create a clinical and translational science center, now called Harvard Catalyst. The grant was mandated by a shift in NIH priority, which forced our academic health care centers to consolidate previously separate NIH-funded clinical research centers, with HMS institutionally playing a coordinating and leadership role. The application required a commitment to a broad and compelling vision of clinical and translational research at the University and an unprecedented level of collaboration among faculty and staff across our community. A wide range of leaders came together to plan and design the center, whose research will involve teams of investigators from across disciplines, departments, and institutions. Harvard Catalyst will be a critical foundation to speeding the translation of our basic and social science research into improved patient care and health care delivery. This endeavor and our broader strategic planning process share many of the same goals and promise to be mutually reinforcing.

In this context, then, upon assuming the position of dean, I determined that the best way for the School to move forward was to step back, take a break from business as usual, and evaluate our scientific efforts, our culture, and our organizational structure. I believed we needed to perform a thorough investigation of the current state of the School and compare that with our highest aspirations. The strategic planning process was designed to investigate a wide range of profound issues, including fundamental research priorities, cultural and organizational barriers to collaboration, the nature of the educational experience we offer to our students, and our relationship to faculty. I discuss each briefly in the paragraphs that follow.

The Process

The charge for the strategic planning process was to provide an honest assessment of the School; to think expansively about where HMS might improve and where we could leverage our current outstanding assets to ensure the greatest impact in education, research, and innovation; and to make recommendations based on these findings. We distributed the work across four teams: the Strategic Advisory Group on Education, Biomedical Research Advisory Group, Social Sciences and Global Health Advisory Group, and Tools and Technologies Advisory Group.

We designed the process to be broad and inclusive. Each team was made up of distinguished junior and senior faculty members from the Quad, our academic health care centers, and the broader Harvard community. In addition, we created a Steering Committee led by me and made up of the chairs of the advisory groups and other thought leaders from across the School and the University. (Members of each team and the Steering Committee are listed in appendix I.) Each of the advisory groups, which included specific subcommittees, launched a series of meetings in early December 2007, with the goal of developing an initial set of proposals by February 2008. The Steering Committee met periodically during this period to assess and integrate the proposals and make sure that appropriate cross-group dialogue occurred when proposals cut across boundaries. The entire process was staffed by both HMS administrators and representatives from the Harvard University Office of Institutional Research. In all, more than 100 faculty members and numerous staff from the University and hospital communities have participated in the planning process so far.

In addition to making strategic planning efforts inclusive, we were determined that the process be transparent. We carried out an aggressive communications strategy, keeping the community involved at every step through town meetings with faculty and staff, articles in HMS's *Focus* newsletter and the *Harvard Crimson*, e-mailed letters from me, and our strategic planning website. This extensive site includes the goals for the process, a list of the advisory groups and their members, a space for comments and discussion, my letters

to the community, and all of the white papers that have been produced from the advisory groups. Among these papers are articles on neuroscience, human genetics, immunology, therapeutics, imaging, microbial science, bioengineering, social science and global health, and culture and community. The website has been a particularly effective bilateral communications tool and has received more than 27,000 unique visits.

I also met with multiple groups to build support for the process, including the HMS Board of Fellows, Harvard University Visiting Committee, University Academic Planning Group, Allston Development Group, HMS/HSDM Joint Committee on the Status of Women, Harvard University Council of Deans, Executive Committee of Medicine, Faculty Council, Program in Medical Education, Brigham and Women's Medical Grand Rounds, Partners Senior Management Retreat, Conference of Department Heads, Clinical and Translational Science group, MGH Executive Committee on Research, preclinical chairs, and groups of junior faculty, among others. Senior members of our strategic planning team also met with the University Academic Planning Group, the Allston Development Group, and others. These meetings afforded participants the opportunity to ask questions and provide feedback.

As a result of the work of the advisory groups and the participation of so many others, we now have a sound basis for moving forward, both to prioritize our own efforts and to initiate conversations with other relevant entities. This process connected the Quad, our academic health care centers, the Broad Institute, and the University in new ways, and in so doing generated a great deal of excitement for the future. A subset of the Steering Committee will continue in an advisory role as we move into the implementation phase.

The Emerging Priorities

Several major themes became apparent during the initial phase of our strategic planning as areas in which HMS should focus if we are to fully capitalize on our enormous talents and resources. These

areas continued to enjoy strong support after extensive deliberations. Below I discuss the five priorities: revitalizing the educational mission of the School; seizing rapidly expanding opportunities in biomedical research to increase human well-being; lowering institutional barriers to collaboration; creating a more unified, supportive, and inclusive community; and increasing and coordinating strategic investments in tools and technologies. I also note several other areas of importance identified by the advisory groups.

Revitalize the educational mission of the School

As our mission states, HMS is, at its core, an educational institution, dedicated to creating and nurturing a diverse community of leaders. The strategic planning process generated enormous enthusiasm for renewing our commitment to education in a variety of important ways. A major asset is our world-class research enterprise, which allows us to involve our medical students in the process of scholarly inquiry, benefiting not only those hoping to be physician-scientists, but also those who will be practitioners and leaders in the clinical arena. The Education advisory group identified areas in which the School could better leverage and integrate our strengths—outstanding students, innovative curricula, brilliant faculty, and deep partnerships with elite academic health care centers—to ensure excellence in the continuum of biomedical education, from undergraduate courses to continuing medical education.

One of the Education team's recommendations focused on increasing the opportunities for scholarly activity during medical training. Two important ideas emerged: requiring medical students to complete a "scholarly project" of four to six months, and adding an MMSc degree track for medical students. The group also recommended increasing opportunities for education in global health—an area of significant student interest and one in which we can collaborate with our colleagues at the School of Public Health and elsewhere.

A second recommendation was to increase the number of MD/PhD students at HMS. Our MD/PhD program is preeminent in the world, and we receive hundreds of outstanding applications each year. Yet

we are able to provide support for only 10 or 11 new students annually, and those outstanding applicants whom we do not have the means to support at HMS typically end up going elsewhere to pursue a fully funded MD/PhD, even if we have accepted them into the medical program alone.

