

Report by the Faculty Issues Sub-group, of the Community and Culture Committee

1. Overview

The charge to the Faculty Issues Subgroup, chaired by Beverly Emerson, is to consider cultural issues of specific concern to faculty, including **diversity** and **inclusiveness**, fairness and transparency in matters of **governance**, **opportunities for visibility**, and **distribution of resources**. This broad mandate was translated into a set of five questions centered around specific Salk policies and protocols.

2. Key questions

- 2.1 Question 1: **diversity**: is our current faculty sufficiently diverse, as assessed by several criteria; how do we ensure diversity when recruiting future faculty?
- 2.2 Question 2: **governance and inclusiveness**: are robust mechanisms in place to ensure that a wide, inclusive group of faculty participates in academic policy and non-elected leadership positions?
- 2.3 Question 3: **governance and transparency**: for policy decisions that influence faculty science (such as space allocation and internal funding), are the mechanisms that drive such decisions fair and transparent?
- 2.4 Question 4: **opportunities for visibility**: how do we ensure that all of our faculty have opportunities to interact with a wide range of donors, thereby enhancing and increasing the ability to raise funds from this important source?
- 2.5 Question 5: **distribution of resources**: how are Salk-specific resources (bridging funds, endowed chairs, foundation support, Innovation grants) allocated? Are there alternative mechanisms that could enhance Salk science?

3. Summary of what we learned (models from outside, info from inside)

a. Information gathered from within:

3.1 Information on faculty diversity addressed the following topics:

(a) scientific diversity: Notably, 11 of the 47 Salk faculty running active labs received either their Ph.D. or postdoctoral training outside of the U.S., and 6 faculty members received their Ph.D. in a discipline other than the life sciences (i.e. physics, computer science or chemistry), indicating that Salk faculty come from a highly diverse range of scientific backgrounds.

(b) ethnic/racial diversity: Like most scientific institutions, Salk does not have any under-represented minorities as faculty, which is a reflection of U.S.-wide difficulties in attracting/retaining these sub-populations into biomedical research. Nevertheless, 20% of Salk faculty are of non-European ancestry, which is an unusually high proportion.

(c) gender: In contrast, the statistics for gender distribution are less impressive. Faculty hires since 2010 are summarized in **Appendix 1**, which shows that the Institute has hired 3.75 male faculty members for every female appointment during the past six years. As the result of similar recruitment patterns in the past, only 16% of the full Professors are female. Furthermore, every woman faculty member who is currently at the rank of Professor was hired as an Assistant Professor more than 27 years ago, with one exception (one woman was hired at the Professor level in 2004). This statement alone is indicative of a substantial and long-standing problem in recruiting, promoting and retaining women faculty.

3.2 Information on governance and inclusiveness:

(a) participation in academic governance: The Academic Council (A.C.) is responsible for formulating academic policies, in consultation with the President, in three broad areas: (i) academic programs; (ii) academic appointments and promotions; and (iii) utilization of research space. Members of the A.C. are elected, through a process defined by the Institute By-Laws, which dictates the composition of the A.C. as well as term limits. In practice, however, academic policies are determined and carried out by standing committees (ApCom, APF, etc.). Members of these committees, including the chair of each committee, are selected by the incoming faculty chair and approved by the A.C. Although this potentially provides an opportunity for broad faculty participation, there is very little turn-over in the membership of these committees; see **Appendix 2** for an example. This promotes a culture in which a small subset of faculty play a disproportionately large role in academic governance, which suggests that alternative mechanisms should be employed to ensure a wider inclusion of faculty in key academic decisions.

(b) opportunities for leadership: As a corollary to the above, there is little turn-over in the chairs of the major committees; similarly, the chairs of sub-committees appointed by ApCom (tasked with faculty recruitment, promotions and mid-term review) are chosen from a limited number of faculty. Restricting leadership opportunities to a small subset of faculty has several consequences. First, there is almost a complete lack of gender diversity in leadership positions. In addition, the lack of turn-over does not facilitate an academic leadership transition that will be necessary to keep Salk vital. This also argues for a process other than the current one to ensure that a wide range of "young" full Professors will assume leadership positions over the next few years.

