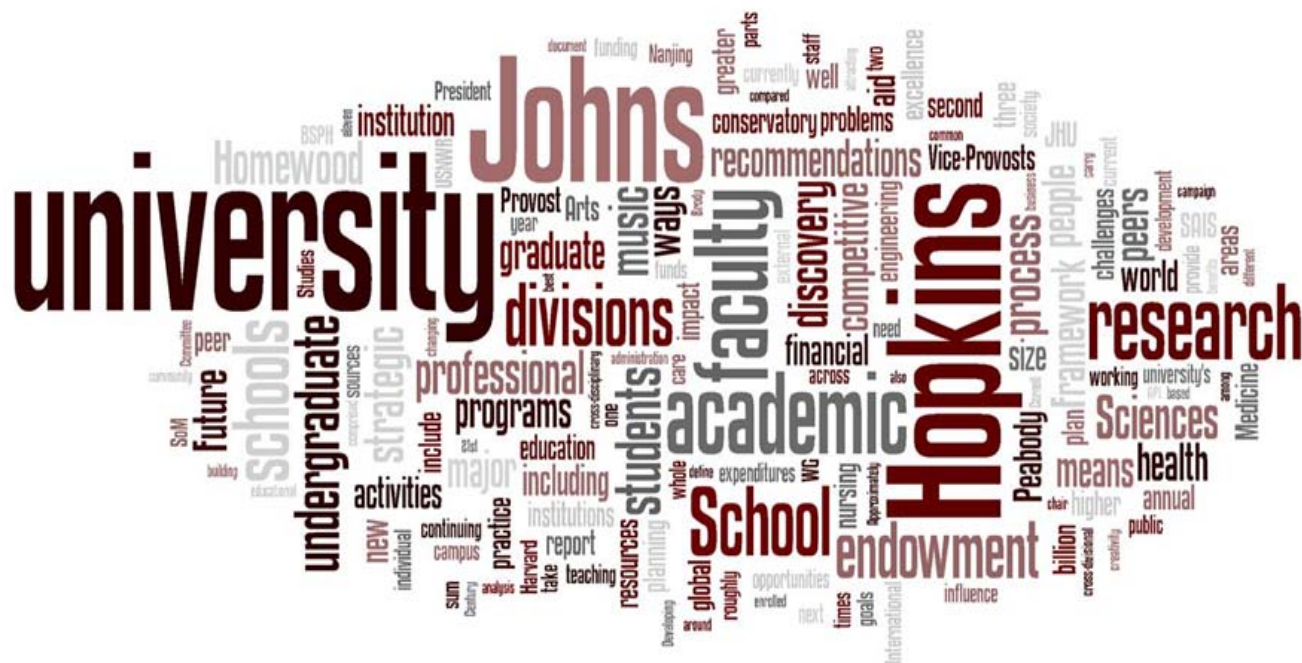


FRAMEWORK FOR THE FUTURE

FEBRUARY 2009

JOHNS HOPKINS
UNIVERSITY



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DATES IN THE HISTORY OF THE JOHNS HOPKINS UNIVERSITY

- 1857 George Peabody proposes the establishment of an institute in Baltimore that will comprise a library, art gallery, academy of music and lecture series.
- 1868 The Peabody Academy of Music opens.
- 1874 The Peabody Academy of Music becomes the Peabody Conservatory of Music.
- 1876 The Johns Hopkins University founded.
- 1889 The Johns Hopkins Hospital opens.
- 1889 The Johns Hopkins Hospital School of Nursing opens.
- 1891 The Publication Agency of The Johns Hopkins University becomes The Johns Hopkins University Press.
- 1893 Johns Hopkins University School of Medicine opens.
- 1909 Johns Hopkins offers college courses for male and female teachers at public and private schools in cooperation with the Woman's College of Baltimore.
- 1912 Maryland Governor Phillips Lee Goldsborough funds the Johns Hopkins Department of Engineering.
- 1918 The School of Hygiene and Public Health opens.
- 1919 The Department of Engineering becomes the School of Engineering.
- 1942 The Applied Physics Laboratory of the Johns Hopkins University is founded.
- 1943 The School of Advanced International Studies (SAIS) is established.
- 1947 University Trustees consolidate existing evening programs for teachers and create McCoy College.
- 1955 SAIS inaugurates its campus in Bologna, Italy
- 1965 McCoy College becomes the Evening College and Summer Session.
- 1966 The School of Engineering merges with the Faculty of Philosophy, creating the School of Arts and Sciences.
- 1977 The Johns Hopkins University and the Peabody Institute formally affiliate.
- 1979 The G.W.C. Whiting School of Engineering is established.
- 1983 The School of Nursing opens as a degree-granting division of the University.
- 1984 The Evening College and Summer Session becomes the School of Continuing Studies.
- 1986 The Hopkins-Nanjing Center for Chinese and American Studies opens.
- 1999 The School of Continuing Studies becomes the School of Professional Studies in Business and Education.
- 2007 The School of Education and the Carey Business School are launched. The School of Professional Studies in Business and Education is closed.

FOREWORD BY THE PROVOST

The Framework for the Future (Framework) study involved nearly 100 faculty, students and staff participating in three working groups on People, Discovery, and Ways and Means, investigating research, scholarship, education and practice at Johns Hopkins. The three working groups were charged with preparing National Academies-style reports summarizing the findings, recommendations, and grand challenges on the ways and means by which our people carry out discovery.

It is my privilege and honor to deliver the Framework study to President Ronald Daniels and the entire Johns Hopkins community. I would like to thank the chairs and facilitators of the working groups and the faculty, students and staff for their honest, open and transparent conversations over the course of 12 Tuesday evening meetings during the summer of 2008. Their dedication to the task of making Johns Hopkins a better university is inspiring, and it calls for a collective commitment to carrying out these thoughtful recommendations.

RECOMMENDATIONS

The three working groups offer 18 recommendations to the university leadership to implement over the next decade to ensure that The Johns Hopkins University thrives as one of the world's preeminent academic institutions. Carrying out these recommendations will require us to define who we are, what we stand for, what we will do (and what we will raise the resources to invest in), and what we will not do or continue to do.

This report concludes that the most compelling need is to invest in our human capital. The recommendations of the People Working Group include offering so-called "need-blind" admissions at the undergraduate level, providing graduate student stipends that are comparable to those at other outstanding institutions, and compensating our faculty, on average, at the 50th percentile of our peer institutions.

INTELLECTUAL THEMES

The Discovery Working Group discussed new cross-disciplinary intellectual areas where Johns Hopkins has a distinct competitive advantage over peer institutions. The working group also reviewed and ranked the 74 faculty proposals submitted to the Framework Request for Proposals (RFP) internal competition. Twelve proposals were funded and three cross-disciplinary research themes emerged from this process (see pages 23 to 25).

1. Sustainable Environment and Global Health

The Johns Hopkins University has a history of pioneering excellence in research, teaching and service related to water quality. This work has had a tremendous societal impact for almost a century, dating back to the work of Abel Wolman. Access to clean water is now becoming a critical global challenge as a result of world population growth, climate change, demographic shifts in populations and loss of protected watersheds. Global water sustainability will require international cooperation and the development of new technologies for maintaining a method for provisioning water quality and quantity across the globe.

2. Discovery in Complex Systems

Scientists today seek new knowledge in an information-intensive environment. Faculty in many disciplines use new technologies to create large digital datasets. However, it is a tremendous challenge to extract information from the data. A cross-disciplinary, analytical program in informatics will help to create techniques, disseminate skills and foster collaborations, bringing Johns Hopkins to a preeminent position in many of its research activities, including individualized medicine, studies of the brain and environmental science, among many others. Current Johns Hopkins initiatives and programs include the Institute for Data Intensive Engineering and Science and the Mid-Atlantic Petascale Partnership, a collaborative effort with the University of Maryland, Virginia Tech and a group of affiliated universities.

3. Science in and from Space

The Johns Hopkins University has the opportunity to become the preeminent academic institution in the field of space science and engineering. A Johns Hopkins Space Science Initiative could bring together key constituencies across the university, including Physics and Astronomy, Earth and Planetary Sciences and the Applied Physics Laboratory. Such an initiative could connect to closely aligned organizations such as the Space Telescope Science Institute and NASA Goddard Space Flight Center to create a preeminent consortium for research and discovery while at the same time attracting and educating the next generations of leaders in the field. Research areas where Johns Hopkins has signature strengths include astrophysics, cosmology, and planetary and earth observational sciences. This research connects to discovery in complex systems through computational projects like the National Virtual Observatory and its successors.

Since the Framework working group reports were generated in 2008, the economic landscape has changed dramatically. The 18 recommendations are being offered at a time of extreme financial uncertainty. Clearly it is a time to make hard choices, focus on our strengths, and make the selective investments necessary to move the institution ahead. These difficult circumstances are times of considerable opportunity. The greatest of universities, of which Johns Hopkins certainly is one, must rise to new challenges and make even more significant contributions to our nation and our world. I trust that this report provides, as its title suggests, a framework for the future.

Kristina M. Johnson
Provost and Senior Vice President
for Academic Affairs

RATIONALE AND OBJECTIVES

Johns Hopkins completed its last strategic plan in 1994, when President William R. Brody, then professor and chair of radiology in the School of Medicine, chaired the Committee for the 21st Century. That plan helped to advance the university's global influence, a building program that has nearly doubled Johns Hopkins' teaching and research space, and two development campaigns that raised more than \$4.8 billion.

By any measure, that plan has served the university well. Yet the world is now a different place. The nature of university research and education is in transition. Important questions are at the boundaries of traditional disciplines or at the core of new, emerging disciplines. In the sciences, multi-disciplinary teams from around the world address major questions, often directed by committees or funding agencies. The extent and complexity of information demands improved tools for acquiring, managing and using data. Research funding from external sources such as NIH and NSF is more difficult to obtain. Many peer universities have organized themselves to invest new funds in cross-disciplinary initiatives.

These circumstances raise a question: What steps must Johns Hopkins take in the coming decade to remain a pre-eminent research university? One step is to enhance our ability to collaborate across divisions and disciplines in research and education in order to respond to the shifting external environment.

In preparation for the next phase in the university's development, President Brody and Provost Kristina Johnson in May 2008 initiated a planning process, called Framework for the Future. Its goals were to take stock of the current state of the university, to identify new crosscutting opportunities and the ways and means to expand collaboration, and to lay the groundwork for strategic thinking as President Ronald Daniels begins his administration.

To achieve these goals, the Provost formed three University-wide strategic working groups (WGs) focused on people (the heart of the university), discovery (their research, scholarship, teaching and practice) and the ways and means for them to develop successful crosscutting initiatives. Each WG comprised roughly 20 faculty and staff leaders. The groups were led by:

People: Chair vice dean David Bell; Co-chairs vice dean Janice Clements and Professor Ralph Etienne-Cummings; Facilitators vice provosts Jonathan Bagger and Paula Burger

Discovery: Chair professor Marilyn Alpert; Co-chairs professors Barry Aprison and Adam Reiss; Facilitators vice provosts Pamela Cranston and Michela Gallagher

Ways and Means: Chair professor J. Brooks Jackson; Co-chairs professors Jane Guyer and Gerry Masson; Facilitators vice provosts Stephanie Reel and Scott Zeger

The WG memberships, charges and full reports appear in the Appendices. The Provost's Steering Committee (PSC), comprising the deans, directors and vice presidents, provided oversight to the process. The groups worked throughout the late spring and summer of 2008.

After a brief description of salient features of Johns Hopkins to provide context, this document integrates and summarizes the WG findings and recommendations. It takes stock of the university today and proposes approaches to strengthening collaborations as one means to respond to emerging external opportunities.

TRADITION OF EXCELLENCE

Johns Hopkins was the first American research university, and has been a global leader throughout its history. Its success is rooted in being a meritocracy. Our first president, Daniel Coit Gilman, in his 1876 inaugural address, articulated the mission of Johns Hopkins University: *"What are we aiming at?" ...The encouragement of research ... and the advancement of individual scholars, who by their excellence will advance the sciences they pursue and the society where they dwell."*

Since its founding in 1876, the Johns Hopkins University established a tradition in which research and scholarship are inextricably linked. From its first president, Daniel Coit Gilman, to its founding faculty, Basil Gildersleeve (classics), James Sylvester (mathematics), Ira Remsen (chemistry), Henry Rowland (physics), and Henry Martin (biology), Johns Hopkins promoted learning through discovery by meritorious persons regardless of social class or background. The founding faculty pioneered modern graduate education in the United States, starting the *American Journal of Mathematics*, the *American Chemical Journal*, the *American Journal of Philology*, and the American Physical Society.

With the opening of the Johns Hopkins Hospital in 1889 and the university's School of Medicine in 1893, Johns Hopkins inaugurated the era of science-based medical education and practice. The founding physicians, pathologist William Welch, surgeon William Halsted, internist William Osler and gynecologist Howard Kelly, created a medical school curriculum with emphasis on the scientific method, and incorporated bedside teaching and laboratory research as part of the formal instruction. Likewise, the founding of the schools of Nursing and Public Health were models in their respective fields.

Since these early days, the university has developed in ways unimaginable to its founders. From its base in Baltimore, and with the close collaboration of the Johns Hopkins Hospital, the university has grown to have a truly global impact. With campuses throughout Maryland, in Washington, Bologna and Nanjing, and scholars scattered across the globe, Johns Hopkins has become a leading generator of knowledge for the world.

Johns Hopkins is the home of many firsts: It was the first university in the United States to emphasize research, to teach students in small seminars and to offer undergraduate majors. Chemist Ira Remsen discovered saccharine; biochemist Elmer McCollum identified vitamin D and its role in rickets; engineer Abel Wolman developed the modern practice of municipal water chlorination. The Peabody Conservatory was the first music academy established in the United States. Johns Hopkins was the first major medical school in the United States to admit women; its faculty were the first to use rubber gloves during surgery and the first to develop renal dialysis and cardio-pulmonary resuscitation (CPR). The School of Hygiene, later named the Bloomberg School of Public Health, was the first such institution in the United States, and today is the largest in the world, with operations in over 90 countries.

Since the early years, the advances have continued apace. Engineers at the Applied Physics Laboratory under Merle Tuve developed the proximity fuse, later judged to be one of the most important technology achievements in the Second World War. Alfred Blalock, Helen Taussig and Vivien Thomas developed the "blue baby" operation, which opened the way to modern heart surgery. David Bodian, Howard Howe and Isabel Morgan identified the three types of polio virus which enabled a successful vaccine. Dan Nathans' and Hamilton Smith's Nobel Prize-winning discovery of restriction enzymes gave birth to the genetic engineering industry. Holland Ford, using the Hubble Space Telescope, discovered supermassive black holes at the centers of galaxies. Riccardo Giacconi received the 2002 Nobel Prize in Physics for his discovery of cosmic X-ray sources, and Peter Agre the 2003 Nobel Prize in Chemistry for his discovery of water channels in cell membranes. In 2007, pianist Leon Fleisher received the Kennedy Center Honors Award for a lifetime of contributions to American culture through the performing arts, and in 2008 pediatric neurosurgeon Benjamin Carson received the Presidential Medal of Freedom.

This tradition of excellence provides a solid foundation upon which to build our Framework for the Future.

THE JOHNS HOPKINS UNIVERSITY TODAY

Today, the Johns Hopkins University comprises nine schools and the Applied Physics Laboratory (APL). These units independently determine their strategic directions, goals, sizes, and sources of revenue. The university administration (UA) supports and delivers core services including the offices of the president and provost, the board of trustees, financial operations, and development programs. The decentralized administration and highly entrepreneurial and opportunistic faculty have shaped the university so that eight of every 10 Johns Hopkins faculty members now work on problems of human health and 40% of the annual budget is related to

professional practice activities. Faculty, students and staff are attracted to Johns Hopkins because it is an aspiring, entrepreneurial institution that strives for excellence in selective fields.

As presented in the table on page 5, the university's 2008 expenditures totaled \$3.67 billion, \$2.78 billion in the schools and academic units and \$0.89 billion at the APL. The university has 3,500 faculty and 9,800 full-time staff. Approximately 5,800 undergraduate students and 14,000 graduate students (8,500 full-time equivalents) enrolled during the past academic year.

Seven of the degree-granting divisions (all but SoM and BSPH) share an enterprise model and culture that are centered around the education of undergraduates, master's, or doctoral students, with roughly 60-70% of their annual revenues deriving from "internal sources" defined as tuition, endowment/investment income, annual giving, and state education aid. Total faculty numbers outside of medicine and public health are small relative to peer institutions. For example, Johns Hopkins has 420 professorial faculty members in arts and sciences and engineering, as compared to 600 at Penn, 730 at Cornell, and 830 at Duke. The JHU endowment is smaller than its peer institutions; Johns Hopkins ranks ~26th in total endowment size¹ and ~89th in endowment per undergraduate student.² More than half of the endowment is committed to the professional schools. Despite its relatively small faculty size and endowment payout as a fraction of budget, Johns Hopkins covers the full complement of sciences, social sciences, arts and humanities with 31 academic departments in arts and sciences and engineering.

In the Homewood schools, five of the 24 graduate programs are rated in the top 10 in their fields; other analyses that take into account the size of the university faculty consistently show higher rankings. For example, a 2007 paper in *Proceedings of the National Academy of Sciences* rates Johns Hopkins second behind Harvard in research productivity in non-biomedical sciences and engineering.³ The Homewood undergraduate program (comprising the Krieger School of Arts and Sciences and the Whiting School of Engineering) is currently ranked 15th by *U.S. News and World Report*.⁴ Just above and below it are Northwestern, Washington University, Cornell, Brown and Rice. This ranking is higher than one would predict given Homewood's size and endowment.⁵

The School of Medicine (SoM), Bloomberg School of Public Health (BSPH) and School of Nursing (SoN), located together in East Baltimore, comprise the second largest medical campus in the United States, after Harvard. This campus is also home to The Johns Hopkins Hospital, the best-rated hospital in the country. The SoM and BSPH have different business models than the other schools; they depend on external funding for roughly 85% of their annual expenditures. In the SoM, sponsored research and clinical revenues, in equal proportion, are the major sources. In the BSPH, sponsored research is the only major external source. The three health schools currently rank second, first, and fourth, respectively, among their peers according to *U.S. News & World Report*, making Johns Hopkins the only U.S. University with all three schools ranked among the top five.⁶

The Peabody Institute was founded in 1857 and is the oldest music conservatory in the United States. It comprises the Peabody Conservatory, which has 650 undergraduate and graduate students, and the Peabody Preparatory, which has nearly 2000 youth and adult students in music and dance. The conservatory is one of the highly regarded music schools in the world, with alumni performing as soloists, as members of leading orchestras and chamber ensembles and singing with renowned opera houses across the globe.

