

Task Force on Supporting Research, Creativity and Collaborative Innovation

CONFIDENTIAL DRAFT – Version 5 – 4/19/19

1. Introduction

Maintaining the unique identity of Brandeis as a medium-sized liberal arts research university is crucial to our success. The marker that most clearly defines our research excellence is the accomplishments of our faculty and other researchers in research, creative work, and innovation. At the same time, we must also integrate education and this scholarly inquiry, insuring that they reinforce one another.

Brandeis is the second smallest among the country's top 62 research universities that together comprise the Association of American Universities. What is striking is not just the illustriousness of our peer institutions, but also the fact that our relatively young age and small size mean that we are comparably under-resourced, and perennially competing with much larger institutions. The question we now face is how can Brandeis maintain and build upon our excellence in research, creative work and innovation, and, more specifically, how can we strategically invest in supporting this scholarly inquiry as we move forward.

- a. **Charge to the Committee.** The Task Force on Supporting Research, Creativity, and Collaborative Innovation was asked how we can construct a more effective campus infrastructure that supports the advancement, financial support, and visibility of research, creative work and innovation at Brandeis that promotes our historical strength in collaboration and exploring across boundaries. This group was asked to deliver specific recommendations in the form of a report to be delivered to the President by spring 2019. (See Appendix A for a listing of members of this Task Force and its working groups.)

The Task Force gathered data on competitive federal and philanthropic funding for research, creative work, and innovation, and on the impact and recognition of achievements in this scholarly activity. They assessed existing and nascent opportunities for collaboration vertically between undergraduates, graduate students, faculty and staff, and horizontally within and between Brandeis Schools, Departments, Centers and Institutes, and between Brandeis and other institutions. They identified the most significant challenges to research, creative work, and innovation and developed proposals for overcoming these challenges and for creating new opportunities for all members of the Brandeis community, while remaining true to our unique mission as a top-tier research university that is Jewish-sponsored and undergraduate-enabling. Also fundamental to the larger Brandeis mission is providing a social justice lens in scholarly inquiry.

- b. **Approach.** Our Task Force was drawn from members from each of the divisions of the University and was organized into four work groups. We use the term “scholarly inquiry” here and below as an umbrella term to refer broadly to the triad of research, creative work, and innovation. We chose to focus primarily on the challenges and opportunities faced by faculty and other independent research staff both in their own scholarly inquiry and with respect to mentoring undergraduate research. To gather input, we met with a diverse set of stakeholders including faculty and other researchers at Heller, IBS, the free-standing Centers and Institutes, and the four divisions of the School of Arts and Sciences. We also met with administrators, undergraduates and the Board of Trustees. These “listening sessions” were deliberately designed to reach as widely as possible in order to gather input from a variety of parts of the university to capture both the similarities, as well as the differences in perceptions as to how best to support research, creative work and innovation. (See Appendix B for list of Listening Sessions.) We sent out questionnaires to faculty, research staff, and alumni and received input from other members of the community (See Appendix C for listing of surveys and questions). We gathered information from existing university data systems.
- c. **Organization of Report.** We first describe the four work groups of our Task Force and how their deliberations informed the overall report. Next we discuss the theme of fostering a culture that supports and enhances research, creative work, and innovation. We then organize our recommendations around the core investments that can be made to support this culture of knowledge creation. These core investments fall into three broad areas: Faculty and Researchers, Physical Infrastructure, and the Academic Ecosystem. We propose eight investments that could effectively advance Brandeis’s culture of scholarly inquiry. We also offer suggestions for policies that could be implemented to operationalize the investments.

2. Foci of the Work Groups

The work groups of the Task Force on Supporting Research, Creativity and Collaborative Innovation examined the four areas described below. Task force members and other key individuals participated in these work groups. The full Task Force met throughout the process, exchanging information about each of the work groups and enhancing synergies among them.

- a. **Work Group 1 – Enhancing Research and Creative Work** focused on identifying both opportunities and impediments to better support and enhance scholarly inquiry. Faculty and other researchers were asked to identify the top 1 -3 investments that would enhance scholarly endeavors through a campus-wide survey and attendees at the “listening session” used these same questions as a basis for discussion. Items common to several schools were identified, as well as items of special relevance for individual schools. The importance of the many activities within library services was highlighted as

a key aspect of advancing research, creative work and innovation, and enhancing the interconnectedness of scholarly inquiry.