Medical training is only one part of the HMS educational mission, however. Our faculty also have major interests in and responsibilities for teaching graduate students and increasingly have become involved in undergraduate education as well. The Education advisory group recommended reorganizing the support structure for graduate teaching and providing better ways to identify synergies and gaps in the various curricula. Improving support for postdoctoral clinical and research fellows, including assistance with career and professional development, is also an important goal, as is revitalizing the educational opportunities available to clinical fellows and residents and improving our use of modern technology to enhance the effectiveness of our medical and graduate student training.

Even with our broad focus on education, HMS's large research enterprise—a major and vital part of the School's identity—often overshadows the importance the institution places on pedagogy and teaching. Thus, a major priority in the area of education is creating and fostering a culture of excellence in teaching. Recommendations from the Education advisory group include rigorously implementing the new criteria for academic promotion and engaging senior leadership at HMS (both Quad- and hospital-based department chairs) in valuing and rewarding teaching through direct connection to academic promotion and compensation. The Education group recommendations are closely tied to the educational initiatives that Harvard Catalyst is supporting as well.

Finally, and perhaps most critically, an area to which I have been committed since becoming dean is reducing student indebtedness. It is important that the School not be out of reach to a broad segment of undergraduate students and their families. It is equally imperative to avoid burdening families with a new round of debt shortly after a child has finished college.

Reducing indebtedness for our medical students is also essential in light of the recent trend that starting salaries in medicine are lagging behind increases in educational debt. If borrowing continues to grow, medical students will feel rising pressure to choose the most lucrative specialties. Minimizing their debt, on the other hand, will ease this distorting pressure on their career decisions and leverage their ability to become the leaders that they can, should, and desire to be.

Seize rapidly expanding opportunities in biomedical research to increase human well-being

The field of biomedical research is exploding, and advances in fundamental biological science are occurring at an unprecedented rate. Researchers have made tremendous progress in tracing the basic mechanisms of biology through the tools of biochemistry, genetics, structural biology, and cell and developmental biology. Three technological revolutions in recent years have accelerated these advances still further: genomics, computing, and imaging. Innovations in these fields have affected almost every area of biology and hold enormous promise for the future. Although major areas of basic understanding still elude researchers—notably in neuroscience, aging, and the science of therapeutics—the medical community has a sense that biomedical science is poised on the verge of unprecedented discoveries.

HMS itself is at a tipping point with regard to human-centered research. We benefit from the talents, energy, and momentum of some of the world’s most brilliant scholars, whose research efforts are pushing the frontiers of knowledge. We have extraordinary disease-oriented investigators and clinicians. This breadth of talent and expertise means that we are extremely well positioned to take decisive leadership in moving this revolution in science toward advances in human health, provided we have adequate investment in the engines of discovery and the connections to medical innovations that they might bring.

Our preclinical departments are at the core of the HMS biomedical enterprise, nurturing many leaders of this revolution and serving as vitally important

centers for scientific innovation, education, and faculty development. The guidance of the department chairs in shaping the vision of HMS, attracting world-class faculty, and supporting and cultivating exceptional smaller groups within the larger HMS community is critically important to the health and vitality of the School. The wisdom and energies of the Quad chairs will be invaluable as we move forward in implementing our strategic initiatives.

I believe that in the future, the impact of our Quad faculty and departments can be even greater if they are connected more effectively and synergistically to the broader vision of the School—including both the new initiatives discussed in this report and deeper connections with clinical faculty and medical education. I am confident that the coming decades will bring great progress in medicine, founded substantially in fundamental discovery, and that our leadership will shine only through the partnership of our basic science and clinical faculty. This achievement will require the highest-quality Quad faculty, strong support for the departments individually and collectively, and new ways of engaging the combined faculty on the Quad and in our academic health care centers with the aim of supporting the overall mission of HMS.

The Biomedical Research Areas advisory group identified a number of key areas that have the potential to connect fundamental science with clinical applications, that are at crucial junctures in their development, and in which HMS has the expertise to lead. Specifically, the committee recommended several cross-cutting fields as high priorities—human genetics, therapeutic discovery, neuroscience, bioengineering, and immunology and microbial sciences—in addition to our existing commitments to stem cell and regenerative biology and systems biology.

Human genetics. Scientists have long recognized that all aspects of health and disease are influenced by inheritance. Discovery of the genes responsible for health and disease provides a direct connection between fundamental biology and the clinic, with great potential to inform therapeutic discovery and the practice of medicine. Until recently, however, the

complex genetic causes of common diseases eluded discovery. Following the sequencing of the human genome, rapid advances in research tools have transformed the study of human genetics, and the next decade promises a revolution in our understanding of the inherited basis of human disease. Thus, we believe that it is imperative to ensure the continuing development of the field (including training the next generation of leaders), the translation of genetic discoveries into medical applications, and the responsible use of genetics in areas connected with law, business, public policy, and society.

Human genetics is an area in which HMS already leads, but also one in which we have not yet realized our full potential. Although the School's community is strong, and its distribution across several institutions provides many important advantages, no centralized leadership, mission, or resources exist for the study of human genetics. This lack of a focal point has meant no natural organizational home for education and research in this crucially important area, and we feel strongly that we should create one.

Therapeutic discovery. Therapeutics is the ultimate objective of a large majority of biomedical research. Many in the field believe that current approaches to this broad area are severely lacking, and that at this moment an opportunity exists to make a dramatic impact. I feel strongly—as does the subcommittee that analyzed this area—that the School must mount a focused effort to bring the enormous expertise of our community to bear on new ways to understand, identify, target, test, and deliver therapeutics, as well as new ways to understand how they affect individuals and populations. We are in a particularly good position to undertake such an effort, thanks to our extraordinary strength in basic and clinical research, our expanding efforts in translational research (now, happily, augmented by Harvard Catalyst), and the continuing efforts of our entire faculty. Recent investments in systems biology, chemical biology, and structural biology have also strengthened our understanding of drug mechanisms and the linkage of genomic information to treatment outcomes.