¹ 2009. College and University Endowments, 2008-2007. The Chronicle of Higher Education. <<http://chronicle.com/premium/stats/endowments/results.php?offset=15&year=2009&sort=market&state=>>>.

² FY 2007 Higher Education Survey: Council for Aid to Education, Voluntary Support of Education Data Miner.

³ Kinney, A.L. 2007. *National scientific facilities and their science impact on nonbiomedical research*. *Proceedings of the National Academy of Sciences*: 104, 46: 17943-17947.

⁴ *America's Best Colleges*. 2009 edition. Washington, DC: U.S. News & World Report, 88-93.

⁵ Livingston, R., Davidson, D. 2008. *Securing the Resources to Secure Our Academic Mission*, Stanford University.

⁶ *America's Best Graduate Schools*. 2008 edition. Washington, DC: U.S. News & World Report, 39-43.

The Paul H. Nitze School of Advanced International Studies, or SAIS, is located in Washington, D.C., with additional campuses in Bologna and Nanjing. The Nanjing program is a joint undertaking of Johns Hopkins University with Nanjing University. SAIS is renowned for its master's degree in international studies and competes with similar professional degrees such as those offered at the Harvard Kennedy School and Princeton's Woodrow Wilson School.

The School of Professional Studies in Business and Education recently split into the Carey Business School and the School of Education, expanding their reach beyond part-time professional education, their original focus.

In sum, the university is poised to build on its distinguished tradition and to extend its reach still further. The knowledge and skills represented here are more essential than ever. If we are to address global challenges — economic, environmental, political, social, and health — whose solutions depend on the discovery and application of new knowledge, we need a new generation of creative problem solvers capable of thinking across disciplines. We need also an infrastructure that supports the advancement of individual students and scholars, true to the vision of Daniel Coit Gilman, “who by their excellence will advance the sciences they pursue and the society where they dwell.”

Table 1. Overview of scope and diversity of Johns Hopkins University Divisions from 2007-08 data.

Unit	Internal Revenue ¹	Faculty ²	Staff	Under-grads	Grads ⁴	Endowment ⁵
Krieger School of Arts and Sciences	\$245.3 (69%)	356	492	3219	1034 (1809)	\$415
Whiting School of Engineering	\$137.2 (63%)	152	198	1372	632 (2069)	\$94
School of Education	\$32 (57%)	68	114	422	(3851)	\$6.4
Carey Business School	\$30.1 (98%)	19	63			\$3.3
Nitze School of Advanced International Studies	\$30.3 (85%)	80	135		907	\$132
Peabody Conservatory	\$28.6 (86%)	108	94	320	366	\$88
School of Medicine	\$1,581.9 (12%)	2168	5287		1303	\$1,135
School of Nursing	\$29.7 (73%)	65	102	373	280	\$45
Bloomberg School of Public Health	\$370.3 (17%)	495	1216		2024	\$331
Applied Physics Laboratory	\$835.4					\$74
Sheridan Libraries	\$5.7 (60%)					\$236
Other ³	\$211.6	43				\$230
Total	\$3,539 (8%)	3554	9801	5772	6546 (7729)	\$2,560

¹ Revenue in millions from endowment, state aid, gifts, investments or tuition; percent of total revenues in parentheses

² Tenure-track professorial faculty plus other titles

³ University (non-divisional), Homewood student services and academic centers

⁴ Full-time graduate students; part-time graduate students in parentheses

⁵ Endowment in millions.

CHALLENGES AND RECOMMENDATIONS

To remain a leading research university, Johns Hopkins must recruit and retain talented and entrepreneurial people and remain focused on improving diversity. The university must also develop the ways and means to invest in crosscutting, cross-disciplinary initiatives that marshal the university's academic resources to address contemporary challenges. This is true even in these uncertain times when grave economic realities may threaten the timetables that have been established for realizing some of our goals. What we must not do is to compromise the level of our ambitions. In fact, it may be at just such moments that great universities are able to strengthen themselves still further and even contribute to solving some of the problems that are threatening the stability of many other institutions and the fabric of our economy.

Faculty members are attracted to Johns Hopkins by its academic culture. But salary and other academic support also play an important role. Faculty and senior staff salaries in parts of the university have not kept up with those at peer institutions, potentially eroding our ability to recruit and retain the very best.

Johns Hopkins faculty members seek to work with the best students and students with the best faculty. To attract them, we need to provide an intellectual environment that is second to none; we need need-blind undergraduate financial aid and graduate stipends that are competitive with our peer institutions.

Faculty members are more burdened with research and educational administration than in the past. Current staffing provides insufficient administrative support in parts of the university. Where this is true, there is the potential to improve productivity with a new model for staff support.

Enhance Support for Faculty. *The biggest challenges are salaries, research support and family-friendly policies.* The university faces competition from better-endowed institutions at precisely the moment that stagnation in federal funding has affected both faculty research and university overhead. For example, there is a need for increased startup funding for new faculty, and increased "bridge funding" to carry established faculty through short periods between grants. Also, some of our competitors are viewed as more responsive to the family needs of faculty, offering childcare and flexible time to care for parents and other family members. Salaries, research support and family-friendly policies represent three grand challenges to our research pre-eminence and to our ability to recruit and retain outstanding faculty in the future.

Recommendation 1: Implement a five-year funding plan to improve significantly Johns Hopkins' competitive position in recruiting and retaining outstanding research, teaching, and clinical faculty by increasing salary levels to at least the 50th percentile of outstanding faculty and staff at peer institutions.

Deans and department chairs need the resources and flexibility to make strategic "rising star" hires that lend the university stature in their own right, and act as catalysts for forming first-rate departments and divisions. We need to approach faculty recruitment and retention in a systematic, focused and personal manner.

Recommendation 2: Develop additional resources that will allow the university to offer significant startup packages when recruiting new faculty, provide "bridge funding" for established faculty, and assist existing faculty to "retool" in new intellectual areas that have the potential to garner extramural support.

Recommendation 3: Working with the deans, the administration needs to develop a plan for facilitating spousal hires both within the university and throughout the community. The university should study the feasibility of providing more on-site childcare. The university should provide flexible time off for faculty to attend to significant family matters such as caring for an elderly parent or dealing with sickness or death in a family.

Attract Students. The single most urgent student challenge is financial aid. Indeed, in many ways, this is the most pressing of all the current threats to The Johns Hopkins University. In the past few years, our leading competitors have instituted new programs that create substantial differences between what they offer their students — undergraduate, graduate and professional — and what we offer our students.

In comparison to our peers, Johns Hopkins offers financial support to fewer students, provides less grant funding, and asks families to pay more (either outright or through loans). Tuition has been eliminated for low-income students at a number of peer institutions, and even at some competing medical schools, tuition is now waived for all students, regardless of need.

At the graduate level, in the humanities and social sciences, the gap is large. For example, our yearly graduate stipends in these fields average \$17,000, compared to \$25,000 at Yale. We are beginning to lose the first-rate students who play a crucial role in the university's research and make it an attractive place for faculty to work, thus threatening the stature of the university itself. The graduate students are also a crucial part of the undergraduate research experience (70% of our undergraduate students participate in research).

In the long run, we believe this is a significant challenge to the university and puts Johns Hopkins in danger of diminishing its ability to attract the very best student talent who will become the prominent alumni upon whom the university depends on for its reputation and support.

Recommendation 4: Within five years, increase the graduate and professional student stipends across the university to be competitive (within 10%) with our peer institutions.

Recommendation 5: Over the next decade, ensure that Johns Hopkins is need-blind in its undergraduate admissions decisions, can meet the full financial need of any admitted student, and offers competitive financial aid packages by capping loans for low income students and reducing family contribution for moderate income families.

Recommendation 6: Through various infrastructure investments, the university should enhance its efforts to build community among all undergraduate students, including Peabody and Nursing, and all graduate and professional students. Residential facilities, community gathering places, social networking, creative programming, and advising support are important for different student constituencies, but all desire a stronger connection to one another and to the university.

Develop Staff. The mission of Johns Hopkins relies critically on a medical, technical and administrative staff that is highly qualified, productive, and efficient, that is recruited where appropriate on a national level, and that receives respect and competitive compensation. The recent report of the Commission on Civility, Equity and Respect highlighted the need to provide leadership education for our faculty and staff with regard to interacting on a common platform of civility and respect.

Recommendation 7: Commit to a goal of developing the workforce of the future by attracting and retaining a staff capable of supporting the university's mission at the highest level. Provide faculty better preparation for managing staff and ensure that staff has the appropriate assistance in developing the competencies necessary to move the university forward.

Strengthen Community Partnerships. The university is engaged in significant community outreach, academic research, health care delivery, education programs, volunteer service, and collaboration with neighborhood organizations. But too often these initiatives proceed in isolation. It will be important to track these activities and make this information more widely available within the university and the wider community. Better communication, more coordination, and innovative, collaborative programs could leverage our considerable efforts, which have advanced measurably through our government and community relations office, and make

an even greater positive impact on our community. There is potential for mutual gain through more systematic and intentional partnerships with the community.

Recommendation 8: Create a university-level Office of Community Partnerships that will facilitate the coordination of student outreach efforts, leverage their impact, encourage new models of engagement, and raise the visibility of Johns Hopkins' deep involvement in the community.

Leverage Strengths across Divisions. The university is envisioned to be a place in which faculty in a discipline share their strengths across divisions to more rapidly advance their field, to attract and support top faculty and graduate students, and to raise the visibility and external support for their research areas. There are major opportunities for the discovery and application of new knowledge, and new academic programs that cut across our traditional divisions. Examples include brain and behavioral science, stem cell and regenerative biology, information science and technology, energy and environmental science, population science, space science, social policy, the performing and visual arts, and others. Our decentralized organization, cultural differences, and varying degrees of resources and priorities must not unduly constrain collaborations in such areas.

Recommendation 9: The provost and deans should reduce barriers and create incentives to adapt a collaborative model in those disciplines where the faculty members see an opportunity to leverage strength across divisions. The vice provost and vice deans for graduate programs should work with deans and faculty to advance the quality and competitiveness of Johns Hopkins PhD programs.

Recommendation 10: Opportunities to integrate coursework, research experiences, and the applications of knowledge strengthens our undergraduate academic programs and distinguishes Johns Hopkins. The provost and deans should reduce barriers and create incentives for enhanced collaboration in undergraduate education that would further strengthen the university and its competitiveness in attracting top students.

Another challenge is to stimulate cross-disciplinary problem solving that addresses important societal problems, leads to academic innovation, attracts talented faculty and students, and elevates Johns Hopkins.

Recommendation 11: Establish the "Johns Hopkins Repertory Scholars" to address, for a limited time period, a targeted issue of importance to society and academia and to stimulate connections and collaborations among faculty, students and staff across the university. As with a repertory theater, the university will create a temporary space in which collaborations can move a chosen field forward and strengthen the scholarship of the university.

Selectively Invest in Crosscutting Academic Initiatives. The university does not now collectively act to invest any appreciable part of its \$3.5 billion annual expenditures into strategic, crosscutting academic initiatives. It spent \$108 million or 3.5%, on central administration in 2008. It invests for the longer-term in buildings, information technologies, fundraising infrastructure, and other functions that support its core business. But it does not now collectively invest in the longer-term development of its core academic mission of education, research, or professional practice. Such investments are left to individual faculty, departments, centers and academic divisions. To remain a leader, Johns Hopkins should *collectively invest* in its core enterprises of education, research, practice, and scholarship.

As a fraction of annual expenditures, **and as compared with peer universities**, Johns Hopkins has relatively little flexible funding from endowment, gifts, state aid or tuition with which to invest in academic initiatives. The most important challenge in the coming decades is to reduce this differential to the greatest extent possible.

Recommendation 12: The university leadership, relying on the Framework for the Future working group report, and external input from experts, should selectively identify a few crosscutting, longer-term academic initiatives that can significantly advance society and transform Johns Hopkins, attracting world-class faculty members and students. The university should annually invest a small fraction of its operating funds in such academic initiatives and make them a focus of the next development campaign.

A grand challenge is to continually identify the best new academic opportunities for investment.

Recommendation 13: The university should create an Academic Initiatives Review Group (AIRG) of faculty and senior administrators to identify and foster interdivisional academic initiatives. The AIRG should operate an academic venture capital fund, evaluating potential initiatives based upon their likely return on investment to society and the university.

The development and operation of crosscutting initiatives, proposed here, will require significant new or reprogrammed funding. The potential sources for these funds include combinations of new philanthropy, return on investment from prior initiatives, tax on increases in annual gifts, savings from administrative efficiencies, increased revenues or reduced costs of existing academic programs, growth in net revenues from existing or novel professional services, and public or private sector investments or partnerships.

Build “Collaborative Decentralization.” Crosscutting research and educational programs, initiated by faculty members in collaboration with deans and other university leaders, will be an increasingly important means by which Johns Hopkins distinguishes itself in the coming decades. To enhance the environment for crosscutting programs, a grand challenge is for the university to shift over time from a totally decentralized organization, described by “each tub on its own bottom,” toward “collaborative decentralization” in which divisions, while still expected to pursue their unique opportunities within their own ways and means, also take joint responsibility for Johns Hopkins’ collective contributions to society. In such an environment, crosscutting initiatives will be more likely to arise and thrive.

Recommendation 14: The new president should expand the role played by the provost, the deans/directors and the faculty in the strategic leadership of the university. Deans and directors should be charged with leading their divisions and also with contributing to the success of the university as a whole. Search committees should seek, and the president should appoint, deans and directors with demonstrated skills and commitment along both dimensions.

Strengthen the Environment for Success. A grand challenge is to make Johns Hopkins the best environment for research and education, consistently across all of its divisions, in order to attract talented faculty and graduate, professional and undergraduate students. Here “best” means addressing important problems, commitment to integrity and collegiality, intellectual stimulation, maximizing faculty and student time dedicated to their scholarly activities and administrative efficiency. The working groups have addressed aspects of this challenge that are common to many divisions, fully recognizing that there will also be effective school-based approaches and solutions.

Recommendation 15: The vice provost and vice deans for research should work with deans, faculty and staff to make this university the best possible environment for research and scholarship. If necessary and cost-effective, the university should invest in additional research support infrastructure to maximize the time faculty and their students spend being productive.

Recommendation 16: To assure quality and efficiency, administrative and academic departments should be systematically reviewed and held to equivalently high standards.

Each academic division should build a faculty culture of shared responsibility for longer-term academic quality and economic well-being. In such a culture, resources need to be continually reinvested in the future. Faculty who become less than fully productive for an extended period should be sensitive to this need and draw core resources commensurate with their current contributions.

Recommendation 17: A committee of faculty should review best practices for assuring longer-term academic quality and economic well-being at peer institutions and recommend how to further the culture of shared responsibility at Johns Hopkins.

Build Optimism. Johns Hopkins comprises a particularly talented group of deans and directors, faculty, students and staff. It is daily advancing the quality of global society. A grand challenge is to reach its full potential by building optimism and excitement that comes from focusing on the core enterprise of education, inextricably linked to research and professional practice and by fostering a culture of shared responsibility for the longer-term academic and economic well-being of the university.

Recommendation 18: The new president and senior leadership of the university should share, within and beyond the university, Johns Hopkins' commitment and contributions to the quality of global society. They can creatively involve faculty and students with the public and the board of trustees to expand their knowledge about the core enterprise of education, inextricably linked to research.

Taken together, these key recommendations, if implemented, will strengthen The Johns Hopkins University's capacity to advance solutions to society's greatest intellectual and scientific challenges.

APPENDICES

A1: ABOUT THE FRAMEWORK PROCESS

In May of 2008, the process of developing a Framework for the Future (Framework) was established at the request of the President and under the guidance of the Provost to provide an analysis and set of recommendations on the future academic activities of The Johns Hopkins University. The ultimate objective of this process is to strengthen the university as a global leader in higher education.

The goals of the Framework include:

1. Taking stock of the current state of the university.
2. Identifying opportunities and the ways and means to expand interdisciplinary and interdivisional collaboration.
3. Laying the groundwork for strategic thinking as President Ronald Daniels begins his new administration.

The process began by the Provost appointing a Steering Committee, comprised of the divisional deans and directors, the Vice Presidents and the President, and chaired by the Provost. After consultation with the Provost Steering Committee, three strategic planning working groups were established focused on the ways and means by which people carry out discovery.

Each strategic planning working group was comprised of ~20 faculty, students and staff, led by a faculty chair and co-chairs appointed by the provost upon consultation with the Council of Deans and various academic councils, and faculty and staff nominations, and facilitated by two Vice Provosts.

The **People Working Group** examined how the university educates students at all levels, proposed ways to better support faculty and staff in their desire to attain the highest levels of excellence and suggested strategies to recruit and retain the outstanding students, researchers, faculty and staff who will define JHU over the next several decades.

David Bell, the Andrew W. Mellon Professor in the Humanities and dean of faculty in the Krieger School, chaired this group with co-chairs Janice Clements, the Mary Wallace Stanton Professor of Faculty Affairs and professor and director of the Department of Comparative Medicine in the School of Medicine, and Ralph Etienne-Cummings, professor of electrical and computer engineering in the Whiting School. Jonathan Bagger, vice provost for graduate and postdoctoral programs and Krieger-Eisenhower Professor in the Krieger School's Department of Physics and Astronomy, and Paula Burger, dean of undergraduate education, facilitated.

The **Discovery Working Group** was chaired by Marilyn Albert, professor of neurology in the School of Medicine, and co-chaired by Adam Riess, professor of physics and astronomy in the Krieger School; Stephen Teret, professor of health policy and management in the Bloomberg School; and Barry Aprison, associate professor in the Department of Interdisciplinary Studies in the School of Education. Dr. Michela Gallagher, vice provost for academic affairs and Krieger-Eisenhower Professor in the Krieger School's Department of Psychological and Brain Sciences, and Pamela Cranston, vice provost for international programs were the Discovery WG facilitators.