3.3 Information on governance and transparency:

One advantage of a research institution as small as the Salk Institute is the ability to be flexible and nimble in making certain academic decisions. This flexibility can be particularly advantageous, for example when considering a target-of-opportunity as a Salk faculty hire. Academic policies that are oral, rather than written, can also allow a great deal of flexibility; however, oral policies are also subject to multiple interpretations, resulting in inconsistent and non-transparent outcomes. In contrast to most institutions, Salk does not have written policies for how research space is allocated to individual faculty, how faculty are chosen to apply for restricted funding and how eligibility for bridging funds is determined. As an example of how such policies can be open to multiple interpretations, there are numerous differing opinions about what the current lab space policy actually states. There are also strong (and often negative) views about how these three aspects of Salk resources are distributed; the lack of transparency about the policies themselves, and how these policies are executed, also leads to substantial speculation about inequitable resource distribution, with a negative impact on Salk faculty culture.

3.4 Opportunities for visibility:

As funds from governmental granting agencies become more scarce, individual laboratories become more reliant on funding from private foundations, private donors, etc. Thus, opportunities to speak at events such as the Salkexcellators private receptions, attendance at the annual Salk International Council meetings, etc. can often initiate a relationship with a donor. However, there are numerous faculty that do not have access to these events (requests for information from External Relations on faculty participation at such events was unsuccessful, so we were unable to analyze the data). There is also a wide-spread perception among Salk faculty that External Relations has a limited number of go-to faculty for interaction with high level donors, members of the Board of Trustees, etc.

3.5 Distribution of resources:

The major sources for laboratory research at the Salk Institute have been federal and state funding agencies, supplemented by funds that come through Institute channels (applications for funding from foundations, endowed chairs, gifts from private donors, etc.). One notable difference between these two categories is that competition for funding from federal and state agencies is an unrestricted process (i.e. any Salk faculty member is eligible to apply), whereas there is no application process for the majority of funds that are distributed by the Institute (and little to no transparency in how these funds are allocated). As funding from governmental agencies becomes more difficult to secure, research funds that are allocated by the Institute play an increasingly larger role in dictating the number of scientists in each laboratory.

Individual laboratories at Salk also exhibit a substantial size distribution. **Appendix 3, Fig. 1A** shows the size of individual laboratories for 24 non-HHMI Professors, displayed as the number of full-time scientists (FTEs) in each of these 24 labs (based on the Salk directory listing for each lab; see legend to Fig. 1A for details). NIH funding (direct and indirect costs) for these 24 laboratories was determined (<https://projectreporter.nih.gov/reporter.cfm>) and normalized to the number of FTEs per lab, as shown in **Appendix 3, Fig. 1B**. Non-NIH government support (NSF, CHRP CIRM, etc.), as well as corporate support, is not included, which will skew the results for a subset of these 24 laboratories. However, since NIH funding represents ~83% of the total government funding received by Salk in 2015 (based on data provided by Ana Cabera), this provides a reasonable overall snapshot. Three features are apparent from this analysis:

(a) Labs with less than 10 scientists per lab have obtained NIH funding equal to ~\$130K per lab member (direct and indirect costs); in contrast, the three largest labs have obtained ~\$40K in NIH support/lab member.

(b) Lab size does not correlate with faculty age (i.e. the premise that the smaller labs are run by older scientists, who might be scaling down, is not supported by the data in **Appendix 3**).

(c) There is a significant gender-specific bias: senior women faculty raise an average of \$195,000 (direct and indirect costs) from NIH for each member of their labs, versus ~\$95,000 in NIH funding/FTE for labs run by senior male faculty. A gender-specific bias is also evident in the timeline for awarding endowed chairs to full Professors (**Appendix 3, Fig. 1C**).