- b. **Work Group 2 - Expanding Undergraduate Research Opportunities** identified key issues, needs and common themes relevant to the goal of expanding opportunities for undergraduates to engage in all forms of research, creative work, and innovation across the university. Information was gathered through a survey of departments, programs, and centers and institutes and through several “listening sessions”. The focus was on trying to characterize existing strong suits and challenges, both those that extend across the institution and those that are peculiar to one or several units, with an eye toward identifying areas in which additional resources are likely to have a significant positive impact.
- c. **Work Group 3 – Provost’s Seed Fund for Interdisciplinary Research** was charged with recommending a process that would support a request for proposals for a large fund of \$ 1 million dollars from the Provost’s office to promote exploration across boundaries, potentially including transdisciplinary projects, social impact projects, and projects that bring together undergraduates, graduate students and faculty among others. The work group decided that the goal should be to devise an internal research seed grant program that served the entire university. Models for such program from several institutions were examined. Several, potentially co-existing ideas for an internal grant program, separate from the existing Provost’s Research Grants, emerged. Two examples are provided: 1.) a Draft Internal Call for Concept Papers as part of the provost’s collaborative research grants, and 2.) a concept for a collaborative postdoctoral fellowship program in Embedded Data Science.
- d. **Work Group 4 – Increasing Collaborations** was tasked with analyzing possible ways to increase collaboration with industry, other universities and foundations, as well as with a variety of community organizations, ranging from the arts through social services, many with a social justice orientation. The main idea that emerged from discussions is that Brandeis will benefit from a greater degree of interdisciplinary collaborative research that involves both internal and external collaboration. Such collaborative research should be the driving factor that spurs innovative interdisciplinary projects across the entire university. Applied research using quantitative and qualitative data that integrates ideas in different fields also provides the potential for the development of innovative project ideas for students and interested faculty and other researchers. A specific proposal was put forth for a University-wide Research and Computational Analytics Knowledge Lab (LAB). The LAB would serve as a platform fostering cross-disciplinary applied research, fueling the integration of ideas, engaging external partners, and attracting funding. The primary focus of the LAB would be around data science applications in different fields such as business, humanities, social sciences, and the natural sciences. The LAB could also serve as a collaborative platform for creative work and innovation in other fields, such as the arts and the humanistic social sciences.

3. Fostering a Culture of Scholarly Inquiry

An organizing theme of the Task Force on Supporting Research, Creativity and Collaborative Innovation is how best to foster a culture at Brandeis that supports and enhances scholarly inquiry. From the inception of the university, the Brandeis faculty, whose mission also includes teaching of exceptional quality, has been exemplary in its scholarly achievements. Yet, there remain important gaps in our campus-wide culture of supporting and nurturing research, creative work, and innovation. Support for our faculty and other researchers is often an *ad hoc* affair rather than a clear and central university mission. We offer a framework for fostering this culture of scholarly inquiry that focuses on three key aspects. This includes a culture that fosters collaboration, supports creativity and innovation, and emphasizes both internal and external engagement around scholarly inquiry. Inherent to a culture of scholarly inquiry is a stable funding environment that provides the resources to ensure that research, creative work and innovation thrive.

- a. **A Culture of Collaboration.** We use the term collaboration in its broadest sense, including both internal collaboration within smaller units (e.g. a department, a center, a lab) or within larger units (e.g. a division, a school) and across different parts of the university. We also include external collaborations among different parts of the university with outside entities including non-profit organizations (e.g. museums, social impact organizations, community groups), for-profit companies, foundations, and government (local, state, federal). These external collaborations may involve funding, but can include other types of partnerships and ways of working together in mutually beneficial ways. Collaboration generally has a positive connotation and is based on the premise that bringing together stakeholders on a given issue to pursue common interests results in improved outcomes overall. But successful collaboration is challenging and not everyone subscribes to its importance or value. It is important to identify drivers of and barriers to collaboration, and to provide appropriate incentives so that both the collective good and the individual stakeholder are rewarded. Opportunities abound for both internal collaborations within and across Brandeis, as well as external collaborations with outside entities. Examples include: vertical integration of undergraduates, graduate students, faculty and other researchers within a single science or social science research group, horizontal integration linking multiple research groups across disciplines within the Division of Science, horizontal integration that links groups across major units of the University such as the Division of Social Sciences and the Professional Schools, and collaborative networks that link Brandeis researchers to peers and colleagues at other universities, health systems, community groups, foundations, NGOs and companies.
- b. **A Culture of Creativity and Innovation.** A culture of innovation is one that actively encourages and rewards creative thinking and that brings together those with different perspectives or different kinds of expertise. It may lead to unorthodox thinking which may generate new or improved ideas, processes, or products. It typically builds on existing strengths of participants, and involves those at any level within the organization