The Discovery Working Group aimed to identify five or six crosscutting initiatives in research, scholarship and education that offer strategic opportunities for the university as a whole to move forward among its peers and to help translate the university's discoveries and application of knowledge for the benefit of the local community and global society. Guided by the Provost's Office, it sought to emphasize interdisciplinary initiatives through its Framework for the Future grants (A2, Discovery Request for Proposals).

The **Ways and Means Working Group**'s objective was to develop planning and financing mechanisms to invest in intellectual, administrative and physical environments in order to foster creative scholarship and learning. J. Brooks Jackson, Baxley Professor and director of the Department of Pathology in the School of Medicine, chaired the group. Jane Guyer, professor and acting chair of Anthropology in the Krieger School, and Gerald Masson, professor of computer science in the Whiting School, served as co-chairs. Scott Zeger, vice provost for research and the Frank Hurley and Catharine Dorrier Professor of Biostatistics, and Stephanie Reel, vice provost for information technology and chief information officer, facilitated.

Roughly 80 faculty, student and administrative leaders served on the three working groups and steering committee. Their charge also called for soliciting ideas and proposals from across the university. Subgroups were organized to engage other faculty, staff and students to address specific issues that arise.

The initial reports from the working groups were submitted in September. The chairs and co-chairs of the working groups, along with the provost and vice provosts, developed these submissions into complete reports that were then circulated to the Provost Steering Committee in October for comment and feedback. Based on this feedback, and the further consultation with the Working Groups, final reports from each working group were submitted to the Provost by the end of November. A draft of the final framework plan was finished at the end of December, and was circulated widely early in 2009.

A2: THE DISCOVERY REQUEST FOR PROPOSALS (RFP) PROCESS

The Framework for the Future strategic planning process included a request for proposals from faculty initiatives in research, scholarship, creativity, teaching and practice that cut across disciplines and divisions of the university. There were a number of reasons for this approach: (1) it is clear that most of the divisions in the university are outstanding, but the next phase of institutional development will greatly benefit from improved integration and ability to collaborate across the university, (2) many of the most pressing problems that the world faces today require integration and interaction across multiple disciplines, and (3) unprecedented opportunities exist to leverage strengths across divisions and promote university-wide efforts in discovery and the application of new knowledge. At the same time, the goal of the Framework for the Future grants was not to identify an exhaustive list of programs that could benefit from institutional support, but rather, to pick the best proposals from among those submitted by faculty with a committed interest and capacity to make major breakthroughs at the boundaries and frontiers of disciplinary knowledge. Proposals received in response to the announcement below were prioritized on the basis of their innovation to deepen the university's selective excellence and further differentiate Johns Hopkins from its peers.

The Provost's Office will provide start-up funding in the form of planning/seed grants of up to \$200,000 per year for three years to ignite new areas and strengthen existing ones where cross-disciplinary interactions make a major difference.

Proposals describing innovative research, teaching, practice, scholarship and creative programs, not to exceed five pages (excluding appendix materials) as outlined below, were due by July 1 to the Discovery Group (via Vice Provost Michela Gallagher) in the format as follows:

The Opportunity: Describe the opportunity addressed by the proposal and how the area will be key to important discoveries in the next decades. (Suggested: one page)

Existing Resources: Identify the schools, units and key faculty that will serve as a foundation for the initiative. Describe other existing resources across the university (technology, educational or research programs, centers and institutes) that gives strength to the proposal. Identify any additional entities — regionally, nationally or internationally — that can offer unique partnerships in the proposed initiative. Identify leaders among JHU faculty who will anchor and integrate activities into a university-wide initiative. (Suggested: two pages)

Goals: What resources are needed to advance research, scholarship, education and practice in the area of opportunity, *e.g.* key bridging faculty, infrastructure/technology, crosscutting centers of excellence, curriculum and educational programs? What is needed to establish greater connectedness among the components that constitute the initiative across the university? What specific milestones are identified in the initiative to realize the potential for discovery and its translation to benefit society? What are the prospects and opportunities for long-term funding? (Suggested: two pages)

Appendix A: A three-year budget

Appendix B: Bios of initiative leaders (two pages per person)

A3: CHARGES TO WORKING GROUPS

DISCOVERY WORKING GROUP

Mission

To identify crosscutting initiatives in research, scholarship, and education that offer the greatest strategic opportunities for The Johns Hopkins University, including initiatives for translation of discovery and application of new knowledge to benefit our local community and global society.

Charge

The committee will identify five to six initiatives to capitalize on our strengths to inform and inspire the next Johns Hopkins campaign. In meeting this charge the committee will:

Specific Charges

1. Identify existing areas of excellence across the university that can lead to the most creative and influential discoveries on the frontiers of knowledge.
2. Identify crosscutting areas of existing strength with the capacity for achieving excellence by addition of strategic resources, such as bridging faculty or key technology.
3. Identify the areas for translation of discovery, application of knowledge, and turning design into practice where the university is best positioned to have high impact to benefit society.
4. Identify the full network of university-wide resources, including units, faculty, centers, and educational programs that place a proposed initiative on the forefront of discovery.
5. Identify the critical partners, locally, regionally, and internationally, that create synergy for a proposed initiative by adding resources for the purpose of discovery or pathways for translation, application, or dissemination of new knowledge.
6. Identify the resources that are most needed to take each proposed initiative into the first-rank of innovative research, scholarship, and educational endeavors.

PEOPLE WORKING GROUP

Mission

To foster an environment that encourages creativity and productivity in research, scholarship, teaching and professional practice.

Charge

Examine how we educate students at all levels, both inside and outside the classroom. Propose ways to better support faculty and staff in their desire to attain the highest levels of excellence in research, scholarship, teaching and professional practice. Suggest strategies to recruit and retain the outstanding students, researchers, faculty, and staff who will define The Johns Hopkins University of the twenty first century.

Specific Charges

1. How can we compete for the best students? Examine the undergraduate and graduate student experience at Johns Hopkins, including quality of life issues such as housing and medical benefits. What progress has been made in implementing the CUE recommendations? What academic and other infrastructure would enable Johns Hopkins to better support its students across the institution?

2. Consider how Johns Hopkins can help students and their families finance their education. Benchmark against our peers, and make concrete proposals for undergraduate financial aid, graduate and postdoctoral fellowships, and financing mechanisms for professional students.
3. How can we compete for the very best faculty? Identify the most important issues for the recruitment, retention, and career development of faculty and professional staff. Benchmark findings against peer institutions, including compensation and demographic profiles. Suggest strategies for improving diversity and strengthening collaborative activities across the university. How can Johns Hopkins help faculty be maximally effective in achieving their goals?
4. How can the staff be best positioned to support the faculty in advancing the mission of the university? Assess the plans for talent development and for strengthening core competencies across the institution. Are Johns Hopkins' policies on staff recruitment, compensation, and job satisfaction competitive and aligned with the needs of the institution?

WAYS AND MEANS WORKING GROUP

Mission

To develop planning and financing mechanisms to invest in our intellectual, administrative and physical environments in order to foster creative scholarship and learning that expands Johns Hopkins' influence for the benefit of society.

Charge

Propose a process to plan and finance crosscutting initiatives by which the university can substantially improve education, discovery or practice by 2020 working at the seams between multiple disciplines and across university divisions. Determine what resources are needed and how they should be invested in the next several years to implement the proposed changes. Propose specific steps that can be taken in the shorter-term to get started.

Specific Charges

1. Propose a planning process and financing approach that will enable Johns Hopkins, a highly decentralized university, to identify and invest in a small number of crosscutting research, educational or professional practice initiatives that can substantially expand the positive influence of our ideas and intellectual products on academia and society. Look inside and outside the university for benchmarks of such processes. Focus on ways and means for opportunities that cut across disciplines and divisions and that leverage upon existing Johns Hopkins strengths.
2. Identify novel ways and means to foster creative faculty scholarship and education in an increasingly regulated academic environment. Simplify the administrative and compliance responsibilities of faculty researchers so they can focus on scholarship and education, ably supported by an efficient administration.
3. Review current long-term plans for university facilities and recommend revisions in light of new opportunities identified in this plan.
4. Determine how JHU compares to leading research universities with respect to the acquisition, use, and communication of information. Develop a strategy and draft plan to provide better informatics support of faculty and students. Find better ways for members of the Johns Hopkins community to communicate with one another and to influence our external constituencies.

A4: COMPOSITION OF WORKING GROUPS

DISCOVERY WORKING GROUP MEMBERS

Marilyn Albert, Chair

Professor
Neurology
Director
Division of Cognitive Neuroscience
School of Medicine

Barry Aprison, Co-chair

Associate Professor
Interdisciplinary Studies in Education
Director
Science, Technology, Engineering and
Mathematics (STEM) Education Initiatives
School of Education

Adam Riess, Co-chair

Professor
Physics and Astronomy
Krieger School of Arts and Sciences

Stephen Teret, Co-chair

Professor
Health Policy and Management
Director
Center for Law and the Public's Health
Bloomberg School of Public Health

Peter Agre

Professor and Chair
Molecular Microbiology and Immunology
Director
Malaria Research Institute
Bloomberg School of Public Health

Andrew Cherlin

Professor
Public Policy and Sociology
Director
Hopkins Population Center
Krieger School of Arts and Sciences

Jonah Erlebacher

Associate Professor
Materials Sciences and Engineering
Whiting School of Engineering

Bertrand Garcia-Moreno

Professor and Chair
Biophysics
Krieger School of Arts and Sciences

Steve Goodman

Professor
Oncology Biostatistics
School of Medicine

Miyong Kim

Professor
Community and Public Health Nursing
School of Nursing

Alain Labrique

Assistant Professor
International Health and Epidemiology
Joint Appointment Department of
International Health / Epidemiology
JHU Country Representative and Project
Scientist
Bloomberg School of Public Health

Elliot McVeigh

Professor
Chair and Director
Biomedical Engineering
School of Medicine / Whiting School of
Engineering

Michael Miller

Professor
Biomedical and Electrical and Computer
Engineering
Director
Center for Imaging Science
Whiting School of Engineering

Jeremy Nathans

Professor
Molecular Biology and Genetics
School of Medicine

Benjamin Pasternack

Piano Faculty
Peabody Conservatory

John Sommerer

Director of Science and Technology
Chief Technology Officer
Applied Physics Laboratory

John Toscano

Professor and Chair
Chemistry
Krieger School of Arts and Sciences

Connie Trimble

Associate Professor
Gynecology and Obstetrics
School of Medicine

David Valle

Professor and Director
Institute of Genetic Medicine
Director
Predoctoral Training Program in Human
Genetics
Director
Center for Inherited Disease Research
Pediatrics; Ophthalmology; Molecular Biology
and Genetics
School of Medicine

Ben Vinson

Professor
History
Director
Center for Africana Studies
Krieger School of Arts and Sciences

Patrick Walsh

Professor
Urology
School of Medicine

Beverly Wendland

Associate Professor
Biology
Krieger School of Arts and Sciences

Facilitators

Michela Gallagher

Vice Provost for Academic Affairs
Krieger-Eisenhower Professor
Psychological and Brain Sciences
Krieger School of Arts and Sciences

Pamela Cranston

Vice Provost for international Programs
Vice Dean for Operations
Carey Business School

PEOPLE WORKING GROUP MEMBERS

David Bell, Chair

Dean of the Faculty
Professor
History
Krieger School of Arts and Sciences

Janice Clements, Co-chair

Vice Dean of Faculty
Professor
Comparative Medicine
School of Medicine

Ralph Etienne-Cummings, Co-chair

Associate Professor
Electrical and Computer Engineering
Whiting School of Engineering

Vincent Amoroso

Director
Student Financial Services
Homewood Student Affairs

Anila Asghar

Assistant Professor
Teacher Preparation
School of Education

Greg Ball

Dean of Research and Graduate Studies
Professor
Psychology
Krieger School of Arts and Sciences

Jef Boeke

Professor
Molecular Biology and Genetics
School of Medicine

Laura Brooks

Manager
Human Resources
Peabody

Roger Brunyate

Chair
Opera Programs
Peabody Conservatory

Jacquelyn Campbell

Professor and Anna D. Wolf Chair
Community Public Health
School of Nursing

Julie Freischlag

Professor and Chair
Surgery
School of Medicine

John Harrington

Associate Dean for Academic Affairs
Professorial Lecturer
International Economics Program
Nitze School of Advanced International
Studies

Todd Hufnagel

Professor
Materials Science and Engineering
Whiting School of Engineering

Rafael Irizarry

Professor
Biostatistics
Bloomberg School of Public Health

Carlita Kearney

Conference Manager
Continuing Medical Education
School of Medicine

Janette Lebron

Graduate Student Association Representative
Physiology
School of Medicine

Gwen Martins

Manager
Human Resources
Sheridan Libraries

Ruth Nimmo

Assistant Director
Operations
Applied Physics Laboratory

Debbie Sampson

Senior Director
Talent Management and Organizational
Development

Bob Siliciano

Professor
Medicine; Molecular Biology and Genetics;
Howard Hughes Medical Institute
School of Medicine

Duncan Sinclair

Professor
Mathematics
Endowment Chair, Graduate Research
Organization
Krieger School of Arts and Sciences

Sarah Steinberg

Senior Associate Dean for Graduate Programs
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Krieger School of Arts and Sciences

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Carey Business School

Mark Zamorski

Undergraduate Student
Krieger School of Arts and Sciences

Facilitators

Jonathan Bagger

Vice Provost for Graduate and Postdoctoral
Programs and Special Projects
Krieger-Eisenhower Professor
Physics
Krieger School of Arts and Sciences

Paula Burger

Dean of Undergraduate Education and
Vice Provost

WAYS AND MEANS WORKING GROUP MEMBERS

J. Brooks Jackson, Chair

Professor and Director
Pathology
School of Medicine

Jane Guyer, Co-chair

Professor
Anthropology
Krieger School of Arts and Sciences

Gerald Masson, Co-chair

Professor
Computer Science
Whiting School of Engineering

Ira Blatstein

Director of Strategic Planning
Applied Physics Laboratory

Chi V. Dang

Professor
Medicine
Vice Dean for Research
School of Medicine

Ruth Faden

Wagley Professor of Biomedical Ethics
Executive Director
Berman Institute of Bioethics

Fannie Gaston Johansson

Professor and Chair
Department Acute and Chronic Care
School of Nursing

Morton Goldberg

Professor
Department of Ophthalmology
School of Medicine

Julian Gray

Guitar Faculty
Peabody Conservatory

Richard Grossi

Chief Financial Officer
Johns Hopkins Medicine

Kevin Hemker

Professor and Chair
Mechanical Engineering
Whiting School of Engineering

Douglas Hough

Associate Professor and Chair
Business of Health
Carey Business School

Fred Puddester

Senior Associate Dean of Finance and
Administration
Krieger School of Arts and Sciences

Fritz Schroeder

Senior Associate Vice President for
Development and Alumni Relations
University Administration

Alfred Sommer

Professor
Department of Epidemiology
Dean Emeritus
Bloomberg School of Public Health

J. Michael Strine

Vice President for Finance
University Administration

Winston Tabb

Sheridan Dean
University Libraries and Museums

Facilitators

Scott L. Zeger

Vice Provost for Research
Professor of Biostatistics
Bloomberg School of Public Health

Stephanie Reel

Vice Provost for Information Technology and
Chief Information Officer

A5: DISCOVERY WORKING GROUP REPORT

One aspect of the Framework for the Future planning process for The Johns Hopkins University has been to identify ways in which the various divisions of the university could operate in a more integrated fashion. The Discovery Working Group (WG), guided by the Provost's Office, therefore sought to emphasize interdisciplinary initiatives, through its Framework for the Future grants. There were a number of reasons for this approach: (1) it is clear that most of the divisions in the university are outstanding, but that there is a consensus that the next phase of institutional development will greatly benefit from improved integration across the university, (2) many of the most pressing problems that the world faces today require integration and interaction across multiple disciplines, and (3) unprecedented opportunities exist to leverage strengths across divisions and promote university-wide efforts in discovery and the application of new knowledge. At the same time, the goal of the Framework for the Future grants was not to identify an exhaustive list of programs that could benefit from institutional support, but rather, to pick the best proposals from among those submitted by faculty with a committed interest and capacity to make major breakthroughs at the boundaries and frontiers of disciplinary knowledge. Proposals were prioritized on the basis of their innovation to deepen the university's selective excellence and further differentiate Johns Hopkins from its peers.

It is important to acknowledge that programmatic initiatives in research and education that involve two or more units already exist at Johns Hopkins, illustrated by examples such as the Department of Biomedical Engineering, Graduate Training Program in Clinical Investigations, Berman Institute for Bioethics, the Hopkins Population Center, and the Brain Science Institute. These examples encompass a number of different models for how such programs emerge and are sustained in the decentralized environment of the university. For example, the deans working effectively together have established outstanding interdisciplinary academic and research programs, *e.g.* Biomedical Engineering. Likewise, faculty groups representing different schools have played a key role in bringing recommendations to the administration that resulted in the formation of a broad interdisciplinary effort, as was the case in the formation of the Brain Science Institute.

As a complement to these routes for achieving strength and excellence, the Discovery WG sought to identify crosscutting initiatives in research, scholarship, and education that offer strategic opportunities for the university as a whole to move forward among its peers and better translate its discovery and application of knowledge for the benefit of both the local community and global society. These Framework for the Future grants engaged the faculty university-wide through participation in the Discovery WG itself (24 members) and the submission of proposals (74 proposals received and reviewed), as described further below.

The Discovery WG comprised 24 members of the faculty and administration, chaired by Marilyn Albert, professor of neurology in the School of Medicine, and co-chaired by Adam Riess, professor of physics and astronomy in the Krieger School; Stephen Teret, professor of health policy and management in the Bloomberg School; and Barry Aprison, associate professor in the Department of Interdisciplinary Studies in the School of Education. The Discovery WG reviewed 74 applications from the faculty in response to a request for proposals (RFP). The original RFP, the Guidelines for Review, and the Reviewer Rating Sheet are provided in the appendix of the Discovery WG report. The proposals involved all schools and divisions of the university and were used to organize topics for WG meetings at which the applications were reviewed, along with discussion of existing strengths and opportunities as seen by members of the WG.