One possible caveat to this analysis is that the disparity in the number of FTEs per lab could be attributed to trainees that are awarded fellowships, from either external sources or as Institute-sponsored fellowships. Comprehensive information on trainee support for these 24 laboratories was not available to the authors of this report, but in response to specific requests, several labs provided information to the authors on how their trainees are supported. At least for this subset of labs, the NIH funding versus lab size disparity is still maintained, even when external trainee support is included in the analysis.

The striking inverse ratio between lab size vs. the amount of NIH support per FTE reflects substantial lab-by-lab variations in research funds that are available from the Institute. This inverse ratio also argues that support from these restricted sources are not being effectively leveraged to increase the amount of NIH funding that is awarded to individual Salk laboratories.

One additional observation from this evaluation: the current lab space policy is presumably based solely on the number of FTEs working in a lab. Thus, Institute-controlled funds, which are awarded through a largely non-transparent mechanism, can be a dominant factor in determining the number of FTEs per lab, and hence the amount of research space available to individual faculty. Given the gender-specific skew in lab size (**Appendix 3**), this also argues that the current lab space policy, based solely on FTEs, has a disproportionate impact on labs run by senior women faculty.

b. Outside models considered:

Access to bridging funds: Many universities have a written policy for how bridging funds are distributed, with applications peer-reviewed by other faculty based on a set of written criteria, thereby providing more transparency; see **Appendix 4** for one example. A subset of universities have coupled this to a metric for assessing how well these funds increase the success rate, on the A1 resubmission, both for new R01s and R01s that are due to be renewed.

Clustered faculty hires: This mechanism is being used by an increasing number of institutions as a mechanism for advancing faculty diversity, and in particular, to increase the proportion of women faculty in STEM departments (1).

Examples of Strategic plans from other institutions: Information from other institutions can often provide useful templates for potential policy recommendations; **Appendix 5** provides information extracted from the Penn School of Medicine Five Year Strategic Plan and the Tufts University Ten Year Strategic Plan.

4. Recommendations

- a. **Recommendation 1:** Re-structure procedures by which faculty recruitments are conducted, by employing “best practices” strategies used by institutions with a strong track record in gender-neutral faculty recruitment. Incorporate input from an outside consultant with relevant expertise and use published recommendations; for example, the 2010 National Academy of Sciences report on gender differences in STEM (2) concluded that “The percentage of women on the search committee and whether a woman chaired the committee were both significantly and positively associated with the percentage of women in the applicant pool ($p=0.01$ and $p=0.02$, respectively).”