or across organizations. Despite its obvious attractions, nurturing creativity and innovation is challenging since it requires risk-taking and accepting failure as part of the process. Yet these values have defined Brandeis' signature achievements in the Arts, the Sciences, the Humanities and Social Sciences and in our distinctive professional schools.

- c. **A Culture of Engagement.** Information needs to be shared broadly within and across groups, and the university's structure and components should actively facilitate communication. Frequently we work in silos within the university and its divisions and professional schools where one group's information could be used and benefited from by another and vice versa. Providing platforms that better support and enhance communication and exchange of ideas is an essential part of a culture that fosters research, creative work and innovation. A few examples of ways to enhance communication that supports and enhances scholarly inquiry at Brandeis include: emphasizing the breadth and depth of research and creative work across the academy both to external audiences and internal audiences, such as alumni; celebrating the communication of research and creative work by undergraduates across the academy, and bringing alumni back to campus around issues of research and creative work. Small investments for gathering together informally, e.g. monthly wine and cheese, can create an opportunity to become aware of the interests of others and contribute to the sense of a shared mission.

4. **Specific Recommendations for New Investments and Policies**

- a. **Faculty and Researchers.** The research excellence of the University is rooted directly in the scholarly productivity of its faculty. (We use the term "faculty" here and below to refer broadly to those, other than trainees, who initiate independent inquiry and creative work, regardless of their appointment). Maintaining excellence in research and creative work will mean investing in protected time for our existing faculty and investing in new members of the faculty to permit exploration of new research directions and replacement of those no longer research active.

Investment 1: Increase the number of active researchers in key areas to achieve and/or maintain excellence. Although investment in new faculty is often driven by curricular needs, these needs should be coordinated with research objectives that span departments, divisions and schools. Such objectives could involve cross cutting areas like Applied Science and Data Analytics, but may also involve specific disciplines and areas of inquiry to buttress an area of established excellence, or to support an area of emerging excellence.

Policies: The Deans, Division Heads and other academic and administrative leaders should reexamine the target size of the faculty, not only in terms of our student-faculty ratios, but also in terms of the competitiveness of our research productivity relative to

our peer institutions. Together, they should develop a coordinated plan for growth in key areas of inquiry.

Investment 2: Increase supported research time for faculty. Brandeis faculty manage to do more with less, but further increases in research productivity can only come by offsetting other commitments to teaching and administration. This will require increasing internal support mechanisms, like the Provost's Research Fund, facilitating faculty efforts to obtain external support (see below), and reexamining key policies like those governing research leaves (such as sabbaticals), teaching responsibilities, and time spent mentoring undergraduate research. The latter is especially critical as there are currently few structured incentives for encouraging faculty to mentor undergraduate research, and yet intensive involvement in research and creative work with faculty is one of the signature features of a Brandeis education.

Policies: New procedures should be established for using internal funds to stimulate research and other creative endeavors. These should include larger internal grants that serve to stimulate new areas of inquiry (for specific proposals see WG#3 report), bridging funds that enhance funding stability for those whose productivity require it, and smaller grants designed to enhance our culture of collaboration, creativity and engagement. These smaller grants, which are likely to be of benefit across the academy, are especially needed in the Humanities, the Creative Arts, and the Humanistic Social Sciences, where other sources of funds are typically lacking. They could be used to support include interdepartmental workshops, informal gatherings and lecture series; to aid in the final stages of manuscript preparation for books and other scholarly communications; and to allow for initiating smaller, riskier pilot projects.