Making a decisive impact on the field of therapeutic discovery will be a significant intellectual challenge. I am convinced, however, that we must aggressively explore this opportunity further. We have established the needs and the general outline of an approach, but we must now provide a clear road map for moving forward. A remarkable amount of therapeutically relevant research is being carried out in our community, but all agree that the opportunity to do more, and to do it better, is huge at this moment, and we intend to make Harvard the world leader in this critical area.

Neuroscience. Neuroscience may well be the area in which the largest breakthroughs are made in this century. Advances in understanding the working of the nervous system and neurological diseases, ranging from Alzheimer's to depression, have enormous potential to be translated into new and important therapeutics. As with human genetics, this is an area in which the University and its faculty already excel but in which we may need to make additional investments in order for the community to thrive. Distinct departments or units of neurobiology, neuroscience, and neurology exist at HMS, in the Faculty of Arts and Sciences, and at our academic health care centers, yet such dispersion brings many missed opportunities for synergy, collaboration, and impact. The white paper on neuroscience recommends that, because of the specialized nature and highly interdependent character of current approaches, research in this area could be greatly accelerated by the creation of a research institute with geographical colocation and explicit clinical connections. I do not believe that we have yet addressed this question in sufficient depth to make a decision regarding creation of such an institute, but I do believe that significant new investments in neuroscience, and consideration of new organizational structures for achieving them, will be a priority.

Immunology and microbial sciences. Research on the linked areas of the immune system, mechanisms and dysregulation of inflammation, and microbial science and infectious diseases is of enormous consequence for human health. Harvard has a very strong immunology program, structured as the Committee on Immunology, which has been functioning as a

collaborative endeavor for more than 10 years. This interdisciplinary, interinstitutional entity involves nearly 90 highly regarded faculty members from throughout the Harvard community, including HMS, our academic health care centers, the Faculty of Arts and Sciences, and the Broad Institute. Harvard also boasts strong programs focusing on infectious diseases that threaten human health. In addition, the growing University-wide Microbial Sciences Initiative, officially launched in 2004, is providing an avenue for collaborative research and the creation of interdisciplinary courses, and the new Allston campus promises to add even more opportunities for making great strides in this area. Finally, although it was not formally a part of our strategic planning efforts, this summer the Harvard community joined with our sister institutions across the state and New England to work on a proposal for an important initiative in global health and vaccine development. We look forward to continuing to work on this major project.

Bioengineering. Bioengineering is a rapidly growing and exciting field that promises to be critical to the translation of biomedical science into a wide variety of applications. Although many Harvard faculty work in this area, including in our academic health care centers and in the Harvard-MIT Division of Health Sciences and Technology (HST), these numbers are not sufficient for the breadth of the field, and organization and focus in this area are lacking. An outstanding effort in bioengineering will require deep collaboration between HMS and the Harvard School of Engineering and Applied Sciences. In a first step, the two schools established a joint committee to address ways of moving forward, and the committee recently submitted a report to me and former SEAS Dean Venkatesh Narayanamurti recommending substantial new investments in bioengineering. A proposal for a Harvard Institute for Biologically Inspired Engineering—in which the educational and research opportunities are truly extraordinary—has also been under discussion for some time and appears to be close to becoming a reality.

A major bioengineering program is currently slated to be housed in Allston First Science, along with the

Systems Biology Department and the new Department of Stem Cell and Regenerative Biology, which links HMS and the Faculty of Arts and Sciences. The collocation of these three entities is particularly synergistic in terms of possible shared cores, cross-departmental faculty collaboration, and an orientation toward applied and translational research. Allston planning continues to be very challenging, however, and these three groups are already predicting a lack of expansion space soon after Allston First Science opens. Ideally, the next science building will both accommodate their needs and bring them into proximity with other departments and initiatives that will provide further synergies.

Stem cell and regenerative biology. Over the past several years, Harvard has recognized the importance of research in this area, creating both a Harvard Stem Cell Institute and the cross-school Department of Stem Cell and Regenerative Biology. This effort already includes many of the features that we recognize as important for other programs going forward: meaningful cooperation and joint programs that reach across schools and our academic health care centers; linkage of cutting-edge fundamental science and translational aspirations; and joint investment and fundraising. Research in this field is a significant priority for HMS, but since the investment and planning for this effort were already set in motion before our strategic planning began—and we do not anticipate significant revision of these plans—we do not address this topic further in this report.

Lower institutional barriers to collaboration

The breadth and depth of biomedical expertise in the Harvard medical community is, I believe, unparalleled anywhere in the world. But our community is spread across many different institutions both in the Longwood area and beyond, each with separate organizational and financial structures. Unfortunately, this situation has created unintended barriers that fragment our faculty. It is sometimes said of HMS that the whole is less than the sum of its parts; although our many productive collaborations and joint efforts belie this notion, I do believe that the whole is less than it could or should be. When scientists working at

different institutions within the Harvard system in similar or complementary areas have potentially ground-breaking ideas, but because of regulatory barriers are limited in their ability to walk across the street to work together, we block crucial avenues for innovation and squander major opportunities for advancing our goals. One of our priorities is thus to rethink our institutional structures to release the full power of our community by lowering barriers to collaboration.

A coordinated approach may be particularly important for animal and human research. The complex regulatory requirements for animal studies and clinical trials in our multi-institutional environment have led to a situation in which innovative mouse models of disease cannot be easily transferred from one researcher to another, and researchers in clinical trials who wish to make use of technology centers at multiple institutions must go through an extended process of obtaining approvals from multiple IRBs with conflicting priorities. Although much of this complexity is imposed by government regulations, I am convinced that improvements are possible, and I am committed to working with my colleagues throughout the HMS community to identify and implement simplifications to the current system. We also identified this area as a major priority in the clinical and translational sciences center application.

