BU Professional Development & Postdoctoral Affairs

Annual Report 2017

Note from the Director

We ask a number of questions in the Postdoctoral Experiences Survey, but my favorite question is "If you could meet one-on-one with the Director of Professional Development & Postdoctoral Affairs today, what would you want her to know about your postdoctoral experience at Boston University?" I like it in part because there is something exciting about a mental image of postdocs bursting into my office with things that they just had to share – things they couldn't get off their mind. (Maybe this is because I often enter meetings this way, bursting in with the one or several things I can't get off my mind…) But more importantly, it's my favorite question because it is so important – it helps us make sure that we are working on the real issues at the heart of ensuring the postdoctoral training experience here at BU is a good one. Just like in 2015, the responses we received this year are reflective, constructive, and illuminating. Mainly they demonstrate the impact that our work has had on such an important population within our Boston University community.

Two years ago, Boston University was well behind our peers in terms of the support we provided to our postdocs. As a starting place, it was challenging to support a population that wasn't entirely distinguishable or visible – improving the quality of our central data set was an important early milestone, and is an ongoing goal to ensure that we are successfully engaging with and supporting postdocs across the University. However, we also lacked basic support systems offered by other competitive research universities, such as a centralized policy infrastructure, benefits for postdocs supported on training and external fellowships, and comprehensive professional development programs tailored to meet postdocs' needs.

Today the landscape for Boston University postdocs looks much different. We have established a minimum salary and stipend for postdocs across all disciplines and funding sources. Our term limit ensures that the postdoc position is no longer a career path in and of itself, but a short-term training experience designed to allow postdocs to advance further in their desired career pathways. All postdocs now have access to centrally subsidized health benefits and discounted transportation options. And finally, our pilot professional development programming has transformed into a suite of resources and programs that builds postdoc skills and enables their long-term success – federally-funded education and research programs, career development workshops, business card and travel award programs, and seed funding research awards to support their interdisciplinary collaborations and skill development.

It means so much to me to be able to support a population that I was once a part of. I hope the work that we do means postdocs can focus solely on achieving the goals that will allow them to go in the professional directions that interest them, as I have been so fortunate to do in my own career. I am proud of what Kate and I have accomplished to date, and I look forward to continuing our success in the coming academic year.

Executive summary

Professional Development & Postdoctoral Affairs (PDPA) was established in 2015 as a University-wide office to serve postdoctoral scholars (postdocs), giving this very important part of our research community a dedicated home on our institutional map. Our mission is to ensure that BU provides a supportive and competitive environment for postdoc training by offering professional development opportunities and advising services to our postdocs and their faculty mentors, capturing and reporting postdoc data, and informing University policy development. Our team is comprised of a Director (Sarah Hokanson) and a Program Manager (Kate Baker).

In 2016/2017, we continued to provide support directly to our postdoctoral scholars. We advised 92 postdocs in one-on-one advising appointments. We responded to postdoctoral skill needs identified in our entrance survey through ten in-person and four online workshop opportunities. Six $500 travel awards supported postdoctoral presentations at national and international conferences, and we supported postdoc networking by supplying 55 postdocs with business cards. Last year also marked the launch of our first $5,000 seed funding research award in collaboration with the Interdisciplinary Biomedical Research Office, and interest is sufficiently high enough that we will expand this program to postdocs in all disciplines this coming year. We also expanded the resources that we provide to Schools/Colleges, now overseeing the postdoc appointment process in the School of Medicine and collaboratively developing a repository to guide departments on complexities associated with postdoctoral training appointments (T32 and F32 awards).

Director Hokanson actively participated in University committees toward the development of new policies and guidelines, and currently represents Boston University on several national leadership committees. She was elected to a three-year term on the Center for the Integration of Research, Teaching, and Learning (CIRTL) Network's Cross-Network Operations Group (CNOG), is serving a two-year term as co-chair of the National Postdoctoral Association's Resource Development Committee, and is a newly elected member of the Graduate Research, Education, and Training (GREAT) Group Postdoctorate Steering Committee. She has also been named to the Advisory Board of Future of Research, a non-profit advocacy group.

PDPA was awarded three federal awards in the past year from the National Science Foundation (NSF). We are part of a ten-institution Alliances in Graduate Education and the Professoriate (AGEP) award, awarded in 2016. We also recently received a subcontract on a new NSF-supported Innovations in Undergraduate STEM Education (IUSE) to develop an integrated set of professional development opportunities focused on developing postdocs' teaching skills. Finally, we responded to a NSF Dear Colleague Letter opportunity to secure a supplemental award for our local NSF Graduate Research Fellowship program.