- b. **Recommendation 2:** To ensure full faculty participation in decisions regarding new hires, establish a mechanism to ensure timely dissemination of relevant materials (CV, letters of recommendation, links to seminar and chalk talks), well in advance of a scheduled faculty vote on a new hire; perhaps this task could be facilitated through the President's office?
- c. **Recommendation 3:** Initiate a simultaneous recruitment of at least three senior women faculty, as a clustered faculty hire. If successful, this would help reverse Salk's long-standing skew regarding gender distribution at the senior level, and may also enhance our ability to hire more women at the junior level.
- d. **Recommendation 4:** Establish a faculty committee tasked with ensuring gender-neutral faculty policies and resource allocation, composed of an equal number of male and female full Professors, with input from an outside consultant with relevant expertise. The goal: transform the Salk Institute into the top research institution in the U.S. where women scientists can be outstanding (in other words, let's take one of our biggest weaknesses and make it one of our biggest strengths). It is worth noting that this recommendation, as well as others in this white paper, reprise an almost identical set of recommendations made in 2003, in a report on the status of women faculty at the Salk Institute that was commissioned by then President Richard Murphy.
- e. **Recommendation 5:** Impose term limits (four years? other?) for membership on academic governance committees, as well as committees that evaluate and award Institute funds to Salk laboratories, as well as two-year (or other?) term limits for chairs (coupled with a two-year prior period as vice-chair) of these same committees. This will help ensure that a diverse set of opinions by Salk faculty will be incorporated into key academic decisions, and also disseminate leadership positions among a wider range of full Professors.
- f. **Recommendation 6:** Establish a mechanism to evaluate the performance of External Relations (ER) that is based on a lab-by-lab fund-raising metric, rather than an Institute-wide metric. Re-structure ER so that individual members of ER have a portfolio of faculty members, so that every Salk faculty member is represented by a member of ER, analogous to how the Office of Technology Development (OTD) operates. Integrate ER more effectively with OTD, to increase the scientific literacy of ER. Schedule regular meetings between each faculty member and the ER and OTD personnel who have been assigned that faculty member. ER should also periodically report to the President on fundraising efforts that support each individual lab.
- g. **Recommendation 7:** For Institute-controlled funding opportunities where a Salk faculty member must be pre-selected in order to apply (such as foundations, private donors, etc.), establish a transparent internal submission process (an intranet Salk website, internal deadlines and peer review by a faculty committee), so that any faculty member can request to be considered. This approach is more transparent, and will potentially ensure that very new areas of research (even in established laboratories) will receive consideration for such funding opportunities, which can often be a precursor to securing NIH support. This is also an established protocol at other institutions; for example, <http://med.stanford.edu/rmg/funding/fundinglist.html>
- h. **Recommendation 8:** Establish a written, transparent policy for awarding bridge funding, with applications that are peer-reviewed by a committee of Salk faculty (rather than by Finance/Research Accounting). One model could be similar to

protocols that are available at other universities (see **Appendix 4**), which is intended to bridge a gap in a specific NIH application. This concept could be expanded to include support for faculty with a track record of extramural funding who have lost all of their research support at the time of the Bridge application, or who will lose all of their research support within six months of the Bridge application deadline. We also recommend conducting a yearly evaluation of the impact of bridging funds on the renewal rate of current R01s, and whether this policy reduces the length of no-cost extensions of R01s that are ultimately renewed (with a corresponding increase in the amount of indirect costs available to the Institute).

- i. **Recommendation 9:** Establish a written policy for utilization of research space, with clearly defined criteria that dictates the amount of space awarded to individual faculty members, accompanied by a written protocol for resolving space conflicts between laboratories. Ensure that the Institute space allocation map is accurate, through a periodic one-on-one consultation with each faculty member and the head of Facilities regarding individual laboratory space usage.
5. Key questions to answer now that Scientific Vision is complete
n/a
 6. Next steps to finish questions thus far explored and answering new round of questions
 - a. Several issues were raised at the recent Salk faculty retreat that influence faculty culture that were not included in the mandate of this committee, such as mechanisms for promoting more informal interactions (both scientific and social) among faculty members.
 7. Issues for which we would like Board input / feedback
 - a. Given the concerns raised above about gender-specific bias in distribution of resources, we request that the Board hire an independent consultant to examine potential gender-specific salary disparities over the past ~five-year period and report his/her findings to the Board.

References

- (1) Faculty Cluster Hiring for Diversity and Institutional Climate, Urban Universities for HEALTH, April 2015. http://urbanuniversitiesforhealth.org/media/documents/Faculty_Cluster_Hiring_Report.pdf
- (2) Gender Differences at Critical Transitions in the Careers of Science, Engineering, and Mathematics Faculty (2010). The Committee on Gender Differences in the Careers of Science, Engineering, and Mathematics Faculty; Committee on Women in Science, Engineering, and Medicine; Committee on National Statistics; Policy and Global Affairs; Division of Behavioral and Social Sciences and Education; National Research Council; 384 pages, ISBN: 978-0-309-11463-9

APPENDICES:

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APPENDIX 1: Faculty hired by the Salk Institute over the past six years

Male faculty appointments (15) since 2010:

2010	Axel Nimmerjahn Björn F. Lillemeier Sreekanth Chalasani Ye Zheng	Assistant Professor Assistant Professor Assistant Professor Assistant Professor
2012	Xin Jin Hu Cang	Assistant Professor Assistant Professor
2014	Kenta Asahina Saket Navlakha Alan Saghatelian Dmitry Lyumkis	Assistant Professor Assistant Professor Professor Salk Fellow
2015	Jesse Dixon Patrick Hsu	Salk Fellow Salk Fellow
2016	Graham McVicker Eiman Azim Sung Han	Assistant Professor Assistant Professor Assistant Professor
Offers under discussion:	Ed Stites Wolfgang Busch	Assistant Professor Associate Professor
Offer (declined) to**:	Ali Shilatifard Trey Ideker David Lui Kees Murre	Professor Professor Professor Professor

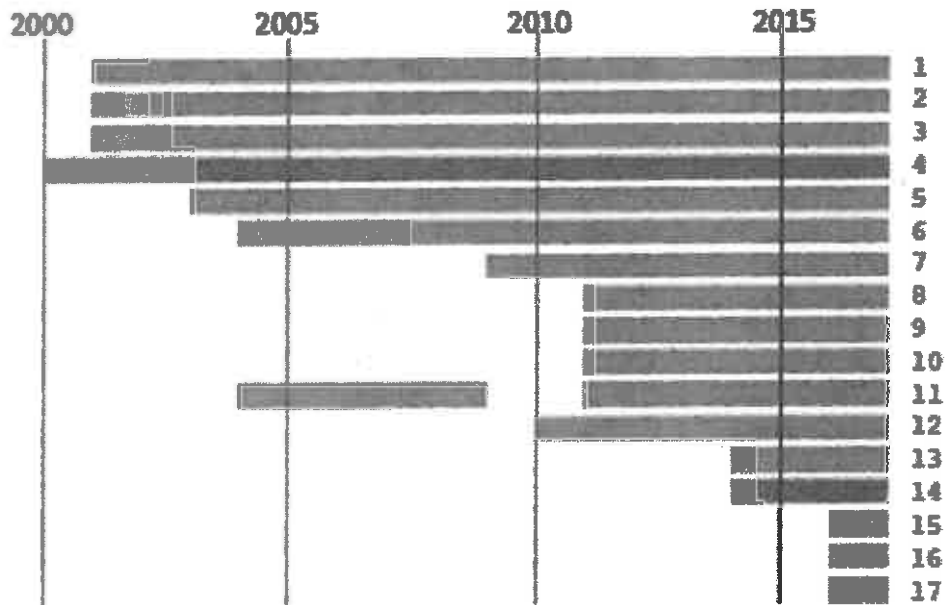
Female faculty appointments (4) since 2010:

2012	Nicola Allen Janelle Ayers Julie Law	Assistant Professor Assistant Professor Assistant Professor
2015	Diana Hargraves	Assistant Professor
Offer (declined) to**:	Anjana Rao Lalita Ramakrishnan	Professor Professor

**Only offers to full Professors that were declined are indicated; data for offers to assistant Professors that were declined were not available.

APPENDIX 2: Lack of turn-over on Salk faculty committees

The figure below, which displays the membership of the Appointments Committee (ApCom) for 2016-2017 (male and female faculty are indicated by blue or red, respectively), is one example of the lack of turn-over on key faculty committee. In this example, 35% of the current members have been members continuously for more than a decade, and another 35% have been members for at least 6 years. A similar lack of turn-over applies to a number of other Salk academic committees, including those that are responsible for distributing funds to individual Salk labs (Salk Innovation grants, postdoctoral fellowships, etc.). This puts the decisions regarding both major academic issues and resource allocation under the control of very few Professors.