The issue of barriers surfaced repeatedly during our planning process, notably in the report from the Organizational Structures subcommittee of the Biomedical Research Areas advisory group and in the section of the Tools and Technologies report that deals with animal research. The problems arising from existing barriers will be even more acute for science initiatives that cross the boundaries of institutional walls, including therapeutics, stem cell and regenerative biology, neuroscience, human genetics, bioengineering, and systems biology. This issue will be of critical importance in the planning and construction of a science community in Allston. As a long-standing member of the Harvard Medical School community, I have a keen appreciation of the various barriers, and dismantling them will be a key goal of my tenure as dean. I pledge to work with my counterparts in the other institutions

that make up our community to change our institutional attitude to collaboration and sharing.

Create a more unified, supportive, and inclusive community

Barriers to collaboration at HMS are not only institutional. Perhaps one of the most difficult challenges identified in the planning process, voiced in meeting after meeting, was the need for several shifts in the culture of HMS, which in broad terms means becoming less insular and more inclusive. We must give special attention to improving the diversity and gender balance of our faculty, make a stronger commitment to mentoring and actively supporting our junior faculty of all backgrounds, and create an environment in which people can identify with a larger community than just their own particular niche.

I have heard from many quarters—faculty, staff, postdoctoral fellows, and students—that rectifying our shortcomings in this area is imperative, and it has emerged for me as a personal priority. Achieving this goal is essential to the future of the School and to the success of the goals in education and research that we have articulated during the planning process. We must work together, across boundaries, to promote the spirit of inclusiveness, collaboration, and excitement about our joint future that has been such an inspiring part of this period of strategic planning.

Increase and coordinate strategic investments in tools and technology

If we are to retain our leadership position in biomedical research and education, recruit the highest-quality scientists, and support the wide range of research that we are planning, we must invest in cutting-edge technologies and computational support and innovation. Our faculty repeatedly cite new investments and new strength in computational biology and advanced imaging—ranging from atoms to human beings—as critical to their ability to effectively carry out their discovery research. The report of the Tools and Technologies advisory group also makes a compelling case for more systematic investments in frontier research in the technologies that eventually enable discoveries across many fields. This is an area in which the whole

School must come together to plan and identify new directions. Central to this challenge is the development of core facilities to make established technologies available to the wider community. Also critical is tackling questions regarding recruiting, evaluating, and rewarding technology innovators, both at the faculty level and at the increasingly important research staff level.

Perhaps the most important insight in the Tools and Technologies group's report is that we must divide technology development into three main stages: innovation, development and dissemination; service; and training. Each of these areas is essential to a healthy and integrated research community, and each offers distinct types of benefits. It is not usually possible for the individuals who are working on developing a technology to also offer a broadly available service center, for example. Steering Committee members strongly reinforced this point, as well as the fact that exceptional service and training centers cannot be maintained in the absence of groups working at the levels of innovation and development.

Although we all recognize the importance of technology in driving biomedical research forward, and we have many outstanding faculty working in important technological areas, HMS has no coordinated approach to identifying and addressing important technology opportunities. It is a tribute to the strength of our diverse community that we have strong technology efforts in most fields despite this situation, but several major areas could benefit considerably from a coordinated approach, including areas relevant to therapeutic discovery, imaging technologies—from the molecular level to whole-body scanning—and computational methods.

Other important areas

Although the above represent the major priorities that emerged from the strategic planning process, I hope that we will be able to direct resources toward several other priorities as well, including those listed below:

Aging. HMS has a significant emerging community focused on aging, in the areas of both basic science

and the social sciences. The School enjoys particular strengths in the biology of aging and in the arenas of policy and quality of care for the elderly population. Research on aging is becoming increasingly important given the demographics in this country and in many parts of the world, and HMS is poised to become a leader in this field.

Social sciences and global health. HMS is taking a leading role in cross-University efforts to improve health through better understanding of social, economic, and delivery-systems factors that affect health care, both in the United States and abroad. Research by HMS social sciences faculty focuses on issues related to health care financing and delivery, quality, disparities, and access, including for the elderly, children, and special and disadvantaged populations. In the educational arena, HMS requires all medical students to take a course in health care policy and one in social medicine. The School offers elective courses to Harvard College undergraduates, mentoring for pre- and postdoctoral trainees, and multiple educational experiences for students in the combined MD/MBA program with Harvard Business School. HMS social sciences faculty are also active in Harvard Catalyst in the areas of community engagement and research, biostatistics, and health disparities research.

Of course, the issues studied by our social scientists cannot be addressed in isolation at HMS—although we must engage in them here—so we hope to work on a University-wide approach to studying these areas. We look forward to actively participating in a cross-University planning activity in social sciences, akin to the role HUSEC now plays for the basic sciences—a recommendation that emerged from the Social Sciences and Global Health advisory group.

With its strengths in global health delivery research, health policy and health services research, and basic science research in microbiology, immunology, and novel therapeutics, HMS can make great contributions at the nexus between social sciences and improved health care delivery and drug discovery. Our hope is that by merging our strengths in both social science and biomedicine, HMS can engage members of both

communities to make the bench researchers' discoveries more effective through the knowledge of health care delivery systems—in the United States and in the developing world—that the social scientists can provide.

We began this discussion during the strategic planning process through the Social Sciences and Global Health Advisory Group, but specific recommendations in this area have so far focused mainly in the educational arena. The arrival of Julio Frenk as the new dean of the School of Public Health and an expected revitalization of the Harvard Initiative on Global Health will help elevate this topic and promote the synergy between these fields that must take place if we are to carry out work that will truly lead to the alleviation of human suffering caused by disease.

Disease-specific efforts. We expect that many disease-related areas of research will accelerate and grow as collaboration across Harvard increases, but we will not attempt to speculate on these, nor on future investments, at this time. It is in the nature of science that new opportunities will emerge unexpectedly, and we have every intention of being appropriately opportunistic as these are identified.

The Implementation: First Steps

We have begun moving forward in each priority area on many of the recommendations put forth by the advisory groups. Below I discuss our activities in education, biomedical research, lowering barriers to collaboration, creating a unified community, and investing in tools and technology.