Members of the Discovery WG strongly agreed with the premise of its charge that bold steps should be taken to raise the visibility of our institution and to achieve greater synergy through collaborations. The Discovery WG was impressed by the size, breadth and quality of the response to the RFP, confirming the creativity and initiative of our faculty. The proposals identified many compelling opportunities for crosscutting collaborations and the eagerness of faculty to more rapidly advance their fields.

Many members of the Discovery WG represented existing models for cross divisional activities, such as the academic program in Biomedical Engineering (member, E. McVeigh), the Population Center as a resource for researchers in multiple divisions (member, A. Cherlin), and the Brain Science Institute (chair, M. Albert and

member, J. Nathans), to name a few. As such, the committee had direct experience with the challenges and opportunities for building on existing strengths to gain greater excellence and visibility.

RFP REVIEW AND SELECTION

The 74 proposals submitted in response to the RFP were classified into five topical groupings, reflecting the interests of the proposing faculty: 1) Global challenges and the environment, 2) Health and disease, 3) Health care delivery, 4) Data intensive computing and informatics, and 5) Innovation in educational curriculum and instruction.

In the selection of candidate proposals for funding, the Discovery WG gave priority to:

1. Existing areas of excellence across the university that can lead to the most creative and influential discoveries.
2. Crosscutting areas of existing strength with the capacity for achieving excellence by addition of strategic resources.
3. Areas for translation of discovery, application of knowledge, and turning design into practice where the university is best positioned to have high impact to benefit society.

Fifteen to 25 proposals were reviewed by the Discovery working group at each of its meetings during July and August 2008. A set of 26 proposals was identified as most outstanding. A meeting in September was dedicated to review of this portfolio in its entirety. Final funding decisions were made in consultation with the Provost Steering Committee, including feedback on specific proposals provided by the deans. Six proposals were funded for three years (up to \$200,000 per year). An additional five proposals received a one-year grant of support at \$50,000. These proposals, including participating schools/divisions and key faculty are as follows:

FUNDED DISCOVERY PROPOSALS — THREE-YEAR GRANTS

Johns Hopkins University Global Water Program *BSPH, WSE, SAIS, APL*

BSPH (Kellogg J. Schwab; Maria Elena Figueroa), WSE (William P. Ball; Seth Guikema), SAIS (Scott Barrett), APL (Charles Young)

Johns Hopkins Bioenergy Initiative *KSAS, SoM, WSE*

KSAS (Doug Barrick; L. Mario Amzel; Evangelos Moudrianakis), SoM (Jan H. Hoh), WSE (Pablo Iglesias)

Johns Hopkins Space Science Institute and Astrobiology *KSAS, APL, WSE, STSci*

KSAS (H. Warren Moos; Tim Heckman; Chuck Bennett; Darrell Strobel; Richard Henry), APL (Andy Cheng; Hal Weaver), WSE (Andreas Andreou; James Spicer), STSci (Matt Mountain)

Johns Hopkins Individualized Medicine Program (JHIMP) *SoM, BIB, KSAS, BSPH, APL*

SoM (David Valle; Carol Greider; Ralph Hruban; Charles Flexner; Stephen Baylin; Garry Cutting; Chi Dang; Aravinda Chakravarti; Andrew Feinberg; Jef Boeke), Berman Institute of Bioethics (Kathy Hudson), KSAS (Karen Beemon), BSPH (M. Danielle Fallin; Rafael Irizarry), APL (Andrew Feldman)

Data Intensive Scalable Computing at JHU *KSAS, WSE, Libraries, SoM, BSPH*

KSAS (Alexander Szalay; Mark Robbins; Stephen Nichols; Randal Burns), WSE (Charles Meneveau), Sheridan Libraries (Sayeed Choudhury), SoM (John Wong), IT@JH (Stephanie Reel)

Nucleating a Discipline: Creating Leadership in Bioinformatics and Computational Biology *SoM, BSPH*

SoM (Sarah Wheelan), BSPH (Rafael Irizarry; Jonathan Pevsner; Luigi Marchionni)

FUNDED DISCOVERY PROPOSALS — ONE-YEAR GRANTS

Hopkins All University Africana Studies Initiative *KSAS, CBS, SoE, BSPH*

KSAS (Ben Vinson III; Michael Hanchard), CBS (James Calvin; Isaac Megbolugbe), SoE (Alan Green), BSPH (Robert W. Blum; C. Michael Gibbons)

Initiative in Computational Learning *KSAS, APL, SoM, BSPH, Sheridan Libraries, WSE, HLTCOE*

KSAS (Jason M. Eisner; Alexander Szalay), APL (Christine Piatko), SoM (Michael Ochs), BSPH (Fernando Pineda), Sheridan Libraries (Sayeed Choudhury), WSE (Sanjeev Khudanpur; James Spall), Human Language Technology Center of Excellence (Gary Strong)

Discover East Asia at Johns Hopkins University *KSAS, SAIS, Nanjing Center, WSE, BSPH*

KSAS (Kellee S. Tsai), SAIS (David M. Lampton), SAIS Nanjing Center (Jan Kiely), WSE (Benjamin Schafer), BSPH (Ying Zhang)

Addressing the “Gathering Storm” in STEM Education *WSE, SoE*

WSE (Michael Karweit; Marc Donohue), SoE (Robert Slavin)

Neuro-Education Initiative: Supporting Translational Research in the Brain Sciences to Transform Teaching and Learning *SoE, BSPH, SoM, KSAS, SoE, SoN, Peab*

SoE (Mariale Hardiman; Barry Aprison; Susan Magsamen), BSPH (Guy McKhann), SoM (Rick Haganir; Martha Denckla; Steven Hsiao) KSAS (Barbara Landau; Banchi Dessalegn), SoE (Mary Ellen Lewis)

SUMMARY OF FINDINGS

Here the report describes specific areas of opportunity that emerged from the work of the discovery WG.

Sustainable Environment and Global Health

The Johns Hopkins University has the capacity to achieve a unique position in Global Health, building on its excellence in public health, medicine and nursing and expanding in the area of environmental science and sustainability. Climate change and sustainability is a particularly pressing concern for global society today and a priority for the university as indicated by President William Brody’s appointment in 2007 of a climate change task force. The work of the task force has called for JHU to dedicate its strengths in science, technology, public health and public policy to address climate change and its health impacts on a global level. A number of the schools have responded with new initiatives. The university has three departments across three schools dedicated to this topic: Earth and Planetary Sciences in KSAS, the Department of Geography and Environmental Engineering in WSE and Environmental Health Sciences in BSPH. In addition, the Center for Global Health was established in 2007 by the three East Baltimore schools. The Center for a Livable Future has worked for more than a decade to promote policies that protect health, the global environment and the ability to sustain life for future generations. Given the resources of relevant faculty across schools and divisions, there is potential to distinguish Johns Hopkins by further coordinating research, education and development.

The goal of sustainability is advanced by discovery in climate science, innovation in energy, and the management of water resources. The Discovery WG found merits in all proposals submitted in this broad area. It selected for special endorsement proposals that could distinguish Johns Hopkins from many other institutions, including a Global Water Program and a Bioenergy Research Initiative.

Abel Wolman pioneered efforts at integrating issues of drinking water quality and human health. Water-related research, teaching, and service have been conducted at a high level throughout Johns Hopkins for almost a century. The provision of sufficient quantities of water is now becoming a critical challenge as a result of world population growth, climate change, demographic shifts in populations, and loss of protected watersheds. Global water sustainability will require not only good understanding of water’s relation to human health and the environment, but also proper water assessment, international cooperation, and new technologies for maintaining proper water quality and quantity throughout the globe. Johns Hopkins could

capitalize on its historical leadership under an initiative involving public health practitioners, engineers, economists, behavioral scientists and specialists in international relations and communications to foster interdisciplinary research and teaching across divisions. Work under such an initiative has the potential to establish The Johns Hopkins University as a leader in Global Water.

Innovation in energy is also a pressing need for the health of the environment and global human health. A number of faculty groups are interested in research on renewable energy. Leading academic institutions in the US including MIT and Stanford are actively engaged in mounting efforts in energy. While not established at the top tier of institutions in the field of energy research, Johns Hopkins has some unique opportunities. One proposal from KSAS, SoM, & WSE would seek to apply expertise of faculty in diverse disciplines to confront the looming energy crisis in an innovative bioenergy research program. The work will exploit methods of molecular biophysics, protein thermodynamics, enzymology, genomics, microbiology, spectroscopy, microscopy, structure determination, and multiscale modeling to greatly enhance the ability to convert lignocellulosic biomass into fuel. In its support of this proposal the Discovery WG noted that the leaders of the bioenergy group expressed a commitment to work with other groups in the field of energy research and education at the university to foster a broader enterprise in energy and sustainability.

By building areas of strength, the broader effort to create a university-wide initiative in research, education, and practice will be advanced. Additional elements of an initiative for a sustainable environment and global health will also gain from other projects (Space Science and IDIES) that received support from the Discovery WG, as described further below.

Discovery in Complex Systems

Scientists today seek new knowledge in an information intensive environment. As noted in a recent *Nature* editorial, “researchers need to adapt their institutions and practices in response to torrents of new data — and need to complement smart science with smart searching.”¹ Johns Hopkins can meet this challenge by leveraging its computational facilities and informatics expertise. Faculty in many disciplines use new technologies that create large datasets, but most do not have the full skill set needed to decipher the complicated output. A cross-department and cross-campus initiative in informatics and novel data analytic approaches will help to disseminate skills and foster collaborations, bringing Hopkins to a preeminent position in many of its research activities, such as individualized medicine, studies of the brain, environmental science and many more. This vision was strongly supported by the Discovery WG in its endorsement of a proposal in informatics submitted by faculty bridging BSPH, SoM, and KSAS.

Given existing strengths in medicine and genetics, the Discovery WG agreed that Johns Hopkins is poised to take the lead in individualized medicine under a proposal building on expertise not only in genetics and medicine but strongly tied to biology, public health, computation, informatics, and bioethics.

Realizing new opportunities in scalable computing (as distinct from centralized supercomputing paradigms), the Deans of the Homewood Schools and Libraries (KSAS, WSE, Sheridan) established the Institute for Data Intensive Engineering and Science (IDIES, pronounced as “ideas”). IDIES has pioneered new ways of using databases to advance the analysis of very large data sets generated by scientific computing, and to showcase how large scientific data sets of the future can be prepared for long-term archiving. The Discovery WG supported the proposal submitted by IDIES to build additional bridges for collaboration with other schools and divisions of the university. As one example, the program in individualized medicine would benefit from engagement with IDIES.

Science in and from Space

The Johns Hopkins University has the opportunity to become the preeminent academic institution in the field of space studies. Space science is already an area of excellence, one that gives high visibility to the university.

¹ “Community Cleverness Required.” Editorial. *Nature: International Weekly Journal of Science* 4 September 2008: 455.

Observations in space will shed light on environmental processes happening on Earth, enhancing stewardship of our planet. Solving the biomedical challenges of manned space flight could help patients here at home. Johns Hopkins is well positioned to lead in this field of national importance.

A Johns Hopkins Space Science Institute (JHSSI) could bring together key constituencies across divisions within the university, including Physics and Astronomy, Earth and Planetary Sciences, and Applied Physics Laboratory, and connect to closely aligned organizations such as the Space Telescope Science Institute and programs at NASA Goddard Space Flight Center, to create a preeminent consortium for research and discovery, at the same time attracting and educating the next generations of leaders in the field. Research includes astrophysics, cosmology and planetary science, as well as studies of planet Earth, to monitor climate and environmental change, increasing the breadth of JHU Global Health initiatives. Likewise, space itself is a complex system, tying this research to Discovery in Complex Systems through computational projects like the National Virtual Observatory and its successors.

PLANS FOR FOLLOW-UP

The RFP application format included milestones for each proposed project. A criterion in selection was the prospect for development toward specified goals and the achievement of long-term support. The Office of the Provost will track the success of the proposed projects through progress reports and follow-up with faculty leaders.

A6: INVESTING IN HUMAN CAPITAL TO MAINTAIN EXCELLENCE: PEOPLE WORKING GROUP REPORT

INTRODUCTION

Johns Hopkins stands poised to be one of the great universities of the 21st century. Thanks to the extraordinary intellectual environments fostered throughout its ten divisions, it has succeeded in attracting faculty and students of the first caliber from around the globe. They, in turn, have developed for the university a global reach and mission, and world leadership on the frontiers of knowledge. But these achievements, and promises, are under threat. Our ways and means of recruiting and retaining the best faculty and students, and supporting them with the best staff, have failed to keep pace with swiftly changing circumstances, and in several crucial areas have reached a tipping point. This report, which is based on extensive interviews and research, will address the principal challenges we face in respect to faculty, students and staff. It will note where, in our belief, new financial resources should be directed most effectively. It will also propose several smaller initiatives which believe could facilitate our responses.

With regard to faculty, the biggest single challenges are salaries and research support. Here, we face drastically increased competition from wealthy competitors at precisely the moment that a decrease in federal funding has impacted both faculty research and university overhead — a dangerous “scissors” effect. We need to maintain competitive overall salaries to ensure excellence in research and teaching. We need the resources and flexibility to make strategic “star” hires that lend the university stature in their own right, and act as catalysts for forming first-rate departments and divisions. We need to approach faculty recruitment in a more systematic manner. Finally, current faculty have expressed considerable frustration at feeling closed out of important administrative decisions, and considerable concern about family issues. Unless the university can address these problems, it will lose the ability to recruit and retain the best faculty in the years ahead.

As far as students are concerned, the single most urgent challenge is financial aid. Indeed, in many ways, this is the most pressing of *all* the current threats to Johns Hopkins. In the past few years our leading competitors have not just changed the playing field, but the game itself, introducing huge inequities between what they offer their students — undergraduate, graduate and professional — and what we offer ours. If this gap becomes too large, we will lose the first-rate students who play a crucial role in the university’s research, make it an attractive place for faculty to work, and do so much to define its stature. In the long term, we will also lose the prominent alumni on whom the university depends so deeply for support. The university also needs to continue to work on a variety of “quality of life” issues to ensure that we remain supportive for current students and attractive to potential students.

A third and vital major challenge is to continue to adapt our technical and administrative staff to the 21st century. Our mission requires a staff that is highly qualified, productive, and efficient, that is recruited where appropriate on a national level, and that receives respect and competitive compensation. To reach this goal will require, in the short and medium term, aiding Human Resources in its ongoing efforts to restructure the staff. In the long term, it will require a comprehensive move towards a staff that is more highly qualified and productive, and better compensated.

These challenges, like the constituencies they affect, are deeply interdependent. It goes without saying that the best students and faculty come here precisely to work with each other. It is somewhat less obvious that in many parts of the university, our small size makes faculty unusually dependent on graduate students both for research assistance and intellectual companionship. Our faculty also depends on well-qualified administrative and technical staff support, and our staff has been, by all indications, increasingly hard-pressed to provide it in this era of increasingly complex information systems. But at the same time, staff can only function effectively if treated respectfully, and managed effectively, by faculty.

Finally, there are three vital issues that cut across the three constituencies in different ways: community, diversity, and the university's brand and web presence. We must do everything possible (especially by coordinating existing efforts and enhancing community partnerships) to improve and sustain the communities within which we live and work — above all the city of Baltimore. We must also ensure that the diversity of our faculty, students and staff reflects the diversity of the communities in which we live, and the world that we serve. On this issue, the university, despite its efforts, is still falling short. Finally, it is our finding that the university presents itself very badly to the outside world, especially on the Internet, compared to our competitors. This failing makes it much more difficult to recruit the best students, and affects faculty and staff recruitment as well.

The goals we have set forth in this report are audacious, even daunting. We have not attached dollar amounts to them, but in many cases the financial investment required is vast. Yet we believe strongly that the university must embrace these goals fully, and leverage its full capacities to address them, or risk falling dangerously behind. At the same time, however, we believe there are also smaller-scale steps the university can take, on issues such as faculty recruitment and faculty management of staff, which will facilitate our approach to the larger challenges.

Across its 132-year history Johns Hopkins has repeatedly overcome tremendous challenges and built a university of global stature, precisely by focusing on the quality and promise of its people. We are confident that it can do so again at this moment, and we welcome the arrival of new leadership and a new campaign as the best possible places to start.

FACULTY

Across the divisions, Johns Hopkins has a remarkably strong faculty: highly regarded, productive, well-funded, with many acknowledged stars in their fields. The single most important explanation for this strength, we believe, can be summed up in the word "culture." What attracts faculty here is above all the chance to work with first-rate colleagues in an atmosphere that is intellectually intense but congenial, and that affords them remarkable freedom to pursue their research goals. This culture in turn depends on three principal factors:

1. The close collaboration between faculty and graduate students that has long been at the heart of the university's mission.
2. The faculty's freedom to do research and teaching with effective staff support, and minimal bureaucratic restraints.
3. The small departments in which a large share of Johns Hopkins faculty do their principal work. The small departments limit us in some ways, but provide a congenial atmosphere where everyone knows everyone else, and has a sense of participating in a common endeavor.

The Johns Hopkins culture, however, is currently under threat. Decreased research funding and uncompetitive salaries are making it increasingly difficult to recruit and retain the best faculty. Faculty are increasingly frustrated by administrative decisions that are taken without their input, and without, in their view, sufficient attention to the university's core academic mission. The fact that we are not just attracting and supporting individuals, but families further affect recruitment and retention. We believe the university must address the financial challenges as best it can, create new mechanisms for consulting faculty, and consider new ways of meeting the needs of faculty families.