APPENDIX 3: NIH funding vs. lab sizes, for full Professors (non-HHMI)

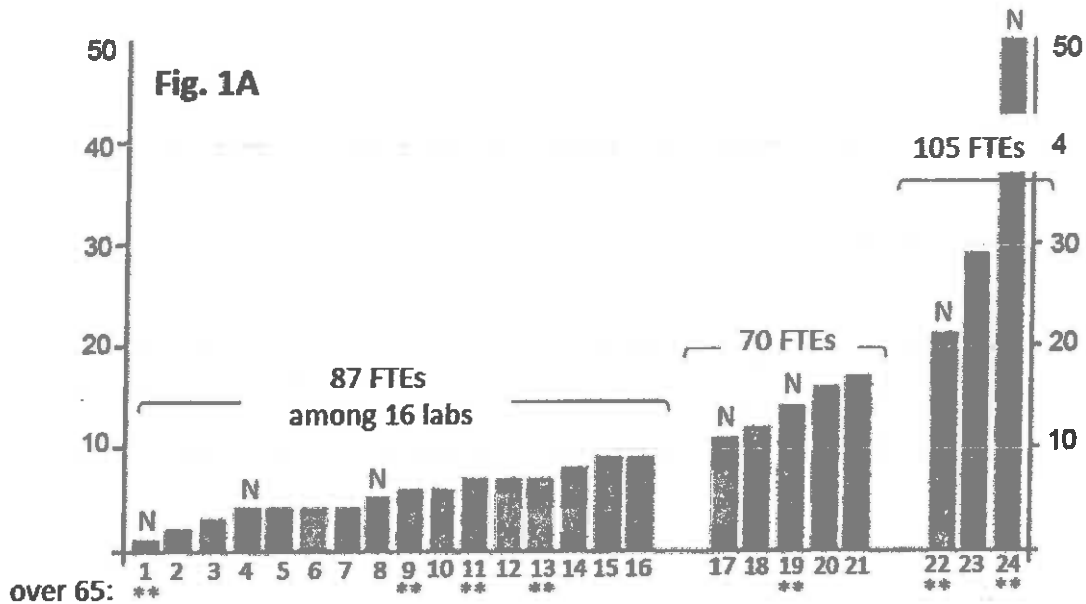


Figure 1A Current size of individual laboratories for 24 non-HHMI professors, displayed as the number of FTE scientists in each lab (based on the Salk directory list for each lab). Not included: Admin. assistants, student interns, visiting scientists, the Principal Investigator, Lab Aides or Lab Techs (the latter two categories were excluded because it was not possible to identify full-time versus part-time Lab Aides and Lab Techs from Salk Directory info; thus, the number of FTEs per lab, particularly for larger labs, is potentially under-represented). Labs run by non-HHMI female professors are indicated in red. N = National Academy member; ** = faculty who are ≥ 65 years old.

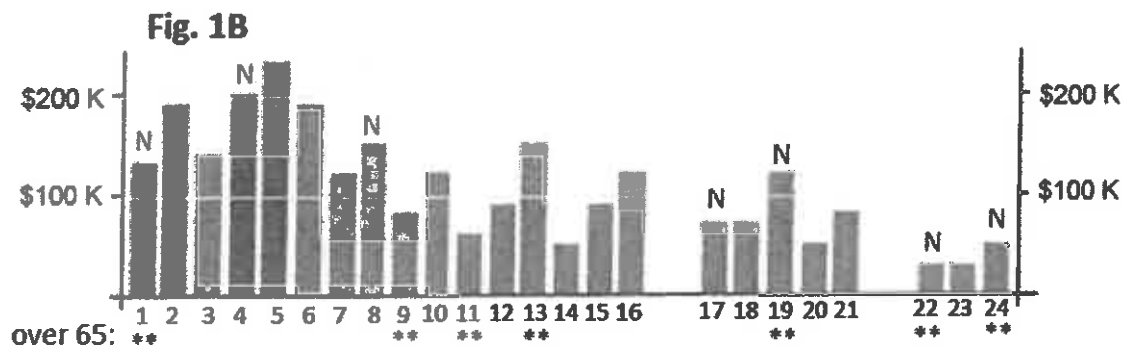


Figure 1B. Current NIH funding (direct + indirect costs) for the 24 laboratories in Fig. 1A, based on data from NIH RePORTER (<https://projectreporter.nih.gov/reporter.cfm>), normalized to

the number of FTEs per lab. Non-NIH government funding (NSF, CIRM, etc.) are not included, which will skew the results for several laboratories.