Education

To ensure that our major educational initiatives are effectively carried out, I created the position of Dean for Education and appointed Thomas Michel, MD, PhD, codirector of the Leder Program in Human Biology and Translational Medicine, to this post. His charge is to integrate and coordinate the graduate, medical, and continuing education programs at HMS, as well as improve integration of HMS programs with others across the University. This integration is

critical for training young investigators who will be optimally prepared for interdisciplinary and translational research and for exposing medical students to the greatest diversity of opportunities for their scholarly activities. Michel is leading the efforts to implement the far-reaching recommendations of the Education advisory committee as we move ahead, including fostering a culture of excellence in teaching at HMS and enhancing our medical students' engagement in scholarly activities. In this area, we are proceeding with implementing the requirement for a scholarly project for medical students beginning in the next academic year, as well as instituting an MMSc track—called HMS PRIME (Program for Research in Medicine)—for those students wishing to pursue an additional year of research.

I have also created the position of Dean for Graduate Education, an area in which we found HMS to have a particular need, which I hope will be filled in the very near future. And since our activities in the varied areas of global health are growing, I plan to create a high-level position in global education. We are moving forward in other areas in education as well:

Reducing student indebtedness. Beginning in the current academic year (2008–09), we have reduced the level of debt for medical students and their families. The School has approved a significant decrease in the financial contribution expected from students' parents by eliminating this cost entirely for families earning \$120,000 or less with assets typical of this income group. Building on this change, HMS has also decided to exclude from its determination of student financial need the income families set aside each year for retirement. This new method will allow a larger number of families, extending to the upper-middle class, to qualify for greater financial support. I believe that it is important for our financial aid policies to avoid penalizing families who are working to save for their retirement. This year's initiative, in combination with funding to cover increases in the cost of attendance, resulted in the awarding of an additional \$3 million in HMS scholarship funds in 2008–09, a nearly 40 percent increase over current funding levels.

Even as we implemented this new program for eliminating the parent contribution for lower- and middle-income families, we are continuing to pursue other ways to reduce student debt. I expect this to be the beginning of even more ambitious efforts in this area, and we are currently carrying out financial analyses that we hope will support a redesigned and even more generous financial aid package. We anticipate that financial aid will also be a major element of our capital campaign.

Global health. As the School prepares our students to become leaders in global health and supports our faculty as they develop innovative solutions for global health policy and delivery questions, we are making some changes to more accurately reflect the realities of the world and of the work at HMS. One of these initiatives has been to change the name of the Department of Social Medicine to the Department of Global Health and Social Medicine. More than simply a name change, this nomenclature gives notice that HMS thinks and works more broadly than the Quad, the University, and even the country in this interconnected, global world. The new name reflects the increasingly important international orientation of the department and acknowledges the outstanding work being conducted around the world by many of the department's faculty members.

An important opportunity both for cross-University collaboration and for the development of a potentially important new teaching program lies in the emerging field of global health delivery. The Department of Global Health and Social Medicine has begun to lay the foundation for this new field, holding an inaugural meeting in May 2007 with senior faculty from seven different schools within the Harvard system and developing cases and course curricula over the past year.

Faculty from HMS, the Harvard School of Public Health, Harvard Business School, Brigham and Women's Hospital, and other institutions are exploring the creation of this new field that will focus initially on the delivery of health care in resource-poor settings. This initiative will support research that will illuminate the causes of important global health

successes and failures and provide insights and models for practitioners who are implementing health care programs in resource-poor areas. It will also establish Internet-based communication networks to help disseminate field-based knowledge about effective implementation strategies. Education and training will be a top priority, and we plan to develop innovative training programs for physicians, nurses, and community health workers.

HMS has the opportunity to take the lead in developing the field of global health delivery, by educating a new generation of health leaders worldwide and, in turn, revolutionizing the delivery of care in the world's poorest countries—lessons that can ultimately be applied to domestic health care delivery as well. We look forward to partnering with the School of Public Health and the University in this and other areas in global health.

Biomedical research

In consultation with members of the Biomedical Research Advisory Group and the Steering Committee, I have decided that three important areas in this field merit an especially high priority: human genetics, therapeutics, and neuroscience. We are making strong progress in these areas, as noted below:

Human genetics. I am working with David Altshuler, MD, PhD, a professor of genetics and of medicine at Massachusetts General Hospital and HMS and a founding member of the Broad Institute, and in close consultation with Clifford Tabin, PhD, chair of the HMS Department of Genetics, in an intensive discussion about how best to organize a new initiative in human genetics. Harvard-wide in scope, but anchored at HMS, the initiative would bring together faculty from across the academic health care centers and the University to build a world-class curriculum in human genetics, which right now is lacking, and to provide leadership, focus, and resources that would aid in drawing top talent in the area of human genetics to the Harvard Medical community. We are making tremendous progress in our efforts, and I plan to present preliminary recommendations to HUSEC this fall.

Therapeutics. I am delighted to report that we are well along in our plans to hold an off-site think tank in the area of therapeutics, scheduled for the end of October. We are bringing together a group of outstanding scientists from across the University and our academic health care centers, as well as thought leaders from other universities, the pharmaceutical industry, and business. The goal of this two-day retreat is to establish a path forward in creating a therapeutics program that would help to reenergize this discipline and effectively bridge the gap between basic science and drug development.

Neuroscience. Our first step in strengthening neuroscience at HMS and across the University was to recruit Michael Greenberg, PhD, director of the neurobiology program at Children's Hospital, as chair of the outstanding Neurobiology Department at HMS. His charge is to foster greater and unprecedented collaboration in this field and to build a broad and deep initiative in neuroscience across Harvard. He has already been extremely active in integrating the neuroscience community across the University and will bring great energy to HMS in this area.

Lowering barriers

Throughout the strategic planning process, in Allston planning, and in the early stages of Harvard Catalyst, we have seen strong and broad enthusiasm for collaboration. Unfortunately, our organizational structures, incentives, and entrenched culture have created significant barriers to collaborative research. We have begun to analyze and codify these obstacles at the most micro and macro levels and are working to identify several areas for improvement.