FINDINGS

1. Challenges Due to Limited Financial Resources

a. Decreased Research Funding and Limited Equipment Budgets: It hardly needs saying that a university so deeply associated with and invested in the sciences has been severely challenged by the present crisis in research funding. The budget of the NIH, after nearly doubling between 1998 and 2003 to \$30.2 billion in

constant FY2008 dollars, has since undergone a real decline. Overall scientific research funding from major public agencies has also undergone a small real decline. The consequences for academic science have been predictable. Established scientists are finding it harder and harder to get grants renewed; younger scientists are getting funded later, or not at all. Everyone must make do with less. At present, according to a recent report, only 18.5% of new investigators have their proposals for NIH R01 grants funded. The numbers for Johns Hopkins itself are stark. From FY2006 to FY2007 our federal grants and contracts fell from \$897.5 million to \$838.0 million. As a result, the university is having to give considerably greater, longer-term startup funds to new investigators, and is increasingly being called upon to help out established investigators with bridge funding between grants.

b. Eroding Ability to Recruit and Retain “Star” Faculty: The university now faces a situation in which it has become prohibitively expensive in most cases to hire outstanding faculty at the senior level, and increasingly difficult at the junior levels. In economics, for instance, star senior hires can now command nine-month salaries in excess of \$350,000 per year. (It is not only the KSAS and CBS that hire in this field; SAIS and BSPH do so as well.) In the natural sciences, strategic senior hires can require startup packages in the \$2.5 million to \$5 million range, as well as high salaries. Even star junior faculty are increasingly out of our price range, especially women and minorities. One important result is that most faculty hiring throughout the university now takes place at the assistant professor level. At present, SoM hires roughly 95% of its faculty at the junior level; WSE and BSPH hire a large majority; KSAS hires roughly 50%, which is up considerably from past levels. (SAIS is a special case since their small size does not allow them to offer tenure track to non-tenured faculty. With only 20 tenured faculty members in total, turnover is extremely low but recruitment for replacements is at the senior level.) Hiring at the lowest level is always a gamble, even with careful choices, careful mentoring, and judicious tenure decisions. Almost by definition, a university our size that seeks to maintain a high research profile must continue to recruit and retain “star” senior faculty as well. They not only raise our research profile, but also serve a crucial catalytic role in attracting others to work with them.

c. Uncompetitive Faculty Salaries and Salary Structures: In general, across the institution, faculty salaries remain low in comparison with peer institutions. In the School of Medicine, average faculty salaries are at roughly the 25th percentile of the Association of American Medical Colleges. In the KSAS and WSE, the deans of faculty cite salaries as important reasons why talented faculty leave for elsewhere. A revealing 2002 Cornell study showed that overall, among top American research universities, Johns Hopkins dropped from sixth place in salaries in 1981–1982 to 24th place in 2002–2003. All the divisions are much less successful at offering competitive salaries at the senior level, and have a mixed record of doing so in crucial retention cases. Meanwhile, faculty who come here at a young age and then rise steadily through the ranks without receiving outside offers generally find themselves falling steadily behind. In some divisions, notably the BSPH, the extent to which faculty must raise their own salaries from external funding has also hurt the university, and is an increasing challenge. Attention needs to be paid to salaries at all levels, including the adjunct faculty who are crucial to many areas of the university, such as SAIS and the part-time master’s programs.

2. Faculty Perception of Administration Insensitivity to their Needs and Mission

In interviews, one of the most consistently reiterated faculty complaints concerned the administration’s limited consultation with faculty before issuing policies that have a direct impact on academic life. For example, the committee heard concerns about changes in the structure of university benefits. The extent to which SAP and other IT systems support the research and teaching mission has also been a point of contention. Strikingly, there is no forum in which faculty from the divisions regularly come together to discuss such issues.

3. Faculty Family Issues

The university has made strides towards improving the environment for faculty in regard to family issues. However, interviews and discussions indicate there is room for further progress. One factor is employment for spouses/partners. A majority of our hires need to find positions for their spouses/partners in the region. At present, the divisions handle these cases almost entirely on an ad hoc basis, with limited help from other divisions and the central administration, and limited resources. Remarkably, while there is a small “Dual

Career Program” at Eastern, all but one dean of faculty were unaware of its existence, and it has proved of little assistance to date with faculty recruitment.

Finding adequate childcare is also extremely important to young faculty of both sexes, and particular the majority of them in dual-career marriages. On-site childcare is recognized by many universities as an excellent way to improve faculty morale, productivity, recruitment and retention. It is a benefit that many universities feel they must offer to retain competitive in the present academic climate. There is currently an oversubscribed childcare center serving the East Baltimore campus. Interviews and discussions repeatedly raised the question of whether the university should strive to create a similar facility on the Homewood campus and expand the offerings in East Baltimore.

RECOMMENDATIONS

1. Fundraising to Protect and Enhance Faculty Quality Across Divisions

Given the multiple challenges described above, the university must make the protection and enhancement of faculty quality across divisions a fundraising priority. The university needs to have the funding to provide adequate research support, recruit outstanding faculty, improve average salaries, and attract the best possible students to work with faculty. In addressing these challenges, we urge the university to study whether these priorities are best addressed essentially at the divisional level, as is currently the case, or whether it makes sense to provide more faculty support through the central administration, so that greater resources can be devoted more rapidly to areas of particular crisis or promise. While we applaud the administration for the efforts to develop more divisional collaborations, we believe that it may also usefully play a role directing resources towards individual divisions when strategic opportunities arise.

2. Creation of New Mechanisms for Faculty Consultation on Administrative Affairs

The university is not a collection of constituencies. It is an institution dedicated to the creation and dissemination of knowledge, and as such all decisions must be evaluated above all in light of their impact on this mission. We believe that the university, and particularly those increasingly large parts of it where administrators and staff do not have regular contact with faculty or students, must reassert these core academic values as a guiding principle in all administrative decisions. More specifically, the university must develop new mechanisms to ensure that faculty are consulted on major administrative decisions and policies, including particularly benefits and information systems. Possible mechanisms would range from a relatively informal Provost’s Advisory Group that could build on existing structures, to a Faculty Council working with the Council of Deans, to a full-fledged University Senate. We believe that inaction on this front will contribute to faculty dissatisfaction and departures at a moment when the university cannot least afford them.

3. Studying Day Care on the Homewood Campus

Despite the potential costs involved, we believe it is time to revisit the issue of daycare on the Homewood campus. Day care is not just a practical issue — it is an important symbolic one. Having a high-quality facility on or near campus would speak volumes about the university’s concern for and support of its employees, and help attract even those faculty who do not end up making use of it. Such a center could cater not only to the faculty and staff who work on the campus, but also to members of the surrounding communities, which have all seen an influx of young families over the past decade. The recent creation of the School of Education offers an opportunity to found a day care center that would not only serve community families, but also have a serious pedagogical and research function.

Although it may be easiest to have a preliminary study conducted by an existing on-site daycare provider such as Bright Horizons, ultimately this is an issue that the university will have to study itself. (For one thing, such providers have an obvious interest in recommending the creation of such a center.) A university study should investigate not only the demand for and costs of a high quality center but also the mechanisms by which the university would manage and fund it. It must be recognized that the Homewood divisions (principally KSAS and WSE) do not have the managerial infrastructure and expertise to run a daycare center, and that at present they do not have the financial resources to establish one, or provide long-term subsidies, without significant

assistance. The study should investigate the experience of universities of comparable size to the Homewood Schools that have chosen to establish day care centers.

4. Creation of a University-Wide Office for Faculty Recruitment

At present, recruitment efforts are largely handled within divisions, generally by department chairs and deans of faculty, despite the fact that many elements (housing, schools, spousal employment, benefits, etc.) are common to the university as a whole. We believe that the creation of a more visible university-wide “Office for Faculty Recruitment,” under the provost, would prove a cost-effective means for helping to recruit top-level faculty (it could replace certain existing efforts in the divisions and at Eastern). This office should be headed by a high level administrator who knows the university and Baltimore intimately and has a good sense of faculty needs and preferences. This person should work closely with deans of faculty in the divisions and with the Provost’s Office and should be available to meet and advise prospective faculty members. Specifically, this person should be able to do the following:

- Provide rapid, accurate information to prospective faculty about housing options, school and daycare options, and university benefits.
- Provide introductions to real estate agents, banks, independent school admissions offices, day care center admissions offices, and potential employers of spouses/partners in the region.
- Work with deans of faculty to explore all possible sources of employment for spouses/partners within the university.
- Work collaboratively with other area universities to help arrange employment for spouses/partners.

5. New Strategies for Faculty Career Development

The university needs to try new initiatives at both ends of the faculty career track. For young faculty, particularly women and racial minorities, the most important issue is mentoring. With the university recruiting a large majority of its faculty at the rank of assistant professor, we need to ensure that these young scholars receive the best possible advice and support to develop into leaders of their fields. Women and minority scholars currently confront the greatest obstacles in moving into senior positions, and may need particular attention. While mentoring programs need to be shaped by the individual divisions (SoM has been a leader in this regard), the university should encourage all the divisions to take the issue with great seriousness.

At the other end of the track, the university needs to experiment with new strategies for encouraging faculty retirement at reasonable ages, so as to free up resources for recruitment, and for support of existing faculty. Traditionally, universities have addressed this problem by offering simple “buy-out” plans. Not only are these plans expensive; in the past they have attracted only limited participation. A more successful venture may be modeled on one recently put in place by Brown University, where faculty accept a larger pay-out in return for moving off the tenure track, and accepting a limited term employment contract, perhaps (although not necessarily) with the possibility of renewal. One plan might take the following shape. Full professors contemplating retirement would have the option to move off the tenure track to a new position with a three-year contract, in return for increased compensation. At the end of this contract, with the approval of their department and dean, they would have the possibility of renewing the position for a further two years. Human Resources would have to conduct surveys and feasibility studies to determine the attraction of such a program to our faculty, and also the budgetary consequences. However, we do believe that some such initiative needs to be taken. The university should also do its utmost to improve the situation of retired faculty, including particularly the continuation of benefits, so that this transition does not seem like enforced exile from a cherished community (as it presently does to many faculty in the relevant age group).

STUDENTS

Across all of our schools, we must continue to recruit the very best student talent and provide students with the quality of academic and co-curricular experience that allows maximum educational opportunity. There are challenges to carrying out this mission, and one looms larger than all others: financial aid. The lack of competitive financial aid packages is a significant impediment to attracting the best student talent. Many peer institutions recently have launched major initiatives that seriously compromise our recruitment efforts. This problem exists across all of our student constituencies, including undergraduates, graduate students, and professional students.

There are other challenges, as well. Academically talented students have many good choices and want excellent educational opportunities and a satisfying social experience. Key to this experience is a strong sense of community that is nurtured and sustained by programming that brings students together. Opportunities for career development should be part of the support system across all of the schools, and responsibilities for mentoring should be explicitly addressed.

Appropriate infrastructure is essential to support a vibrant community. For undergraduates, the critical need is more campus housing of a competitive quality, and a configuration of social space that builds strong bonds and identification with the university. Within all of the divisions, congenial spaces must be developed to allow students and faculty to overcome the “silos” that are a frequent consequence of academic organization.

The costs of meeting the financial needs of students and sustaining a strong sense of community are substantial, but the costs of not doing so are even higher in terms of compromising our aspiration to draw to the university persons of “genius, talent, learning, and promise,” because they, in the words of Daniel Coit Gilman, “should be your strength.”

FINDINGS

1. Recruiting the Best Students

a. Academic reputation: Johns Hopkins’ reputation for academic excellence is the most important element in recruiting students to each of the university’s schools and programs. Because the distinction of our faculty for scholarship and research is well recognized, we are able to attract outstanding student talent to our applicant pools. The strong brand association encourages student interest in even those programs that do not depend on our permanent faculty.

b. Yielding the top students: The central challenge for Johns Hopkins is to turn applicants into matriculants, and this is increasingly difficult due to the lack of competitive financial aid. Yield on admitted students varies among the schools, but, generally, we are not at the top of our peer set.

c. Competitive aid package: The lack of competitive financial aid packages across all schools and at all levels is now the *biggest* impediment to attracting the best student talent to JHU. Many peer institutions recently have undertaken major initiatives that further compromise our recruitment strength, including eliminating loans for middle income students and eliminating tuition for low-income students. In comparison with our competitors, Johns Hopkins offers financial support to fewer students, provides less grant funding, and asks parents to pay more (either outright or through loans). Even at some competing medical schools, tuition is now waived for top students, regardless of need.

d. Graduate Stipend: The most prestigious universities are now awarding graduate stipends that vastly exceed those offered at Johns Hopkins, especially in the humanities and social sciences. (For instance, Yale now offers *minimum* stipends of \$25,000 per annum.) The limited stipend support is not adequate in light of the cost of living and thus often requires students to work outside their departments, with the obvious consequence of distracting the students away from their research, which increases the length of time to graduation.

2. Student Quality of Life

The Working Group had a special charge to consider the status of implementing the recommendations of a Commission on Undergraduate Education, which issued a report containing 34 suggestions for improving the quality of the undergraduate experience. Over the past five years, the majority of the recommendations have been implemented at Homewood, Nursing, Peabody, and the undergraduate programs that were part of the School of Professional Studies and Education (now primarily located in the Carey Business School). As a result, the undergraduate experience has been much enhanced. Additional progress must be made in two main areas: the provision of residential facilities to meet the housing needs of undergraduates, and the further enhancement of the Charles Village neighborhood. The opening of Charles Commons has brought significant benefits for meeting both objectives, but it alone does not fully address the needs. Our findings speak to ongoing challenges.

a. Academic Community: All the divisions underline the importance of a strong academic community in creating a high quality of student life, notwithstanding significant demographic differences, which present their own set of challenges. For example, Bloomberg students average 27 years old and many are married, while medical students average 24 and School of Education students average 33. There are gender issues as well, with heavy male populations in Engineering, contrasted against heavily female ones in the Schools of Nursing and Education. Almost all of the part-time students in the various advanced academic programs are adult professionals with full-time jobs in the local community.

b. Fragmentation: The organization of graduate programs around academic departments contributes to a fragmentation of community, and in the absence of efforts to counter it, students and faculty tend to remain in their “silos.” Student morale is highest where the culture is supportive. For example, the School of Medicine has recently organized its student body into “colleges” that have helped in the delivery of advising services and created a stronger culture of mutual support.

c. Housing: Many prospective undergraduate students do not choose Johns Hopkins because of concern about the limited on-campus housing options. Most of Hopkins’ peer institutions either guarantee or provide significantly more and better campus housing, and their recent investments in quality residential programs have made the disparities with Hopkins even greater. In particular, not all of the housing provided for first year Hopkins students is well aligned with their needs. Good quality campus housing contributes to a stronger sense of community and school spirit, and allays parent and student concerns about safety and security.

d. Programming: Students across all the divisions desire activities that bring them together and celebrate the institution. KSAS and WSE students search for and welcome activities that involve the whole community, such as the annual Spring Fair. At Peabody, various steps are taken to counteract the insular nature of the one-on-one system of major study, as with, for example, participation in large ensembles.

e. Advising and mentoring: Once students enroll, the advising and mentoring system is critical to providing the guidance students need for academic and social growth. For graduate students, the relationship to dissertation advisor is key, and when this relationship is not smooth, students are constrained in finding alternative sources of support and academic advice. Professional development opportunities and professional responsibility guidelines are not available in all schools and divisions.

f. Family support: While recent changes to the insurance for individual graduate and professional students has helped their financial situation, insurance for families with children remains a concern. So, too, does access to childcare, which is limited in East Baltimore, and not provided for the Homewood campus community.

3. University Infrastructure

Good quality quantitative, university-wide information that would permit analysis for decision-making is lacking. Because of differences among the schools in the demographics of their student bodies and their tuition and aid policies, producing comparable data is challenging but, in the absence of good data, there is over-reliance on anecdotal information.

RECOMMENDATIONS

1. Undergraduate Financial Aid

In order for the university to remain competitive for the best student talent, there is an urgent need to increase significantly the amount of need-based financial aid available to students:

a. The university must strive towards a goal of need-blind admissions and meeting the full financial need of all admitted students. Institutions that are able to declare publicly that they meet these goals have a powerful competitive advantage in encouraging students from all economic backgrounds to apply. This is the single most strategically important investment we can make.

b. The university must guarantee a cap on student loans for lower income students. Low-income students and their families are typically averse to debt. Our competitive position will be greatly enhanced by promising that no student in this income group will have to borrow more than a very modest amount. We should also look to eliminate tuition, room and board cost for *all* in the very low-income category (less than \$40,000), as has been done by some of our peers.

c. Aid packages should reduce the family contribution required of moderate-income families. A reasonable reduction in the required family contribution would make a tremendous difference in our ability to enroll excellent students from moderate-income families. Families with annual gross incomes of \$75,000 to \$150,000 are in a difficult situation, with incomes too high to be awarded need-based grants, yet not sufficient to pay a significant portion of the annual \$50,000+ cost of attendance at Johns Hopkins. Without progress, the future holds a polarized student body that could consist primarily of low income and upper income students.

2. Graduate and Professional Student Aid

In order not to lose top graduate student talent, stipends must be enhanced and more need-based financial aid, loans, and scholarships must be made available for graduate, professional, part-time, and international students.

a. The university must raise stipends for graduate students to competitive levels. It must also provide more need-based financial aid, loans. Scholarships should be made available for professional, part-time, and international students.

b. The university must provide more need-based tuition financial aid, loans and scholarship for professional, part-time and international students. International students have special needs and usually have to cover the full cost of their education. If we are to be a global university, it is critical that we continue to have an international student body.

c. There should be university-wide transparency and discipline-specific uniformity in the financial packages offered. To prevent inequities and potential dissonance among students, guidelines for defining financial packages should be shared.

3. Creating a Supportive Community

Community, both academic and social, surfaced as being the most important requirement to students' quality of life. The community needs for graduate and professional students focus on the mentoring, networking and good governance. The student-advisor relationship is clearly at the center of graduate student training, while for professional students, the availability of professional development and networking opportunities is paramount. For undergraduates, facilities and programs that bring students together are particularly important.

a. The university should develop new residential facilities to provide campus housing for all undergraduate students who wish to live in university housing. As part of a comprehensive plan, a freshman quadrangle would enhance the objectives of providing more space and of strengthening community. This important recommendation from the CUE report remains critical unfinished business.

b. The university must provide the infrastructure, virtual as well as physical, to integrate students, faculty and staff within divisions and schools, as well as across them. Students desire better facilities geared towards learning, comfortable areas for study and relaxation, and greener and more inviting campus surroundings.

c. Initiatives should be undertaken to ensure professional behavior and the cultivation of an atmosphere of mutual respect, collegiality, fairness, and trust. We need a clear statement of expectations and responsibilities as part of an advisor-student relationship.

d. A university-level committee should examine the status of postdocs at Johns Hopkins to identify best practices. Postdoctoral fellows represent a particularly important and challenging group for the university because they have a status that is between that of a student and a faculty member. Their exact status varies as a function of the school they are in. For example, health insurance is handled very differently at the two Homewood schools (where they are treated the same as undergraduate students) as compared to the SoM and the BSPH (where they are not). The university should work toward establishing a single set of policies regarding the status of post-docs and a uniform benefits package.