Encouraging innovation and risk-taking will require providing faculty with more time to reflect and explore. A comparative study of peer institutions should be undertaken with respect to leave and academic workload issues. The emphasis should not be on developing a "one size fits all" policy, but on maximizing the quality, innovation and influence of our scholarly endeavors across the academy. This may mean applying different norms, different incentives and different strategies across schools and departments.

- b. **Physical Infrastructure.** Research and creative work can involve scholars working alone in their offices with pencil and paper, but also often involves teams working together in specialized spaces, using specialized equipment and resources. Continued innovation and creativity require continued renewal of these shared spaces and resources.

Investment 1: Finish the renewal of the Science Complex. Completing the second phase of the Shapiro Science Center would have direct and ripple effects that would transform inadequate Chemistry research space and enable new research enterprises in the areas of Applied Science and emerging areas of collaboration such as Chemical Biology,

Biological Data Science and the study of Active Matter. The Science Center could also house new equipment needed for specialized research in these and other areas.

Investment 2: Invest in Creative Arts infrastructure. Currently studio artists and performing arts faculty work primarily off campus, limiting their ability to collaborate with students, colleagues and across the academy. Creating professional studios on campus would enhance the productivity and visibility of the creative arts, promote stimulating adjacencies, and facilitate research mentoring with students. Such spaces should be part of a broader enhancement of Creative Arts facilities, which are sub-par and outmoded compared to peer (and many lesser) institutions, putting Brandeis at a distinct competitive disadvantage, especially given the importance of new media and cross-disciplinary collaborations.

Investment 3: Provide a hub for the Social Sciences. The departments that comprise the Division of Social Sciences are currently housed in seven different buildings on campus. Discussions are underway for a new building supporting the International Business School. This could have broader goals of serving to integrate social scientists working on related problems in Heller, IBS and Arts and Sciences. Thematically, social scientists across these divisions have expressed interest in an Interaction “Lab” or “Hub” to support and coordinate research that relies on data analytics.

- c. **The Academic Ecosystem.** Faculty research rarely occurs in isolation. It depends on input from colleagues, support from staff and sometimes trainees, and informs teaching and the research of undergraduate, graduate and postdoctoral trainees. New investments and policies are needed to maximize the mutual benefit of these many interactions.

Investment 1: Increase support for undergraduate research and creative work. We believe that all undergraduates wishing to pursue intensive, faculty-mentored research or creative work should be able to do so. This will require major changes in the support provided to undergraduates to ensure access regardless of financial need. Part of this support, could come through financial aid and through benefits such as summer on campus housing. Additional funds administered through departments and programs would allow for tailored support as specific needs may vary across the academy. Changes will also be required in the incentives provided to faculty to ensure a sufficient number of faculty mentors are available.

Policies: Create a campus-wide coordinator for undergraduate research. This individual should have an academic background to optimize interactions with faculty, staff and students needed to integrate policies and practices that will maximize student opportunities for intensive research and creative work on and off-campus. Student work should be celebrated yearly in thematic festivals, conferences and poster sessions, building on current successes like SciFest, Deis Impact and the Leonard Bernstein

Festival of the Arts. Faculty incentives for mentoring research and creative work should be systematically reexamined.

Investment 2: Support sponsored research throughout the academy. Support is especially needed in the Social Sciences departments in A&S where the number of proposals has traditionally been low. What is required is not only staff to help with pre- and post-award administration, but also structured faculty mentoring within and across departments, so that those new to proposal writing can benefit from those with more experience.

Policies: Although indirect costs are estimated University-wide and their recovery rates are fixed through external negotiations, they impact research and creative work differently in different parts of the University. New policies that use financial incentives to stimulate further sponsored research are needed. Internal grants should be used to offset the impact of indirect costs, especially for those with smaller budgets or limited allowance for indirect cost recovery. Additional unrestricted grants to those successful at raising “budget relieving” external funding will serve as further incentives and also permit greater innovation and risk-taking.