Faculty and staff at Harvard Catalyst have made excellent progress in lowering barriers to collaboration, including their early efforts to streamline multiple IRB processes. In addition, the Harvard Catalyst web portal will serve an important function of “match-making” among scientists, making it easier to identify the location of cores, the researchers who are working in particular areas, and the data that exist across the full system. We recognize that further lowering—and removing—barriers to collaboration will not be easy

and will require support from the University's central administration, as well as the involvement of key leaders and administrators in several institutions. I am personally committed to seeing this through.

Improving communication and integration. We are in the process of establishing three new councils—the Council on Education, Council on Research, and Council on Faculty Development and Diversity—to be led by deans in each area. These deans will be charged with convening key stakeholders and thought leaders at HMS and across the University, with the goal of sharing information and ideas and integrating planning efforts. I will have direct contact with each of these councils through the newly formed Dean's Cabinet, which includes, among others, the three new academic deans—Dean for Education, Dean for Interdisciplinary Research, and Dean for Academic and Clinical Affairs (see below)—plus the Dean for Clinical and Translational Research, who is also principal investigator of Harvard Catalyst.

The Dean for Interdisciplinary Research is a new position for which I am currently recruiting. This dean will focus on the Quad and beyond, reaching out to the School's academic health care centers, the University, and the broader community of scientists in the Boston area. This person will also play a key role in helping me represent the interests and perspectives of HMS in Allston and University science planning. This position, which reflects the increasing importance of the interdisciplinary and interinstitutional nature of our work, will replace the previous position of Dean for Basic Sciences and Graduate Studies. In addition, the new dean will cochair with me the Council on Research, which will bring together the Quad preclinical chairs, the Dean for Clinical and Translational Research, the leaders of new research initiatives, and representatives of our academic health care centers and institutes, among others, and will serve as the main forum for cross-disciplinary communication for research among various elements of our community.

Close interaction between the basic sciences and social sciences on the Quad is vital, and I view the bond between me and the preclinical chairs as one

of the most important ingredients in preserving and nurturing the health of the School overall. In addition to the regular meetings I hold with the preclinical chairs individually and as a group, their participation on the Council on Research will be of critical importance. Along with the Dean's Cabinet and other councils, the Council on Research will also work with members of the strategic planning Steering Committee in the implementation of the strategic plan and in ongoing institutional planning.

Our broad and frequent communications during the first phase of strategic planning were critical in involving the community in the process and in drawing out feedback and new ideas. It is equally important that we continue these efforts as we move into the implementation phase. We plan to keep the community informed of our progress through letters from me, through town meetings, and through continued updating of our strategic planning website. I will also continue to employ the meeting structures we used in the first phase, as well as the new councils, to keep stakeholders informed.

Creating an inclusive community

I am pleased to report that Nancy J. Tarbell, MD, has taken the important position of Dean for Academic and Clinical Affairs. She comes to HMS from Massachusetts General Hospital, where she has been the CC Wang Professor of Radiation Oncology and director of the Center for Faculty Development and the Office for Women's Careers. One of her key mandates at HMS is to integrate and expand the School's efforts in faculty development and diversity, and she will chair the council in this area. Charged with bringing people together to share ideas across multiple institutions to set the priorities for faculty development, among other duties she has responsibility for carrying out reviews of HMS clinical departments, as well as oversight of the Office of Faculty Affairs, the Office of Diversity and Community Partnership, and the Office for Faculty and Research Integrity.

In another step, I have asked the preclinical chairs to name a senior faculty member in each of their departments to be responsible for supporting promotions

and advancement, mentoring, development, and diversity in the department and to serve as a representative to the Council on Faculty Development and Diversity.

Tools and technology

The Tools and Technologies report recommended that HMS form a standing advisory group to develop a strategy and resources for achieving and maintaining leadership in technological innovation over the long term, including new faculty searches and technical platforms. We plan to create such a committee, which will report to the Dean for Interdisciplinary Research and will have representation on the Council on Research. This dean will take a prominent lead in integrating the technology needs of the Quad, Harvard Catalyst (together with the Dean for Clinical and Translational Research), and Allston, the latter along with research and administrative leadership from the provost's office, Faculty of Arts and Sciences, and School of Engineering and Applied Sciences. We will also undertake an effort to collect and disseminate information about core services and training opportunities across our various institutions and move to create new service centers.

Harvard Catalyst has already greatly advanced Harvard's technological capacity through its impressive and powerful web portal, which offers users a wealth of information in an easy-to-navigate site. We will augment their work in knitting together the websites of our academic health care centers through similar efforts on the Quad and across the University. We now have the great advantage of the platform that Harvard Catalyst has built, for which the technology and personnel costs were very high and the achievement years in the making, and we will work to make the resources useful to the broad Harvard biomedical research and teaching community.

The Challenges

As you can see, we have high aspirations for Harvard Medical School. Our biggest challenges are organizational and financial. Science is expensive, yet we want to attract and retain the best faculty, give them the

tools to succeed, and support them in a vigorous and exciting environment. We are looking to shift the paradigm of how we do work here, and I believe that these extraordinary times require extraordinary investments.

Financial

Foremost among the challenges we face is securing the financial resources required to support not only the new initiatives that we seek to implement, but also the existing core programs of the School. These issues include the financing of ongoing endeavors that resulted from prior planning processes, such as the cornerstone initiatives for the Systems Biology Department and the Department of Stem Cell and Regenerative Biology; expanding our support of educational programs; and ensuring that the promise and potential of existing faculty can be realized. These funding challenges are exacerbated by the shrinking NIH resources available for research universities and the increased costs associated with expanding our faculty commitments to teaching across the spectrum of the curriculum and across the University.