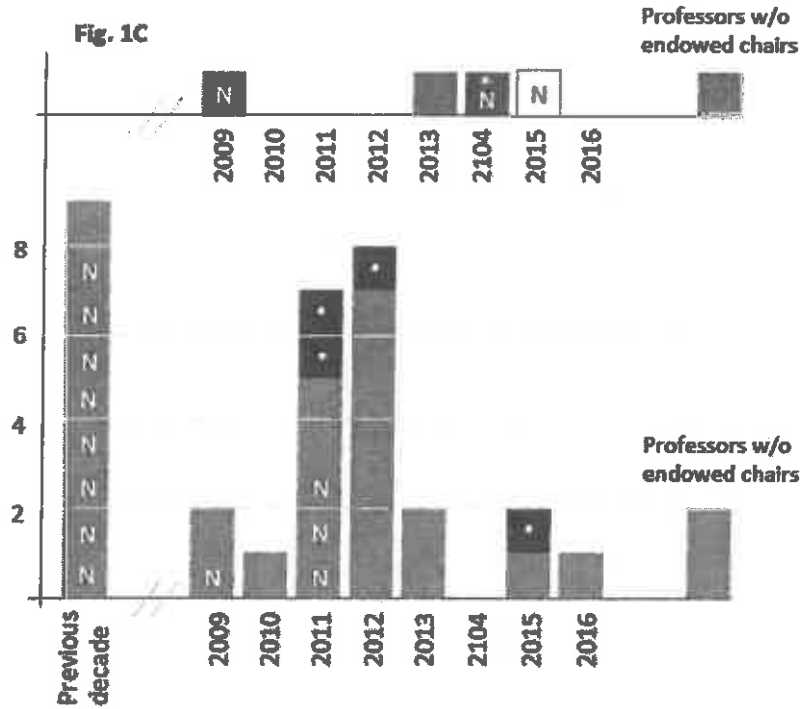


Figure 1C. Timeline of endowed chairs awarded to HHMI and non-HHMI Professors. Asterisks indicate endowed chairs that were re-awarded, due to faculty departures and/or post-tenure status. Labs run by female professors indicated in red. N = National Academy member; box in white = honorary chair (i.e. not associated with endowment funds).

APPENDIX 4: One example of a transparent peer-reviewed internal mechanism for bridging funds, for bridging a gap in a specific NIH application.

GENERAL GUIDELINES AND RESTRICTIONS:

- The maximum amount of funds that will be made available will be \$50,000 per award application cycle. If extramural grant funds (for the requested project) become available to the PI during the bridge funding period, any remaining Bridge funds will be returned.
- Bridge funding may not be used to support the PI's salary.
- Allowable expenditures include funding of technical staff, students and postdocs, and laboratory supplies. **Travel specifically** required for the project is also acceptable (but not travel to a scientific meeting). Purchase of capital equipment is prohibited.
- As the total pool of available bridge funds is limited, fulfilling all the above criteria does not ensure that all applicants will receive bridge funding. In the event funds are not available to cover all bridge funding requests within a cycle, the Bridge Grant Review Committee will determine priority for funding. The Vice President for Research and Graduate Education will make final funding decisions.