Investment 3: Supporting Data Ecosystems. Acquiring and analyzing large datasets has become increasingly central to the sciences and social sciences, as well as to the domains of business and social policy, touching even the humanities, through the “digital humanities.” Management of academic data resources and training in data acquisition and analysis are piecemeal, poorly integrated, and largely lacking in some important areas of the academy. There is a recognized need for training courses, workshops and consultations in quantitative methods, data wrangling and statistics. Researchers in one part of the academy often are unaware of the data resources and expertise present elsewhere in the university. The library is a natural hub and clearinghouse for these resources and for the sharing of expertise. Other natural partners include the computer science department, the program in Applied Math, and data and computer specialists in the professional schools, the Centers and Institutes and the Sciences. But more integration is desperately needed. Clearer demarcations are needed between the institutional data and computing mission of ITS and academic data and computing needs.

Policies: Academic data management should be centralized to improve access and efficiency. However, academic computing and data needs should not be exclusively the domain of IT professionals. The separation of LTS back into separately administered Library and ITS departments has left a gap that needs to be better knit together. A Committee on Academic Data and Computing should be established to partner with the Brandeis Library, Information Technology Services, and other stakeholders to optimize training and technology delivery to faculty, students and other researchers for the purposes of research and creative work.

More generally, new mechanisms are needed to better support and integrate the many ways in which the Library supports and scaffolds research. Recent innovations, such as the MakerLab, loaning 3-D printers, and the new digital humanities lab are welcome additions but could be better utilized and more fully integrated into the academic ecosystem. Even more importantly, nascent changes in the landscape of scholarly communication are likely to require a pivot in our strategies for allocating investments in this area. Ongoing discussions involving a diverse set of stakeholders from across the University are needed to help Library decision makers optimally support research and creative work.

5. Conclusion

The commitment to maintain Brandeis as a research university with a liberal arts focus requires first-rate faculty and researchers who work within a culture that celebrates scholarly inquiry in an environment designed to provide maximum support for these efforts. It also requires the nurturing of the next generation by providing opportunities for students to learn and engage in research, creative work, and innovation in collaboration with these faculty and researchers.

We found tremendous consensus around the investments that will be required to enhance our productivity in scholarly inquiry. These include the need to:

- to free up faculty and other researcher time available to pursue scholarly inquiry
- to renew spaces around the campus that serve as focus points for scholarly inquiry
- to strengthen the administrative infrastructure that supports scholarly inquiry
- to promote and support undergraduate scholarly inquiry

While the diversity of issues and opportunities facing faculty and researchers across the different communities within the university is striking, there is a tremendous commonality of purpose, inspiration and creativity across the university, and in many cases, similar themes raised in different contexts. These commonalities suggest that fostering a culture of scholarly inquiry with a focus on enhancing a culture that thrives on collaboration, encourages creativity and innovation, and emphasizes engagement both internally and externally is an achievable goal. The challenge is to provide an infrastructure for integrated planning that creates and supports the mechanisms to achieve this goal.

RESEARCH TASK FORCE APPENDICES

APPENDIX A: MEMBERSHIP LIST

APPENDIX B: LISTENING SESSIONS

APPENDIX C: SURVEYS CONDUCTED

APPENDIX A: RESEARCH WORKING GROUP MEMBER LIST

Research Task Force Membership		
Sacha Nelson	co-chair	Gyula and Katica Tauber Professor, Department of Biology
Lisa Lynch	ex-officiant	Provost and Executive Vice President of Academic Affairs
Bonnie Berger		Simons Professor of Mathematics and Computer Science, MIT, and Associate Member of the Broad Institute, Brandeis Board Member
Michael Dettelbach		Assistant Vice President, Corporate and Foundation Relations
Irving Epstein		Henry F. Fischbach Professor of Chemistry HHMI Professor
Elizabeth Ferry		Professor of Anthropology
Angela Gutchess		Associate Professor of Psychology
Edward Hackett		Vice Provost for Research
Steve Karel		Senior Research and Technology Specialist in the Division of Science
Jytte Klausen		Lawrence A. Wien Professor of International Cooperation
Jane Kondev		Professor of Physics
Rebecca Menapace		Associate Provost for Innovation Executive Director of the Office of Technology Licensing and the Hassenfeld Family Innovation Center
Debarshi Nandy		Associate Professor of Finance in the Brandeis International Business School and the Heller School for Social Policy and Management
Greg Pestko		Professor of Neurology and Neuroscience, Weill Cornell Medical College, Brandeis Board Member
Matthew Sheehey		University Librarian
Ramie Targoff		Professor of English
Cindy Thomas		Professor and Associate Dean for Research
Jonathan Unglaub		Associate Professor of Fine Arts
Stephen Van Hooser		Associate Professor of Biology
Working Group 1: Enhancing Research and Creative Works		
Steve Van Hooser		Associate Professor of Biology, Working Group Chair
Angela Gutchess		Associate Professor of Psychology
Edward Hackett		Vice Provost for Research
Jytte Klausen		Lawrence A. Wien Professor of International Cooperation
Matthew Sheehey		University Librarian
Cindy Thomas		Professor and Associate Dean for Research
Jonathan Unglaub		Associate Professor of Fine Arts