STAFF

Staff at Johns Hopkins are vital contributors to the success of the university, valued and respected for the expertise they bring to the enterprise. Faculty and students drive the university; the staff is the foundation upon which their success is built. Yet to meet its mission, the university must adapt its technical and administrative support to the needs of the twenty-first century. Johns Hopkins requires a staff that is highly qualified, productive, and efficient, and that we recruit, where appropriate, on a national level. This staff must receive competitive compensation, and be treated with equity, civility and respect. Human Resources must focus on rewarding excellence, developing talent, and creating the workforce of the future.

As competition for high-value talent intensifies in a knowledge-driven global economy, the university must invest in developing its staff to meet the challenge. An institutional culture that values staff will lay the foundation for greater loyalty and enhanced productivity. Better preparing faculty for managerial roles will strengthen the interface between faculty and staff for enhanced performance and productivity. These elements, together with a performance and reward system that clearly sets expectations, rewards results, and actively remediates poor performance, will position the university to attract, develop, and retain the highly skilled staff it needs for the future.

Previous reports and anecdotal evidence suggest that Johns Hopkins still harbors disquieting vestiges of a culture of exclusion and stratification that no longer serves the university's mission, that does not align with best business practices, and that fails to leverage the value of a diverse pool of human talent. The university must strengthen its efforts to create a welcoming environment for women, minorities, and younger people. Respect for the value of staff at all levels would address many of the issues discussed in this report, as would better preparation for faculty in managing staff. At the same time, the staff themselves need the competencies necessary to move the university forward. It is incumbent on the organization to find and develop these competencies and to measure success.

FINDINGS

1. Employment Partnership. The university environment is a complex ecosystem, one that requires a variety of supporting systems, ranging from the technical to the administrative. Talent is wasted when divisions and departments do not work in partnership, and when faculty and staff do not work in partnership. In a successful employment partnership, the following expectations are important for a high performing staff:

- An accurate description of the job and of the job environment (honesty and transparency)
- A commitment that pay and benefits are equitable and commensurate with contributions during the entire period of employment (economic well-being)
- A work environment that is positive, fair, safe, and comfortable (belonging)
- A supervisor and co-workers who are supportive and appreciative of the staff member's work (support and appreciation)
- Opportunities to enhance personal skills and develop individual careers (growth)
- A place where staff can make a contribution to a larger/higher purpose (meaning)

a. Respect. Studies and surveys report that some staff experience an unwelcoming environment that is not always respectful and that does not foster career development. The values of civility, equity and respect continue to be a significant concern for many in the community. The university is best served by recognizing the critical role of staff in supporting the work of the faculty and students.

b. Data. The same rigorous approach that is applied to university research and professional practice must be applied to managing the work environment. At present, there is a lack of data regarding staff: turnover, retention, acceptance rate, competencies, etc. Human Resources has begun to implement systems that will allow for data collection, and will soon begin initiating HR Metrics and Analytics. Data is essential for sound management.

c. Quality. Preliminary data indicate that Johns Hopkins will lose longstanding staff during the next five to seven years. A succession plan is urgently needed to identify gaps and fill them through external recruiting and the development of internal talent. A system of career ladders is necessary to enable the progressive movement of talented, ambitious staff from entry-level positions through a range of technical, specialist, middle management, and senior leadership positions.

Meanwhile, faculty remarked in interviews that staff did not always have an adequate understanding of the context for and purpose of the activities they support, for reasons due to inadequate qualifications, communications skills, training and explanation from managers and faculty. It was also observed that many of the issues involving staff are related to changes in information technology. Staff are increasingly obliged to use complex information systems generally not designed with their own specific tasks in mind. SAP is only the most notorious example.

Finally, Johns Hopkins is missing opportunities to improve the quality of its staff in succession planning, mentoring, coaching and helping staff progress through career paths, and in adherence to performance standards.

d. Compensation. Hopkins does not have a dynamic range of compensation to provide significant rewards for significant performance. Moreover, compensation does not appear to be matched to expected levels of skill and performance. At present, HR aims compensation at the 50th percentile of market surveys. A world-class university must have top-notch staff to support its faculty and students. Over time, this might require a comprehensive move towards a staff that is smaller, but more highly qualified and productive, and better compensated.

e. Management. Too often faculty with no preparation for management find themselves thrust into the position of supervising staff. This is a poor formula for producing high levels of satisfaction and productivity. Supervisors need appropriate training in how to effectively manage staff, especially with respect to the resources available to assist in dealing with difficult issues.

RECOMMENDATIONS

1. Leadership and Change. Since each division is semi-autonomous in its operations, change needs to take root in each division. But this change must be a cooperative enterprise, aligned with the university's overall mission. For that reason, division leaders, faculty, and Human Resources must be brought together to ensure that values important to faculty are maintained while the work environment for staff is improved.

2. Recruitment and Retention. Johns Hopkins requires a staff that is highly qualified, productive, and efficient, and is recruited where appropriate on a national level. This staff must receive competitive compensation and be treated with equity, civility and respect.

HR Metrics need continued development to allow for a deeper analysis of our recruitment practices and trends, and to more targeted and focused recruitment.

3. Staff Competencies and Performance. Staff and their supervisors need more effective training in performance management practices to enable supervisors to understand how to communicate and measure expected performance, and to enable staff to understand what is expected. Better mechanisms are needed for releasing staff when they are not performing to standards.

For those positions in which job requirements have evolved to meet new governmental requirements or to make effective use of IT systems, new job descriptions need to be developed. This will help in defining performance expectations and training and development needs so that appropriate staff are hired, and so that staff may achieve a higher level of effective function in the job.

4. Rewards. Staff positions should be supported with accurate job descriptions, new systems to measure and reward high performance, enhanced systems providing better orientation to the business, robust training and increased professional development opportunities to build competencies, and pay tied to performance. Pay for high performing staff should be targeted above the 50th percentile of market surveys. Divisions need more ability and budget to reward high performers with bonuses. This method may be increasingly necessary in an ever-competitive economy.

5. Respect. A supportive and respectful work environment will attract, retain and develop a diverse community of staff functioning at an optimal level. The recommendations from the various committees and reports (the *Vision 2020* report of the University Commission on the Status of Women, the Commission on Civility, Equity and Respect, and the Diversity Climate Survey of 2006) deserve attention and appropriate action.

A more engaged staff is a more productive and effective staff, so Johns Hopkins should consider developing and implementing an engagement survey similar to the Gallup 12 Survey that the SoM is using to get a broader feedback measurement. Such a survey would identify concerns beyond diversity.

6. Leadership Training. More attention should be paid to the role of faculty as manager, whether in labs, centers and institutes, or in leadership positions within departments and divisions. Faculty need to understand the skills and capabilities possessed by the current staff, mechanisms for growing and developing needed skills, and must be given the necessary tools for managing the complex social environment at the work place. Those who fulfill managerial roles must accept the responsibility and perform it well.

Each division needs a champion to assess divisional needs, and to assure that necessary resources are provided so that staff are trained and developed to perform their jobs. He or she will ensure that performance

standards are communicated and that the surrounding environment is positive and supportive of staff roles. The champion will work with supervisors to assure that poor performance is appropriately addressed and that the overall effectiveness of the workforce improves.

CROSSCUTTING FINDINGS AND RECOMMENDATIONS

Summary

Unlike the findings and recommendations in the previous three sections, those laid out below cut across the three constituencies of faculty, students and staff, and affect university life as a whole. For this reason, we have grouped them together at the end of this report, but it must be emphasized that this placement is in no way meant to convey that we consider them of lower priority. In fact, in many ways they are the highest priority of all, because the university depends in critical ways on each of them. The university must strive to ensure that the diversity of its personnel reflects that of the world, which it serves, for without this it can never achieve its full potential. It must strive to be an active, responsible part of the city where it is located, for our fortunes and the cities are inextricably linked. And it must present itself effectively to the world beyond Baltimore, in order to attract the best possible talent.

Diversity

The university's record in achieving a racially diverse and gender-balanced faculty and student body remains mixed. Some divisions, notably Public Health and the humanities and social science areas of the KSAS, have made considerable, although still insufficient progress. In the SoM, women now comprise 42% of assistant professors, although only 19% of full professors, while the student body is majority female. Other divisions — *e.g.* SAIS and WSE — still lag behind with respect to the gender balance of the faculty. This mixed performance reflects a larger national picture, and is not atypical of it. Nonetheless, our record is not acceptable, and furthermore we risk falling further behind as many of our competitors adopt a variety of strategies to address the problem.

We further note that financial considerations play a disproportionate role in the recruitment of minority student applicants. Programs like the Baltimore Scholars have helped with undergraduate recruitment, but greater diversity in the student body depends on reducing the tuition burden on more students. At the same time, if we fall significantly behind our competitors with respect to financial aid, we are likely to slide backwards with respect to diversity, instead of making progress.

For faculty, the Provost's recent Mosaic Initiative represents a welcome step in the right direction, but must be supported by more broadly. Divisions need to ensure salary equity across racial and gender lines. Search committees must advertise as widely as possible, and more importantly, to define positions flexibly enough so as to be able to attract desirable candidates who will increase the university's racial and gender diversity. Search committees need to receive a clear message from their divisions about the importance of the issue.

Coordinating Community Partnerships

The future of The Johns Hopkins University is tied directly to the success of the city of Baltimore. At present, concerns about security, transportation, and cost of living frequently deter the best students, faculty and staff from coming here. The university already undertakes a significant amount of community outreach, academic research, health care delivery, volunteer service, and collaboration with neighborhood organizations. However, these programs and services are not centralized, and the activities are not coordinated. Indeed, in many cases they are undertaken in more or less complete isolation from and ignorance of each other. To take just one example, programs run outside of the Homewood campus often fail to take advantage of the considerable good will and volunteer efforts of our undergraduate student body. In short, the whole of these efforts remains less than many impressive parts.

The university should create an Office of Community Partnerships that would coordinate the many disparate activities that are already under way across the university, engage the city government and local institutions (including foundations), and maximize the impact of our efforts on the community. It is not clear where such

an office should be lodged administratively, but it is essential that it be university-wide in scope so that the all of Johns Hopkins' efforts to strengthen the community can be leveraged.

Branding and Web Presence

Given its administrative and geographic decentralization, Johns Hopkins faces special challenges in creating a coherent public image, or brand, for the university. The creation of the Mason Hall visitor center was a major step forward, but we still have a long way to go, particularly with our *virtual* infrastructure. It is too easy to forget that for our students, and increasingly for our younger faculty and staff as well, the Web has *always* been there, and is fully integrated into their lives. It is essential that the university have a highly effective web presence.

Unfortunately, this is not the case. The problem begins with the fact that the university has been very slow to recognize the recent evolution of the Web. It was once the case that the Web principally delivered static content and information, but in recent years there has been a powerful move towards interactive experiences ("Web 2.0"), as exemplified by sites such as YouTube, Facebook and Wikipedia. It is through sites like these that students in particular share information and generate meaningful, if virtual, communities. Johns Hopkins, unlike many of its competitors, has made virtually no moves towards Web 2.0. Worse, even its static content delivery is unsatisfactory, thanks largely to the familiar problems of decentralization. Beyond the JHU home page lies a morass of disparate web pages of widely varying utility and design competence, amidst a forest of broken links and out of date pages that still come up on routine searches. The JHU search function itself is hopelessly ineffective, routinely yielding outdated, inaccurate or irrelevant results.

We need to develop a more effective public brand for the university, and particularly to convey the range of excellence in our divisions beyond the medical and health sciences. In particular, we need our Web presence to portray a coherent picture of an energetic, enthusiastic and committed community of scholars, taking full advantage of Web 2.0 to do so. Here the university's decentralization is actually an advantage because it is compatible with the trend towards fluid, organic, "open source" organizations that our students already find entirely natural. We therefore recommend the following:

1. The university should develop marketing material that leverages our tremendous reputation in medicine and biological research to promote the other parts of the university and showcase all of its divisions and schools.
2. The university should quickly and dramatically enhance its presence on the Web, creating a coherent brand identity that emphasizes its unique strengths as a lively community of scholars and students. The new Web presence should include the provisions of tools and support for individuals and groups to make their own effective contributions to our web presence.
3. The university should actively foster the development of interactive online communities of students, faculty and staff by providing appropriate software, servers, training and encouragement.
4. The culture of information technology at Johns Hopkins must be focused firmly on the central missions of research and education, which means focusing on the end users, rather than on IT for its own sake, and on compliance issues. In other words, it must provide faculty, students and staff with computational and staff with computational and communications tools relevant to academic communities in the 21st century.

A7: WAYS AND MEANS WORKING GROUP REPORT

Johns Hopkins was the first, and remains today, a preeminent American research university. Its success owes substantially to its roots as a meritocracy, to a highly entrepreneurial faculty, and to a decentralized organization that allows the 10 divisions to identify and pursue their own objectives. This independent development has resulted in a unique university in which eight of every 10 Johns Hopkins faculty work on problems of human health and 42% of the annual budget is related to professional practice activities.

The nature of university research and education is in transition. Important questions are at the boundaries of traditional disciplines or motivating new disciplines. Multidisciplinary teams, from around the world, address major questions. The extent and complexity of information demands sharper reasoning and quantitative analyses. Research grants from external sources such as NIH, are more difficult to obtain. A dozen peer universities have grown their endowment and elevated themselves from Johns Hopkins in their capacity to invest in new research initiatives.

These circumstances raise the question: What steps must Johns Hopkins take in the coming decade to remain a preeminent research university? One step that the president and provost have identified is to enhance our ability to collaborate across divisions and disciplines in research and education.

The Framework for the Future Ways and Means Working Group (W&M), comprising 19 faculty and administrative leaders, was asked to “propose a process to plan and finance crosscutting initiatives by which the university can substantially improve education, discovery and/or practice by 2020 by working at the seams among multiple disciplines and across university divisions.”

The W&M deliberations were predicated upon three principles. First, the measure by which this university should be judged is the influence its ideas have for the wellbeing of all people. Second, this influence occurs through the discovery, communication and application of new knowledge. And third, that Johns Hopkins continues to aspire to be among the world’s preeminent universities. These principles are consistent with the university’s original mission, articulated by President Gilman in his 1876 inaugural address: *“What are we aiming at?” ...The encouragement of research ... and the advancement of individual scholars, who by their excellence will advance the sciences they pursue and the society where they dwell.”*

This executive summary presents five grand challenges and the working groups recommendations that are highlighted in the text. The complete findings, challenges and recommendations are provided in the report that follows.

CHALLENGES

- 1. Build a foundation through “collaborative decentralization”:** The W&M envisions crosscutting research and educational programs, initiated by faculty in collaboration with deans and other university leaders, from multiple divisions. To enhance the environment for crosscutting programs, a grand challenge is for the university to shift over time from a totally decentralized organization, described as “each tub on its own bottom,” toward “collaborative decentralization” in which divisions, while still expected to pursue their unique opportunities within their own ways and means, also take joint responsibility for Johns Hopkins’ collective contributions to society. In such an environment, crosscutting initiatives will be more likely to arise and thrive.
- 2. Build on strength across divisions:** The W&M envisions a university in which faculty in a discipline leverage their strengths across divisions to more rapidly advance their field, to attract and support top faculty and graduate students, and to raise the visibility and external support for their research areas.
- 3. Selectively invest in crosscutting academic initiatives:** To remain a leader, Johns Hopkins should *collectively invest* in its core enterprises of education and research as it does in its buildings,

administrative systems and other support functions. Currently, such investments are made in most cases by individual departments and divisions with limited strategic coordination. As a fraction of annual expenditures, Johns Hopkins has flexible funding from endowment, gifts, state aid or tuition that is significantly smaller than most of its peer universities. A challenge is to reduce this differential to the greatest extent possible. In the meantime, the university must be selective in its investments. A grand challenge is to continually identify the best new academic opportunities for investment. Another challenge is to stimulate cross-disciplinary problem solving that addresses important societal problems, stimulates academic innovation, attracts talented faculty and students, and distinguishes Johns Hopkins among its peers.

4. **Strengthen the environment for longer-term academic success:** A grand challenge is to make Johns Hopkins the best environment for education and research, consistently across all of its divisions, in order to attract talented faculty and graduate, professional and undergraduate students. Here “best” means: addressing important problems, commitment to integrity and collegiality, intellectual stimulation, maximizing faculty and student time dedicated to their scholarly activities, and administrative efficiency. The working group has addressed aspects of this challenge that are common to many divisions, fully recognizing that there will also be effective local approaches and solutions.
5. **Build optimism through engagement and transparency:** Johns Hopkins comprises a talented group of deans and directors, faculty, students and staff. It is daily advancing the quality of global society. A grand challenge is to reach its full potential by focusing on the core enterprise of education, inextricably linked to research, and by developing a small number of crosscutting initiatives that have the potential to transform society and this outstanding research university.