In parallel with planning for departments and new initiatives, as well as for the Allston campus, we must anticipate and address the major costs of investments in tools and technologies. This issue has enormous significance as we consider our priorities for moving ahead. Infrastructure is vital to so many people and diverse parts of our biomedical community, and it represents a large need for investment. This area will be an important component of the portfolio of the new Dean for Interdisciplinary Research.

Although we feel optimistic that embracing a more interdisciplinary, interinstitutional model of carrying out cutting-edge research will make us even more competitive for limited sponsored funding and for gifts from savvy donors, the administrative costs of supporting such collaboration are significant. As an institution, we have the fiduciary responsibility to ensure the fiscal health of our research departments, educational programs, and general administration. In committing to initiatives that expand beyond our institutional boundaries, however, the School grows ever more exposed to decisions that put the interests

of the collaboration first. Although these interests are certainly aligned with those of HMS, we must pay careful attention to the financial implications for the School's bottom line.

Allston is an example of an interinstitutional initiative that represents a major financial challenge for HMS. Although we view this campus as an important investment in the life sciences, the financial commitments it will require are enormous. In building a world-class science facility to house three critical Harvard University programs—Stem Cell and Regenerative Biology, Systems Biology, and the Institute for Biologically Inspired Engineering—HMS is expanding its faculty, space, technological cores, teaching and research activities, and administrative capacity at an extremely rapid pace. Although we recognize the importance of the central University financing and generous fundraising that have been backing these programs, the combined costs of the three initiatives require that HMS commit tens of millions of dollars to support these cross-institutional endeavors.

It will take some time for HMS to integrate the costs of Allston and other collaborative projects into the School's operating budget in a manner that is financially stable and responsible. In working toward this goal, HMS will need to consider new sources of revenue, potential redirection of funds, and opportunities for cost savings.

Organizational and administrative

As we enter the second phase of our strategic planning, we must turn our attention to the difficult task of prioritizing among many meritorious recommendations, ideas, and initiatives. Although our enthusiasm and energy for expansion may be limitless, we recognize that the realities of our organizational and financial resources are much more constrained. Many of the School's highest priorities (including human genetics, therapeutics, and neuroscience), are cross-institutional in nature, requiring significant administrative and financial resources for implementation. Further, implementation of these initiatives necessitates identifying and breaking through organizational and cultural barriers to collaboration.

Although we have recognized the need for major changes in this area, the significance of such barriers cannot be underestimated.

Conclusion

We realize that achieving our highest aspirations will not be easy. Through the first phase of our strategic planning process—the investigation and self-examination—we had to recognize areas in which our shortcomings were preventing us from being more than the sum of our parts. I believe, however, that the intense exercise of broad and inclusive planning that we have undergone during this past year has shown us how strong we are and how much stronger we can be. The process has given us a sound platform for making decisions about our priorities as we move ahead. We

have already taken a major leap forward by coming together to pursue big ideas that require deep collaboration and the best efforts, talents, and aspirations of our community.

Throughout this year of planning, as a new dean I have marveled at the talent, enthusiasm, and dedication demonstrated by the faculty and staff involved in this process, and their deep resolve to make a difference in shaping our school and community. I am proud to lead such a fine institution and optimistic about our common future. We have the momentum to make great strides in research and innovation, in teaching and mentoring, and in creating community in new ways and in new places. This is an exciting time to be at Harvard Medical School—the hub of a vibrant Harvard Medical community—and we intend to make the most of it.

Appendix I

Strategic Planning Advisory Groups

Steering Committee

Team Leader

Jeffrey Flier

Team Members

David Altshuler
Allan Brandt
Michael Brenner
Joan Brugge
Bill Chin
Bruce Donoff
Michael Gimbrone
Steve Harrison
Jim Y. Kim
Marc Kirschner
Eric Lander
Ellice Lieberman
Barbara McNeil
Doug Melton
Thomas Michel
Stuart Orkin
Daniel Podolsky
Joan Reede
Vicki Sato
Christine Seidman
Theda Skocpol
Bruce Spiegelman
Christopher T. Walsh
Len Zon

Staff Leaders

Megan Benson
Daniel Ennis
Judy Glaven
Aili Lewis
Lisa Muto
Becky Ward
Nina Zipser

Strategic Advisory Group on Education

Team Leaders

Thomas Michel
Orah Platt

Team Members

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Bruce Bean
Eugene Beresin
Steve Blacklow
Julie Buring
David Cardozo
Connie Cepko
Sanjiv Chopra
David Cohen
Jules Dienstag
Dan Federman
David Golan
Charlie Hatem
Peter Howley
Haiden Huskamp
Nancy Kane
Jim Y. Kim
Randall King
David Knipe
Bruce Levy
Rob Lue
Eleftheria Maratos-Flier
Nancy Oriol
Elio Raviola
Thomas Roberts
Richard Schwartzstein
Gordon Strewler
David Van Vactor
Debra Weinstein
Fred Winston
Mark Zeidel

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Nina Zipser

Biomedical Research Advisory Group

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Christine Seidman

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Michael Brenner
Emery Brown
Lew Cantley
Don Coen
Ray Dolin
Patricia Donahoe
Elizabeth Engel
Judy Garber
Michael Gimbrone
Nathanael Gray
Mike Greenberg
Dan Haber
Ed Harlow
Phil Kantoff
S. Ananth Karumanchi
Anne Klibanski
Roberto Kolter
Joe Loscalzo
Diane Mathis
John Mekalanos
Tim Mitchison
Lee Nadler
Roz Segal
Pam Silver
Suzanne Walker
Gary Yellen

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Becky Ward

Social Sciences and Global Health Advisory Group

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Jim Y. Kim

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Anne Becker
David Blumenthal
Allan Brandt
Dan Brock
Jorge Dominguez
Jonathan Finkelstein
Dennis Kasper
Ron Kessler
Gary King
Tom Kirchhausen
Arthur Kleinman
Nan Laird
Joe Newhouse
Richard Platt
Deborah Prothrow-Stith
Dennis Ross-Degnan
Sadath Sayeed
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Cliff Tabin
Bruce Walker
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Dyann Wirth

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Jennifer Puccetti
Nina Zipser