Working Group 2: Expanding Undergraduate Research Opportunities	
Irv Epstein	Henry F. Fischbach Professor of Chemistry, Working Group Chair
Elizabeth Ferry	Professor of Anthropology
Angela Gutches	Associate Professor of Psychology
Steve Karel	Senior Research and Technology Specialist
Jané Kondev	Professor of Physics
Karen Hansen	Women's Studies Research Center
Working Group 3: Deploying the Provost's Seed Fund	
Michael Dettelbach	Assistant Vice President, Corporate and Foundation Relations, Working Group Chair
Irv Epstein	Henry F. Fischbach Professor of Chemistry
Edward Hackett	Vice Provost for Research
Rebecca Menapace	Associate Provost for Innovation
Debarshi Nandy	Associate Professor of Finance in the Brandeis International Business School and the Heller School for Social Policy and Management
Ramie Targoff	Director of the Mandel Center for the Humanities
Working Group 4: External Collaborations	
Debarshi Nandy	Associate Professor of Finance in the Brandeis International Business School Working Group Cochair
Rebecca Menapace	Associate Provost for Innovation Working Group Cochair
Luis Croquer	Henry and Lois Foster Director and Chief Curator
Michael Dettelbach	Assistant Vice President, Corporate and Foundation Relations
Andrea Dine	Executive Director, Hiatt Career Center
Edward Hackett	Vice Provost for Research
Steve Karel	Senior Research and Technology Specialist
Kathryn Wight	Director of Partnership Engagement

APPENDIX B: RESEARCH TASK FORCE LISTENING SESSIONS

Research Task Force Listening Sessions	
1/23/2019	Social Science Council
1/28/2019	Board of Trustees
1/28/2019	Creative Arts Council
1/31/2019	Science Council
1/29/2019	Free-standing centers and Institutes
2/13/2019	Humanities Council
2/18/2010	Dorothy Hodgson, Dean of Arts and Sciences
2/28/2019	Meeting with Alyssa Canelli, Andrea Dine, Irv Epstein, Angela Gutches, Ed Hackett, Connie Horgan, Steve Karel, Meredith Monahan
2/4/2019	Heller School for Social Policy and Management
2/12/2019	International Business School and Economics
3/7/2019	Students Listening Session
3/22/2019	Meeting with Paul O'Keefe, Assoc. Provost for Research Administration

APPENDIX C: RESEARCH TASK FORCE SURVEYS CONDUCTED

Work Group 1 Survey – Question on Investment Priorities

1. From the perspective of your center, department, or program, what are the top one to three investments the university could make to enhance your performance?

Work Group 2 Survey – Questions on Undergrad Research and Creative Work

1. Are there opportunities for undergraduates to conduct research or creative work at your department, program, center or institute? These could be senior theses or independent studies; work in a lab; creation of or work on a performance or exhibition; work with faculty on faculty research; supervised internships, etc.
2. Does your dept., program, center or institute have any grant programs or other forms of support for undergraduate research and creative work?
3. Is there unmet student demand for these kinds of activities in programs sponsored by your department, program, center, or institute? If so, what would be needed to help meet that demand?
4. Is there anything else you would like us to know, or would you like to speak with us further?

Work Group 4 Survey – Questions on External Collaboration

1. How do we promote more industry collaboration while increasing the income from IP licenses and agreements?
2. What other partnerships with universities and foundations should we be pursuing and what barriers may be preventing such partnerships?
3. How do we increase our federal funding and identify new foundations, corporations and private philanthropists for support of our research and scholarship including the arts and humanities?