RECOMMENDATIONS

1. The new president should expand the role of the provost, the deans/directors and the faculty in the strategic leadership of the university. Deans and directors should be charged with leading their divisions and also with contributing to the success of the university as a whole. Search committees should seek, and the president should appoint, deans and directors with demonstrated skills and commitment to advocate for their divisions while working together to expand the influence of the university.
2. The provost and deans should reduce barriers and create incentives to adapt a collaborative model in those disciplines where the faculty members see an opportunity to build on strength across divisions with the goal of establishing a leading program and attracting greater resources.
3. The vice provost and vice deans for graduate programs should work with deans and faculty to advance the quality and competitiveness of Johns Hopkins PhD programs and to attract new sources of student support. The creation of a university-wide “graduate school” to facilitate the process should be studied.
4. The W&M recommends that the university leadership, relying on the Framework for the Future working group reports and external experts’ input, should selectively identify one or more crosscutting, academic initiatives that can significantly advance society and distinguish Johns Hopkins, attracting world-class faculty and students. These initiatives should have the potential to transform the university and, therefore, be a major focus of the next development campaign. Second, the university should annually invest a small fraction of its operating funds in comparable longer-term academic initiatives that can keep Johns Hopkins among the preeminent research universities in the world.
5. The university should create an Academic Initiatives Review Group (AIRG) to foster interdivisional initiatives in research and education. The AIRG would comprise highly respected faculty and administrators from across the university to review proposals, mentor proposing investigators, especially from among our young stars, and promote implementation of the best ideas. The group would function as an academic analogue to the Business Review Group in Johns Hopkins Medicine. The AIRG should operate an academic venture capital fund, evaluating potential initiatives based upon their likely return on

investment to society and the university. Here, ROI would be measured both in intellectual and financial terms by metrics like those listed in the Appendix.

6. The W&M proposes that the university establish the “Johns Hopkins Repertory Scholars” in which the academic leadership identifies a targeted issue and a dynamic director. As in a repertory theater, the director will specify a focus of scholarship, assemble diverse and multitalented scholars from within and, in some cases, beyond the university, and then create an intellectual environment in which collaborations can move the chosen field forward. A single topic will typically take one year in residence with time before to plan and time after to complete its contributions to answering the societal and academic questions posed.
7. The vice provost and vice deans for research should make this university the best environment for research and scholarship. If necessary and cost-effective, invest in additional research support infrastructure to maximize the time faculty and their students spend being productive.
8. Undergraduate and graduate student financial support, which also benefits the retention and productivity of faculty, has been raised in tuition-focused development campaigns at peer institutions. This approach should be considered at Johns Hopkins to more nearly level the playing field. The possibility of cross-disciplinary training through double majors/minors for undergraduates and through innovative graduate curricula can be featured in this campaign along with the tradition of student involvement in world-class research.
9. Each academic division should work toward operating with a faculty culture of shared responsibility for longer-term academic quality and economic wellbeing. In such a culture, resources need to be continually reinvested in the future of each academic unit. The W&M recommends that faculty who become less than fully productive over an extended period should be sensitive to this need and draw core resources commensurate with their current contributions. The W&M proposes that a committee of faculty be appointed to review best practices at peer institutions and to recommend how to further the culture of shared responsibility at Johns Hopkins.
10. Building upon the approach to the professional education of doctors and nurses, the other professional schools should investigate the possibility of affiliating with, or creating “professional practices” in which faculty can engage part-time in their profession practice while teaching students “at the bedside.” These practices have the potential to generate additional funding for both faculty and students.
11. To assure quality and efficiency, administrative and academic departments should be systematically reviewed and held to equivalently high standards.
12. A key asset for the future is optimism. The new president and senior leadership should share, within and beyond the university, Johns Hopkins’ daily contributions to the quality of global society. They can creatively involve faculty and students with the public and board of trustees to expand their knowledge about, and appreciation for, the core enterprise of education, linked to research.

INTRODUCTION

The goal for the Ways and Means Working Group (W&M) is to:

Propose a process to plan and finance crosscutting initiatives by which the university can substantially improve education, discovery and/or professional practice by 2020 by working at the seams among multiple disciplines and across university divisions.

The Ways and Means working group (W&M) was chaired by Professor Brooks Jackson, Director of Pathology in the School of Medicine and co-chaired by Professors Jane Guyer from the Krieger School of Arts and Sciences and Gerry Masson from the Whiting School of Engineering. The entire membership of faculty and administrators is listed in Appendix 1. The working group met 13 evenings from May through September and had several leadership and sub-group meetings in addition. This report presents its main findings.

The W&M deliberations were predicated upon three principles. First, the measure by which this university should be judged is the influence its ideas have for the wellbeing of all people. Second, this influence occurs through the discovery, communication and application of new knowledge. And third, that Johns Hopkins continues to aspire to be among the world's preeminent centers of scholarship. These principles are consistent with the university's original mission, articulated by President Gilman in his 1876 inaugural address:

"What are we aiming at?" ...The encouragement of research ... and the advancement of individual scholars, who by their excellence will advance the sciences they pursue, and the society where they dwell."

The W&M goal is to delineate ways and means for crosscutting initiatives that make the university greater than the sum of its parts. This report focuses on a *framework* for change in addition to specific opportunities, because the W&M recognizes that the university is amidst a transition in leadership.

The W&M strongly endorses the notion that this university's strengths — discovery and application of new knowledge; critical reasoning and communication; an international perspective; and the capacity to educate the brightest among the next generation from around the world — are essential to finding and implementing the ideas and technologies that can produce greater good for all people.

This report, mirroring the working group's discussions, emphasizes the "ways" to make the university greater than the sum of its parts. The group is convinced that the "means" to do so must follow from the ways and must be negotiated by the leadership in light of the prevailing fiscal situation. The group also believes that the university should develop a process to identify a small number of collective initiatives with the potential to dramatically advance the university, allowing less far-reaching programs to develop in individual, or small groups contexts within divisions.

This report is organized in three sections. The first provides a brief overview of the university as the working group views it today. The second section is a listing of findings related to governance, decentralization, collaboration, education, research, professional practice, and finally information and communication technologies. The findings are followed in the final section by five grand challenges and associated recommendations about how to better organize and finance crosscutting initiatives that have the potential to make the university greater than the sum of its parts and more able to address important societal problems of the future.

THE JOHNS HOPKINS UNIVERSITY TODAY

As listed in Table 1 on the following page, The Johns Hopkins University comprises nine schools and the Applied Physics Laboratory (APL), as well as the Sheridan Libraries and several academic and cultural centers and professional practice organizations.

The university's annual expenditures totaled \$3.67 billion in 2008, \$2.78 billion in the schools and academic units and \$0.89 billion at APL. The university has 3,500 faculty and 9,800 full-time staff. Approximately 5,800 undergraduate students and 14,000 graduate students (8,500 full-time equivalents) enrolled during the past academic year.

The university operates as a largely decentralized system in which divisions are free to independently determine their own strategic directions, goals, size, and sources of revenue. The university administration (UA) organizes and delivers core services including the president and provost's offices, the board of trustees, financial systems, and development programs. The UA annual budget is 3.5% of the university's annual expenditures.

As evident in Table 1, seven of the schools (all but SoM and BSPH) share a business model and culture that are centered around undergraduate, master's, or PhD education with roughly 60 to 70% of their annual revenues deriving from "internal sources" defined as tuition, endowment and investment income, annual giving, and state aid. Endowment is a smaller part than it is for peer institutions; Johns Hopkins ranks 26th in total endowment size¹ and 89th in endowment per undergraduate student.² More than half of the endowment is committed to the professional schools.

Total faculty numbers outside of medicine and public health are also small relative to peer institutions. For example, Johns Hopkins has 420 professorial faculty in KSAS and WSE as compared to 600 at Penn, 730 at Cornell, and 830 at Duke. Despite its relatively small faculty size and endowment payout as a fraction of budget, Johns Hopkins covers the full complement of sciences, social sciences, arts and humanities with 31 academic departments in arts and sciences and engineering.

¹ 2009. College and University Endowments, 2008-2007. The Chronicle of Higher Education. <<http://chronicle.com/premium/stats/endowments/results.php?offset=15&year=2009&sort=market&state=>>.

² FY2007 Report: Council for Aid to Education, Voluntary Support of Education Data Miner.

Table 1. Overview of scope and diversity of Johns Hopkins University Divisions from 2007-08 data.

Unit	Internal Revenue ¹	Faculty ²	Staff	Under-grads	Grads ⁴	Endowment ⁵
Krieger School of Arts and Sciences	\$245.3 (69%)	356	492	3219	1034 (1809)	\$415
Whiting School of Engineering	\$137.2 (63%)	152	198	1372	632 (2069)	\$94
School of Education	\$32 (57%)	68	114	422	(3851)	\$6.4
Carey Business School	\$30.1 (98%)	19	63			\$3.3
Nitze School of Advanced International Studies	\$30.3 (85%)	80	135		907	\$132
Peabody Conservatory	\$28.6 (86%)	108	94	320	366	\$88
School of Medicine	\$1,581.9 (12%)	2168	5287		1303	\$1,135
School of Nursing	\$29.7 (73%)	65	102	373	280	\$45
Bloomberg School of Public Health	\$370.3 (17%)	495	1216		2024	\$331
Applied Physics Laboratory	\$835.4					\$74
Sheridan Libraries	\$5.7 (60%)					\$236
Other ³	\$211.6	43				\$230
Total	\$3,539 (8%)	3554	9801	5772	6546 (7729)	\$2,560

¹ Revenue in millions from endowment, state aid, gifts, investments or tuition; percent of total revenues in parentheses

² Tenure-track professorial faculty plus other titles

³ University (non-divisional), Homewood student services and academic centers

⁴ Full-time graduate students; part-time graduate students in parentheses

⁵ Endowment in millions.

The Homewood undergraduate program is currently ranked 15th by *U.S. News and World Report*.¹ Just above and below it are Washington University, Cornell, Brown and Rice. This ranking is higher than one would predict given Homewood's size and endowment, based upon a recent Stanford University analysis.² Homewood schools have five of 24 graduate programs/divisions that are rated by U.S. News in the top 10 in their fields. A 2007 paper in Proceedings of the National Academy of Sciences rates Johns Hopkins second behind Harvard in research productivity in non-biomedical sciences and engineering.³

The schools of medicine, public health and nursing, located together in East Baltimore, comprise the second largest medical campus in the United States, after Harvard. This campus is also home to the Johns Hopkins Hospital, the best-rated hospital in the U.S. The SoM and BSPH have a different business model than the other schools; they depend on external funding for roughly 85% of their annual expenditures. In the SoM, sponsored research and clinical revenues, in equal proportion, are the major sources. In the BSPH, sponsored research is the only major external source. According to *U.S. News*, the three health schools currently rank second, first, and fourth, respectively, making Johns Hopkins the only U.S. university with all three schools among the top five.⁴

FINDINGS

GOVERNANCE

G1. Deans and directors are charged with, and evaluated in terms of, the success of their individual divisions.

G2. Deans and directors work effectively together, in pairs, to create and sustain education and research programs; examples include the Department of Biomedical Engineering, the Graduate Training Program in Clinical Investigations and the Sheridan Libraries.

G3. The university does not collectively act to invest any appreciable part of its \$3.5 billion annual expenditures into strategic, crosscutting **academic** initiatives. It spent \$108 million or 3.5% on central administration in 2008. It invests for the longer-term in buildings, information technologies, fundraising infrastructure, and other functions that support its core business. For example, it invested roughly \$160 million, amortized over 15 years, to purchase and implement Hopkins One, an SAP system for business information management. But it does not now collectively invest in the longer-term development of its core academic mission of education, research, or professional practice programs. Such investments are left to individual faculty, departments, centers and academic divisions.

DECENTRALIZATION

D1. Despite having a substantially smaller endowment than its peers, Johns Hopkins has become one of the world's preeminent research universities through the creative and entrepreneurial efforts of its faculty, deans and directors.

D2. Deans and directors operate within a decentralized organization in which each division determines its own strategy to achieve excellence and to respond to major issues, constrained only by its own ways and means.

D3. The decentralized organization and governance have led to a university with a unique "shape." For example, it has more tenure-track faculty in its school of public health than in all of arts and sciences and engineering and 8 of every 10 professorial faculty member's work on problems related to human health.

¹ *America's Best Colleges*. 2009 edition. Washington, DC: U.S. News & World Report, 88-93.

² Livingston, R., Davidson, D. 2008. *Securing the Resources to Secure Our Academic Mission*, Stanford University.

³ Kinney, A.L. 2007. *National scientific facilities and their science impact on nonbiomedical research*. Proceedings of the National Academy of Sciences: 104, 46: 17943-17947.

⁴ *America's Best Graduate Schools*. 2008 edition. Washington, DC: U.S. News & World Report, 39-43.

D4. Multiple academic cultures coexist within the university. For example, KSAS, WSE and SoN faculty are largely funded by undergraduate tuition and have correspondingly substantial teaching responsibilities to be balanced with their research. SoM and BSPH faculty receive about three quarters of their funds from external research grants or from professional practice. Their scope of research, especially in new areas, is constrained by competitiveness for external funding and the funding priorities of sponsors.

The different sources of support, attendant responsibilities and policies, such as calendars, have created logistical barriers to collaboration across divisions despite overlapping interests and opportunities. While significant, these barriers are surmountable, as evidenced by the success of the Department of Biomedical Engineering, the Berman Institute of Bioethics, the Hopkins Population Center, and other ongoing collaborations.

D5. There are major opportunities for the discovery and application of new knowledge, and new academic programs, that cut across our traditional divisions. Examples include brain and behavioral science, stem cell and regenerative biology, information science and technology, energy and environmental science, population science, space science, social policy, the performing and visual arts, and others. Our decentralized organization, cultural differences, and varying degrees of resources and priorities have constrained collaborations in such areas.

D6. Decentralization minimizes the size of university administration but increases the size, complexity and redundancy of divisional administration.

D7. There are many examples of effective administrative collaborations among the divisions, including Networking and Telecommunications Services (NTS) and University Libraries, that produce solutions to shared problems without full merger or substantially centralized powers. The typical collaboration starts when the deans and directors perceive a common need, and a transparent and mutually acceptable allocation of benefits and costs can be arrived at.

There are also examples of duplication of effort and imbalanced quality of services: for example, in research administration and development of pedagogical and instructional technology support for faculty.

D8. Identifying strategic imperatives, making enterprise-wide decisions, and prioritizing university investments in a highly decentralized environment are challenging. The implementation of SAP is one example. While the need for a new system was widely embraced to start, the magnitude and costs of the project were large and grew over time. The level of communication, interaction, and effective training across the university did not keep pace. The difficulty of the transition diminished confidence in the project for some members of the administration, faculty and staff.

COLLABORATIONS

C1. There are numerous examples of successful academic collaborations between pairs of divisions, including Biomedical Engineering, the Graduate Training Program in Clinical Investigations, the Homewood Student Affairs, and the Center for Educational Resources. There are fewer successful models of sustained academic collaborations involving more than two divisions. Two recent exceptions are the Population Center and the Berman Institute of Bioethics.

C2. Johns Hopkins academic collaborations have a higher likelihood of success when they follow one or more of the following principles:

- Have a clearly articulated mission that is protected from drift or dilution
- Are initiated and supported by participating divisions
- Are led by a dynamic and committed “champion,” a person for whom the group’s success represents his or her career ambition

- Have significant start-up funding or an on-going external source of support or do not require a large initial investment
- Report to one or at most two deans or to the provost
- Have shared space
- Provide essential infrastructure or services to participating faculty and students
- Act like a utility, providing essential goods or services that others value and do not have a vested interest in managing
- Are organized as a distinct administrative entity; for example, the Johns Hopkins Health System or the Kennedy Krieger Institute

C3. Collaborations tend to be less successful and short-lived when they:

- Are created to meet a perceived need for the university without shared decision making by and support from the divisions
- Have goals that are not oriented to research, education or professional practice, or where the university does not have the requisite expertise
- Are led by a director for whom the group is not a primary career mission or who does not effectively involve stakeholders
- Are financed by involuntary taxation of divisions for whom participation is not a priority
- Are not well defined in terms of goals and priorities

C4. Other leading research universities have organized innovative collaborations with varying degrees of success by:

- Participating in well-endowed, stand-alone organizations, such as the Harvard-MIT Broad Institute that brings essential infrastructure to a focused research mission, such as personalized medicine
- Coordinating research and educational programs into a small number of “initiatives” that are targets for recruitment and fundraising. Stanford has five initiatives: Human Health; Environment and Sustainability; International, Arts and Creativity; and K–12 Education
- Creating temporary, multidisciplinary programs targeted at a particular topic in a reportorial model, as is done in African Studies and the Humanities Institute by Northwestern university
- Creating institutes, with an administrative status similar to that of a school, by consolidating, into one location and governance structure, departments from several schools, such as the Institute for Genome Science and Policy at Duke University
- Consolidating researchers from many departments into one new research space, as Harvard has done with its new initiative in Stem Cell Technology.

C5. Some peer universities, such as the University of Pennsylvania, have a system of centers and institutes with explicit organizations and reporting responsibilities to a chair, dean or to the provost.

PEOPLE

P1. To remain a leading research university, Johns Hopkins must, first and foremost, recruit and retain outstanding people who are talented, entrepreneurial, and diverse. Salary is a key factor. Currently, Hopkins faculty and senior staff salaries in many parts of the university are judged to be non-competitive with peer institutions.

P2. Johns Hopkins faculty seek to work with the best students and students with the best faculty. To attract them, we need to provide financial support and an intellectual environment as good or better than that which is available at peer institutions. The best students now have access to significantly more scholarships at our peer institutions.

P3. Faculty members are more burdened with research and educational administration than in the past. Current staffing provides some secretarial support but insufficient administrative support in many parts of the university. Where this is true, there is the potential to improve productivity with a new staff support model.

EDUCATION

E1. Johns Hopkins undergraduate education is distinguished by the opportunity for students to incorporate a world-class research experience into their program. A large fraction of students deepen their knowledge in a specific discipline through research. At the same time, many students choose to double major or to minor in a second field to diversify their learning experience.

E2. Faculty follow students. Crosscutting academic programs meet students' needs but also foster interactions among faculty with diverse interests. The university has the opportunity to promote crosscutting faculty initiatives by supporting such academic programs.

E3. Nearly 40 students in the master's program in information security have their tuition covered by a Department of Defense program in which students exchange tuition support for a six-month internship at DoD. The Department of Biostatistics has just begun a similar program in which students are paid back their master's tuition by Johns Hopkins if they spend two years as senior staff after graduation. There may be opportunities for more tuition support using internship models of this kind.

RESEARCH ENVIRONMENT

RE1. University research is increasingly a regulated enterprise. There are more regulations, stricter oversight, imposed cost sharing, politicization of some programs, and heightened public greater public sensitivity to research integrity, than in the past.