Tools and Technologies Advisory Group

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Steve Harrison
Elazer Edelman

Team Members

Sangeeta Bhatia
George Church
David Corey
Steve Elledge
John Frangioni
Todd Golub
Robert Gould
Steve Gygi
John Halamka
Ronald Kahn
Zak Kohane
Cynthia Morton
James O'Malley
John Parrish
Paul Ridker
Bruce Rosen
Bernardo Sabatini
Brian Seed
Jonathan Seidman
Caroline Shamu
Arlene Sharpe
Joy Sircar
Judith JeBANathirajah
Steen
Ralph Weissleder
Alan Zaslavsky

Staff Leaders

Judy Glaven
Becky Ward

Appendix II

Timeline of Dean Flier's Meetings with the Community in 2008

January

- Executive Committee of Medicine
- Preclinical Chairs
- Faculty Council
- Program in Medical Education
- Town Meeting
- Brigham & Women's Grand Rounds
- Partners Senior Management Retreat

February

- Conference of Department Heads
- Clinical and Translational Science Group
- MGH Science Advisory Council
- Quad Town Meeting
- Brigham & Women's Town Meeting
- Psychiatry Executive Committee
- Preclinical Chairs

March

- Harvard University Council of Deans
- HMS/HSDM Joint Committee on the Status of Women
- President Drew Faust and the Steering Committee
- Visiting Committee

April

- HMS Board of Fellows

May

- University Development Group
- [Advisory groups submit white papers]
[Announcement: Department of Social Medicine to be renamed
Department of Global Health and Social Medicine to reflect
the increasingly important international orientation of the department]

June

- Final meeting of Steering Committee
- University Academic Planning
- Harvard University Science and Engineering Committee (HUSEC)

July

- Allston Development Group Meeting

September

- Harvard Catalyst (Clinical and Translational Science Center) Retreat
- Meeting with President Drew Faust

Appendix III

List of White Papers from the Advisory Groups

The following white papers were produced by the strategic planning advisory groups through their intensive meetings and discussions during the first phase of the HMS strategic planning process. The papers, along with a wealth of information about our strategic planning, are available on the HMS strategic planning website, <http://hms.harvard.edu/public/strategy>.

- Bioengineering
- Chemical Biology/Pharmacology/Therapeutics
- Education
- Human Genetics
- Imaging
- Immunology and Inflammation
- Microbial Sciences
- Neuroscience
- Organizational Structures
- Social Sciences
- Tools and Technology

Acknowledgments

This report embodies the work of numerous wonderful, talented people, to whom I am profoundly grateful and whose efforts I would like to publicly acknowledge here. Many individuals participated through multiple committees and subcommittees, invigorating our intensive strategic planning process with their ideas, their collegiality, and their dedication to making Harvard Medical School the best it can be.

In particular, I would like to acknowledge the extraordinary efforts of the chairs of the advisory teams: Thomas Michel and Orah Platt, Strategic Advisory Group on Education; Bruce Spiegelman and Christine Seidman, Biomedical Research Advisory Group; Barbara McNeil and Jim Y. Kim, Social Sciences and Global Health Advisory Group; and Steve Harrison and Elazer Edelman, Tools and Technologies Advisory Group. I am grateful to them all for shepherding this process from its launch—the first moments of convening the committees and clarifying the charge—to the present, which over the past year included brainstorming and synthesis of ideas, presenting updates to the Steering Committee and to other groups, and crafting the white papers from the main committees that have informed this entire document.

All of the white papers are posted in full on the HMS strategic planning website, including the full lists of contributors, and I would like to express my deep appreciation for the efforts of all the authors and participants. In particular, I would like to thank the following lead authors: Michael Greenberg and Gary Yellen on the neuroscience white paper; David Altshuler, Jim Gusella, Raju Kucherlapati, Christine Seidman, Cliff Tabin, and Chris A. Walsh on human genetics; Don Coen, Bill Chin, David Golan, Nathanael Gray, Phil Kantoff, Dan Kahne, Tim Mitchison, Bruce Spiegelman, and Rebecca Ward on therapeutics; Michael Brenner, Christine Seidman, and John Mekalanos on organizational structures; Roberto Kolter, John Mekalanos, Suzanne Walker, and Jon Clardy on microbial sciences; Diane Mathis on immunology and inflammation; and Steve Harrison on imaging. I would also like to thank Pam Silver and Elazer Edelman for bringing their experience from the Harvard University Bioengineering Initiative to the strategic planning process. In addition, I am grateful to Bruce Yankner, David Sinclair, Barbara McNeil, and Lew Lipsitz for their contributions to the discussion of research in aging at a Steering Committee meeting. Many other faculty were involved in the development and writing of these papers, and I am grateful to them all.

Staff members from both HMS and the Office for Institutional Research who were critical to this process include Daniel Ennis, Judy Glaven, Aili Lewis, Lisa Mincieli, Lisa Muto, Jennifer Puccetti, Rebecca Ward, and Nina Zipser, among others. Bob Neal, B.D. Colen, Judith Montminy, and Jan Reiss were invaluable in communicating our progress to the community in many forms. We are fortunate that many of the staff who contributed to the first phase of planning continue to be involved in the implementation phase of this effort.

It was a true pleasure to work with the members of the Steering Committee, a wonderful and dedicated group that consisted of the advisory team chairs, plus David Altshuler, Allan Brandt, Michael Brenner, Joan Brugge, Bill Chin, Bruce Donoff, Michael Gimbrone, Marc Kirschner, Eric Lander, Ellice Lieberman, Doug Melton, Stuart Orkin, Daniel Podolsky, Joan Reede, Vicki Sato, Theda Skocpol, Chris T. Walsh, and Len Zon. Evelyn Hammonds and Isaac Kohlberg also participated in their respective areas of faculty development and diversity and technology development. Our meetings were exhilarating and enormously helpful. I hope to call on many of these individuals to receive the benefit of their counsel over the next months of prioritization, implementation, and realizing the vision we have created and honed as a group.