REVIEW PROCESS AND CRITERIA:

- Three submission deadlines for receipt of BFGs have been established. Submitted applications will be assigned to The Bridge Funding Grant Review Committee, which is composed of faculty members with expertise in research and knowledge of external grant review processes.
- The BFG Review Committee will rely considerably on the NIH summary statements associated with each application.
- Grants that received enthusiastic support from NIH reviewers (a 20th percentile ranking or better), but did not receive NIH funding, will receive an expedited review and be prioritized for funding.
- For all other applications, the review of the BFGs will focus on:
 - a The strength of the plan to address the concerns raised in the external reviews.
 - b Other concerns that may affect the competitiveness of the revised, external application.
 - c Appropriateness and justification of the budget.
 - d IRB, IACUC, and IBC concerns or questions.

REQUIRED APPLICATION COMPONENTS (AS PDF FILES) FOR APPLICATIONS THAT RECEIVED A PERCENTILE RANKING OF 20 OR BETTER (I.E., ELIGIBLE FOR EXPEDITED REVIEW*):

- The application that is being bridged (i.e., the A0 version)
- The summary statement from the review of the A0 version
- A one-page statement of how the review critiques will be addressed

REQUIRED APPLICATION COMPONENTS (AS PDF FILES) FOR APPLICATIONS THAT RECEIVED A PERCENTILE RANKING ABOVE 20 (I.E., NOT ELIGIBLE FOR EXPEDITED REVIEW):

- The application that is being bridged (i.e., the A0 version)
- The summary statement from the review of the A0 version
- A one- to three-page statement of how the review critiques will be addressed and how the bridge funding will be used to increase the likelihood of funding for the revised application (i.e., the A1 version)

EXPEDITED REVIEW: FOR AN APPLICANT WHOSE PROPOSAL IS ELIGIBLE FOR EXPEDITED REVIEW, SUBMITTED MATERIALS WILL BE SENT ELECTRONICALLY TO ALL REVIEWERS.

- If there is no request on the part of the committee to discuss the application or gather additional information, the application will be prioritized for funding. If multiple expedited review applications are received in a single cycle, they will be prioritized based on NIH percentile ranking at initial review (e.g., application 1 with a percentile of 9%ile will be prioritized over application 2 with a 19%ile score).

APPENDIX 5: Two examples of strategic plans by other Institutions

A. The Penn School of Medicine Five Year Strategic Plan included numerous key strategies to optimize performance of the Penn Medicine Ecosystem

1. Emphasizes the importance of faculty diversity to further enrich the academic environment, which is currently 33% women and 5% URMs. Their Diversity Plan includes recruitment of a **Vice Dean for Diversity and Inclusion** who will have the authority and resources necessary to achieve strategic goals.

2. **Develop transparent, evidence-based finance and space allocation decision-making models.** Penn Medicine administrative leaders will work with the faculty to design the new funding models, compensation policies, and reviews of space utilization.

3. In addition to recruitment efforts, Penn Med sees the important of Investing in existing Penn Faculty at all career levels:

Enhance pathways for career evolution

Support flexibility throughout faculty careers, including retraining opportunities

Engage in selective but impactful global partnerships by aligning opportunities with university initiatives

Expand the experiences we offer faculty members and trainees at international sites and increase funding for collaborative research with international colleagues.

4. Consolidate redundant administrative infrastructure, improve efficiency and manage costs of administration

B. The Tufts University Ten Year Strategic Plan

5. Emphasizes the importance of a diverse, world-class faculty that functions through a tradition of **shared governance**. Success depends on faculty governance structures that **effectively capture all faculty perspectives** and in which faculty and administration partner on key decisions

6. Committed to strong, forward-looking work/life policies and programs that will be crucial to **recruiting, retraining, and supporting current and future faculty**. It is essential to secure the resources and enact the policies that that enable faculty to have the time, space, and other resources to **achieve their full potential throughout their careers**

7. Steward resources effectively through collaborations with external consultants and local experts to insure efficiency and cost-effectiveness of maintaining the administration

8. Tufts University is committed to making positive changes in **diversity and inclusion**. Like Penn Med, Tufts will also appoint a university-wide **Chief Diversity Officer**.