RE2. Faculty members appear to spend an increasing proportion of their time on research administration rather than on research and scholarship.

RE3. Administrative support for faculty research is uneven across the university — excellent in some places, inadequate in others.

RE4. Peer institutions are judged to invest greater start-up funds in junior faculty, provide more bridge funding to established investigators who are between grants, and have shared equipment programs to assure faculty have access to state of the art technologies necessary in their research. Such investments give our peers a competitive advantage in faculty recruitment and retention.

RE5. Peer institutions also appear to provide a greater number and more attractive graduate student fellowships. At many of these institutions, graduate fellowships are covered by endowment, whereas Johns Hopkins graduate students support is more often provided by the faculty through their sponsored research. This creates an unlevel playing field that disadvantages the Johns Hopkins faculty.

PROFESSIONAL PRACTICE

PP1. Johns Hopkins is distinguished by the extent to which it incorporates professional practice in its core mission: "...to bring the benefits of new knowledge to the world." The Applied Physics Laboratory, School of Medicine and School of Nursing professional practice, Jhpiego, Institute for Policy Studies, and applied research programs in many schools comprise roughly 40% of the annual university expenditures.

PP2. The training of doctors and nurses is well integrated within the professional practices of faculty in the SoM and SoN. There is limited integration of training within APL, Jhpiego or in the other professional practices.

SOURCES OF FUNDS

S1. Investment returns on endowment and annual gifts have become an increasingly important source of revenue for research universities. Johns Hopkins' endowment is small relative to its peers. For example, in 2007–2008, it ranked 26th in total endowment size and 89th in endowment per undergraduate student, with more than half of the endowment committed to the professional schools.

S2. For the Homewood schools, the revenue derived from tuition is directly reduced by the need to provide financial aid. The KSAS and WSE receive net tuition after financial aid of approximately 75% of total tuition. At many of our peer institutions, financial aid is substantially supported by endowments. The percentage collected is likely to fall over the coming years if they are to remain competitive in undergraduate recruitment.

S3. Sponsored research has grown steadily and predictably over the past decade allowing Johns Hopkins to be highly productive in those areas such as biomedicine that are well supported by external sources. However, the growth in sponsored research has been accompanied by a relative reduction in unrestricted funds, decreasing the university's ability to invest in new initiatives, and making it more dependent on research directions chosen by the U.S. government and other external funders.

S4. Johns Hopkins depends to a much higher degree than its peers on sponsored research. Traditional sponsored research funds are now harder to acquire than only five years ago, and this trend will likely persist.

S5. Professional medical fees are at risk of being reduced so that the two major sources of external funds (professional fees and NIH funding) for the SoM are both at risk.

S6. The pressure on most of the university's major sources of revenues: NIH funding, tuition, and clinical revenues, and the attendant increases in administrative costs, have made it more difficult for divisions to balance their budgets without harming current levels of academic programming. A new "tax," to pay for crosscutting initiatives, has the potential to harm existing programs in support of newer ones.

S7. New academic programs that are mandated from above and financed by taxing participating or all division expenditures do not work well at Johns Hopkins.

S8. The development and operation of crosscutting initiatives, proposed here, will require significant new or reprogrammed funding. The potential sources for these funds include combinations of:

- New philanthropy
- Return on investment from prior initiatives
- Tax on increases in annual gifts
- Savings from divisional and university administrative efficiencies
- Increased revenues or reduced costs of existing academic programs, for example by replacing general funds support for faculty research with external grants
- Growth in net revenues from existing or novel professional services
- Private sector investments or partnerships

INFORMATION TECHNOLOGIES AND COMMUNICATIONS

IT1. Network and Telecommunications Services (NTS) is an effective collaboration of all divisions that is responsible for email and directory services, the Hopkins web infrastructure, network security and related activities. It is seen as fairly apportioning costs and benefits for basic IT services across the participating divisions. It is a model for organization and management of other shared services.

IT2. Systems for collecting, managing and using research information are the responsibility of individual investigators. NTS has made some tools, such as Microsoft Sharepoint and Adobe Acrobat Connect Pro

system, available to the JHU community. Through its data curation program, the Sheridan Libraries provides digital collections, services and infrastructure to support research, learning, and long-term preservation. Faculty and students across the university use these academic computing functions via the University Libraries. The Sheridan Libraries are finalists for a \$20 million National Science Foundation (NSF) grant that would accelerate its provision of academic computing services and reduce the data management burden that faculty currently face.

IT3. Despite these positive developments, it is difficult to ensure that all potential users are made aware of tools and technologies and have the skills to use them. Many other services, such as database management, statistical support and website implementation, are available to only small subsets of the faculty.

IT4. Communications systems to facilitate multi-institutional research groups or for teaching on-line recently became available across the university. The *Sakai* open-source course management system was piloted and evaluated as a possible enterprise-wide solution for on-line education. The *Learnshare* learning management system was selected as a training environment, for use across the university and health system for on-line and instructor-led staff and faculty administrative training. Due to the decentralized nature of the university, the selection processes were protracted, and the funding allocation models have not yet been fully adopted.

GRAND CHALLENGES AND RECOMMENDATIONS

1. Build a foundation through “collaborative decentralization.” The W&M envisions crosscutting research and educational programs, initiated by faculty in collaboration with deans and other university leaders, from multiple divisions. To enhance the environment for crosscutting programs, a grand challenge is to build a university governance in which deans and directors are successful leaders of their own divisions, encouraged to be innovative and entrepreneurial as is our tradition, and are also responsible to be actively engaged with the president, senior vice presidents and the university administration to govern the university so as to make Johns Hopkins greater than the sum of its parts.

The goal is to move from a totally decentralized organization, described by the motto “each tub on its own bottom, toward “*collaborative decentralization*” in which divisions remain free to pursue their unique opportunities, are responsible for their internal ways and means, but also share responsibility for Johns Hopkins University being a global leader.

R.1a. *The new president and the provost should initiate a “conversation series” with the deans, directors and other key university leaders to lay the foundation and build trust for shared leadership and collaborative decentralization.*

R.1b. *The new president can expand the role played by the provost, the deans/directors and the faculty in the strategic leadership of the university.*

R.1c. *Deans and directors should be charged with leading their divisions and also with contributing to the success of the university as a whole. Search committees should seek, and the president should appoint, deans and directors with demonstrated skills and commitment to advocate for their own division while working across divisions to strengthen the university.*

2. Build on strength across divisions. A grand challenge is for faculty in a discipline to pool their strengths across divisions to more rapidly advance their field, to recruit and support top faculty and graduate students, and to raise the visibility and external support for their research areas.

R.2a. *The deans of Engineering and Medicine should work with the chair of Biomedical Engineering (BME) to maximize the benefits to both schools of this leading model of collaboration. The provost and deans should then reduce barriers and create incentives to adapt the BME model for other disciplines where the faculty members see an*

opportunity to establish a leading research, graduate or undergraduate program through such collaboration. Possibilities exist in many areas such as biology, neuroscience, biomedicine and nursing (e.g. regenerative medicine, stem cell research, nanobiotechnology), chemistry, astronomy, economics, sociology, psychology, brain science, anthropology, statistics, and information sciences.

Another grand challenge is to enable and assure that faculty recruit highly productive graduate students, who use Johns Hopkins' investment in their future to advance their disciplines and address important societal problems. Recruiting the best students requires that the university create the requisite environment and level of support for faculty and students to be productive together.

R.2b. *The vice provost and vice deans for graduate programs should work with deans and faculty to advance the quality and competitiveness of Johns Hopkins PhD programs. The creation of a university-wide "graduate school" to facilitate the process should be considered. A careful review of the experiences of peer institutions in the use of graduate schools to promote the quality of PhD education is recommended.*

3. Selectively invest in crosscutting academic initiatives. Johns Hopkins has total annual funding from endowment, gifts, state aid or tuition that is significantly smaller than most of its peer universities. A challenge is to reduce this differential to the greatest extent possible. In the meantime, a grand challenge is for the university to invest discretionary resources in selected areas where it has the potential to further distinguish itself. The creation of new mechanisms for identifying frontiers as they emerge, for promoting discussions about important opportunities among units, and for applying seed funding to promising collaborations, constitutes one of the key processes for transforming the university to retain and advance its competitive edge.

R.3a. *The new president, provost and deans/directors should develop, using as input, recommendations from the Discovery, People, and Ways and Means working groups, a series of university crosscutting initiatives to be a focus of the next fund raising campaign. Our recommended approach is to ask each dean/director to propose three initiatives, for \$20 million, \$50 million and for \$100 million, "that will best distinguish Johns Hopkins as a university." A selected subset of these proposals could be input to an expert panel of friends of Johns Hopkins, convened as a "visiting committee," to review and identify those likely to most benefit society and the university over the longer-term and to attract philanthropic and sponsored support. These initiatives can be a central focus of the university's next fundraising campaign. The visiting committee could meet annually to provide ongoing advice about crosscutting academic initiatives.*

A grand challenge is to identify opportunities and the ways and means for the university to *collectively invest* in its core enterprises of education and research, as it does, for example, in administrative systems. To be successful, collective investments should: be driven by faculty ideas and initiative, have dynamic and committed academic leadership, and have an academic business plan with strong anticipated return on investment, as measured by methods summarized in Appendix 2.

R.3b. *To remain a leader, Johns Hopkins should collectively invest in its core enterprises of education and research as it does in its buildings, administrative systems and other support functions. Currently, such investments are made almost entirely by individual faculty, departments, and divisions with limited coordination. The W&M recommends that the university annually invest a small fraction of its operating funds in longer-term academic initiatives that can keep Johns Hopkins among the preeminent research universities.*

Given the size of this annual investment and the budgetary pressures that already exist within divisions, these funds should not be raised through an increase in the current

university administration tax on spending or another new tax on programmed revenues in the divisions. That strategy may do more harm than good to existing, successful programs. Rather, the university should build an academic venture capital fund from which these investments are made. The fund can be continually refreshed by return on investments and, as deemed necessary by the president, provost and deans, new sources from a combination of: philanthropy dedicated to strategic initiatives; a tax on growth in annual giving, reductions in central administrative costs or other means.

R.3c. *The university should measure baseline levels of consumption and expenditures on “consumables,” including transportation, energy, paper, garbage disposal, cleaning service and others. A fixed fraction, say 80%, of the savings due to reducing consumption below the baseline level, should be reinvested by divisions in core academic needs, for example, in student scholarships or improvements to facilities that support the academic and research missions of the university. The annual reinvestment should be measured and heralded to encourage additional savings.*

R.3d. *The university should create an Academic Initiatives Review Group (AIRG) to foster interdivisional initiatives in research and education. The AIRG would comprise highly respected faculty and administrators from across the university to review proposals, mentor proposing investigators, especially from among our young stars, and promote implementation of the best ideas. The group would function as an academic analogue to the Business Review Group in Johns Hopkins Medicine.*

The AIRG would comprise highly respected faculty and administrators from across the university to review proposals, mentor proposing investigators, especially from among our young stars, and promote implementation of the best ideas. The group would function as an academic analogue to the Business Review Group in Johns Hopkins Medicine.

The AIRG should operate like an academic venture capital fund in which potential investments are evaluated based upon their likely return on investment to society and the university. Here, ROI is measured both in intellectual and financial terms by metrics like those in Appendix 2

Another challenge is to stimulate cross-disciplinary problem solving that addresses important societal problems, leads to academic innovation, attracts talented faculty and students, and distinguishes Johns Hopkins among its peers.

R.3e. *Establish the “Johns Hopkins Repertory Scholars,” a program in which Johns Hopkins academic leaders identify a targeted issue of importance to academia and society as well as a dynamic director to organize a term-limited initiative. As in a repertory theater, the director will specify a focus of scholarship, assemble a diverse and multitalented group of scholars from within and, in some cases, beyond the university (faculty, students, visitors, and support staff), and then create an intellectual environment in which collaborations can move the chosen field forward. A single topic will typically take three to five years to complete: one to plan a group and refine the questions to be pursued; the middle years to work together; and the final year to publish and disseminate findings. This allows for an annual or bi-annual shift of focus. The leader will be expected to reach out to a wide range of disciplines, divisions and departments, to foster truly innovative approaches to the problem at hand. In this way, the Repertory Scholars will stimulate a creative intellectual environment and crosscutting scholarship. Several exciting models can be studied for creating the one best suited to Johns Hopkins.*

4. Strengthen the environment for longer-term academic success. A grand challenge is to make Johns Hopkins the best environment for education and research, consistently across all of its divisions, in order to attract talented faculty and graduate, professional and undergraduate students. Here “best” means: addressing important problems, commitment to integrity and collegiality, intellectual stimulation, maximizing faculty and student time dedicated to their scholarly activities, and administrative efficiency. The working group has addressed aspects of this challenge that are common to many divisions, fully recognizing that there will also be effective local approaches and solutions.

***R.4a.** The vice provost and vice deans for research should build a better research environment in order to make Johns Hopkins the place where faculty and research students want to build their careers. If necessary, invest in additional research support infrastructure using the NTS or another similar model of shared resources. Review the staffing of sponsored faculty research and, if necessary, create a new staff category — research facilitator — to support faculty by handling the myriad administrative responsibilities related to grant procurement and administration so that faculty and their students can focus the lion’s share of their time and energy on productive research and scholarship.*

***R.4b.** Undergraduate and graduate student financial support, which also benefits the retention and productivity of faculty, has been raised in tuition-focused development campaigns at peer institutions. This approach should be considered at Johns Hopkins to more nearly level the playing field. The possibility of cross-disciplinary training through double majors/minors for undergraduates and through innovative graduate curricula can be featured in this campaign along with the tradition of student involvement in world-class research.*

***R.4c.** Building upon the approach to the professional education of doctors and nurses, the other professional schools should investigate the possibility of affiliating with, or creating “professional practices” in which faculty can engage part-time in their profession practice while teaching students “at the bedside.” These practices have the potential to generate additional funding for both faculty and students.*

***R.4d.** Each academic division should work toward operating with a faculty culture of shared responsibility for longer-term academic quality and economic wellbeing. In such a culture, resources need to be continually reinvested in the future of each academic unit. The W&M recommends that faculty who become less than fully productive for an extended period should be sensitive to this need and draw core resources commensurate with their current contributions. The W&M proposes that a committee of faculty be appointed to review best practices at peer institutions and to recommend how to further the culture of shared responsibility at Johns Hopkins.*

***R.4e.** To assure quality and efficiency, administrative and academic departments should be systematically reviewed and held to equivalently high standards.*

***R.4f.** Evaluate the pros and cons of selling non-essential assets, as was done in the past with WJHU or American Radiology, and reinvesting the proceeds in the core enterprises of education and scholarship.*

5. Build optimism through engagement and transparency. Johns Hopkins comprises the most talented group of deans and directors, faculty, students and staff in its history. It is daily advancing the quality of global society. A grand challenge is to reach its full potential by expanding the public’s and board’s knowledge about, and appreciation for, the core enterprise of education, inextricably linked to research, and by developing a small number of crosscutting initiatives that have the potential to transform society and this outstanding research university.

R.5a. *The new president and senior leadership of the university should share, within and beyond the university, Johns Hopkins' commitment and contributions to the quality of global society. They can create excitement about the future, a key university asset.*

R.5b. *They can creatively involve faculty and students with the public and the board of trustees to expand their knowledge about, and appreciation for, the core enterprise of education, inextricably linked to research.*

R.5c. *Major university investments such as HopkinsOne, or academic initiatives like the ones proposed here, should be steered by a multidisciplinary team of faculty and administrators to ensure the broadest sponsorship, leadership, participation and support. The W&M also recommends that leadership groups be as transparent as possible regarding costs, benefits, challenges, and successes.*

R.5d. *The president and the board of trustees can focus the university's energy and resources on its core enterprise while assuring an effective and efficient university administration.*

APPENDIX: POTENTIAL MEASURES OF RETURN ON INVESTMENT (ROI) FOR RESEARCH PROGRAMS

1. Amount of money generated over a specific period of time that yields at least a given percentage return on the investment such that the cost of the investment (including the opportunity cost of funds) is at least recouped
2. Percent increase over five to 10 years in outside funding in grants, contracts, and philanthropy into initiative area adjusted for inflation
3. Percent increase over five to 10 years in scholarship in given area (e.g. total citations of papers published in a given field)
4. Percent increase in number of applicants and number of graduating students going into initiative area
5. Increase in reputation rank in proposed area
 - a. Percent increase in patent/licensing income in initiative area over 10 years
 - b. Impact in field
 - c. Production of leaders in the field

A8: NOBEL PRIZES WON BY JOHNS HOPKINS UNIVERSITY FACULTY, STAFF AND ALUMNI

The following winners of Nobel Prizes have had an association with The Johns Hopkins University, either as graduates of Johns Hopkins or as faculty of the university before, at the time of or subsequent to their receipt of the prize.

2006	Medicine	Andrew Fire
2004	Medicine	Richard Axel
2003	Chemistry	Peter Agre
2003	Literature	J.M. Coetzee
2002	Physics	Riccardo Giacconi
2000	Medicine	Paul Greengard
1999	Economics	Robert H. Mundell
1997	Peace	Jody Williams
1994	Medicine	Martin Rodbell
1993	Economics	Robert W. Fogel
1990	Economics	Merton H. Miller
1984	Economics	Sir Richard Stone
1981	Medicine	Torsten Wiesel
1981	Medicine	David H. Hubel
1978	Medicine	Daniel Nathans
1978	Medicine	Hamilton O. Smith
1972	Chemistry	Christian B. Anfinsen
1971	Economics	Simon Kuznets
1968	Chemistry	Lars Onsager
1967	Medicine	Haldan Keffer Hartline
1966	Medicine	Francis Peyton Rous
1963	Physics	Maria Goeppert-Mayer
1955	Chemistry	Vincent du Vigneaud
1944	Physiology	Herbert Spencer Gasser
1944	Medicine	Joseph Erlanger
1934	Chemistry	Harold Clayton Urey
1934	Medicine	George Hoyt Whipple
1934	Medicine	George Richards Minot
1933	Medicine	Thomas Hunt Morgan
1931	Peace	Nicholas Murray Butler
1925	Physics	James Franck
1919	Peace	Woodrow Wilson