In this report, we summarize the current issues facing postdocs across the United States, describe the demographics of BU's current population of postdocs, highlight our progress in 2016/2017 meeting our strategic goals, and identify the new steps we will take in 2017/2018.

National context – current issues

Postdoc parental benefits

The Center for WorkLife Law at the University of California and Hastings College of the Law partnered with the National Postdoctoral Association (NPA) on its latest report, *Parents in the Pipeline: Retaining Postdoctoral Researchers with Families*. This report is part of an effort by The Center for WorkLife Law to ensure that parents — and mothers in particular — have an equal opportunity to advance in science, technology, engineering and mathematics (STEM) fields. *Parents in the Pipeline* highlights the parenthood leak in the STEM pipeline. The report chronicles the experiences postdoc mothers and fathers – both those with separate and shared parental responsibilities – along with survey and institutional policy data on pregnancy accommodations, paid and unpaid parental leave, attitudes about leave, and benefits for postdoc parents; survey data revealing significant differences in the experiences of postdocs who are immigrants and/or people of color; and recommendations on how institutions can better support postdoc parents.

Postdoc mothers reported high rates of receiving accommodations (when requested), but low rates of requesting overall. Fear and a sense of isolation made postdoc mothers hesitant to ask for accommodations needed to protect their health. Just 40% of postdoc mothers requested accommodations. Over half of the institutions surveyed (53%) provided no paid maternity leave to postdoc employees of their institution. Postdoc trainees and individually funded postdocs fared worse, with 61% and 62% of institutions providing them no paid leave, respectively. That number climbs to 74% for postdoc mothers who are externally funded. Because postdocs are often unable to afford unpaid leave, many returned to work before they fully recovered from giving birth. Many mothers also reported having to fight for the leave they needed, and a smaller subset actually lost their job as a result of their PI's hostility to their pregnancy or need for time off. One in five mothers reported that their PI's response had a negative impact on the overall quality of their appointment before having recovered from giving birth.

Well over half of the institutions surveyed provide no paid leave for postdoc fathers who were institutional employees (61%) or institutional trainees (67%). That number climbs to 85% for externally funded postdoc fathers. Many postdocs were left with no form of paid time off, including sick or vacation time, to support their families while welcoming a new child into their home. Fathers reported having to fight outdated beliefs about family in their efforts to obtain leave. Even when postdoc fathers desperately needed to support their partner's recovery or care for their newborn, they reported facing the belief that fathers do not play a caretaking role or hostility to the notion that a father should take time off for the birth of his child. One in ten fathers reported that their PI's response to their new parent status had a negative impact on the overall quality of their appointment. Fathers of color were far more likely to have negative experiences: one in five reported a negative impact.

Common themes emerged from interviews with both postdoc mothers and fathers. Non-white postdocs were discouraged from taking leave at nearly twice the rate of white postdocs. And one in four postdocs of color reported a negative impact on their overall postdoc experience as a result of their PI's response to their new parent status, compared to just 14% of white

postdocs. One in ten postdoc mothers and four in ten fathers responded that they were not sure whether their institution had a maternity or parental leave policy that covered them – even after having gone through the process. Human resources offices reportedly often misinterpret the law and struggle to navigate the varying grant-related policies that apply to postdocs. Institutions typically offer different leave options based on the postdoc's funding source – resulting in confusion and frustration among postdoc parents and their faculty mentors. And because some grantors only provide supplemental funding for parental leave when there is an institution-wide policy in place, this practice also results in missed opportunities to secure funding. Even when postdocs were able to secure leave for the birth of their child, they were often pressured to return before the expiration of their leave term. Postdocs describe PIs using "guilt," "insulting remarks," or even "open threats" of cutting funding and other adverse consequences to compel them to return. The report recommends that institutions implement a formal parental leave policy that is specific to postdocs and separate from other classifications, providing better support for this population of researchers and eliminating the confusion that can exist for both postdocs and their mentors.

Boston University does not currently have a postdoc-specific policy for parental leave, and our benefits differ depending upon whether the postdoc is classified as an employee or non-employee postdoc. Employee postdocs are entitled to a parental leave of 8 weeks per child. If both parents are University employees, they are only entitled to a total of 8 weeks of parental leave for the birth, adoption, or placement of the same child. Leaves for the birth or adoption of a child may also be covered concurrently by the Family Medical Leave Act, and can be supplemented by additional vacation or sick time accrued by the employee postdoc. Employee postdocs on parental leave must apply their accrued paid absences to cover their leave; upon exhaustion of paid absences, the balance of the leave will be taken as unpaid. Non-employee postdocs are entitled to the parental leave guidelines specified by their fellowship award. NIH-sponsored Kirschstein traineeships (e.g. T32 or F32) follow the same benefits guidelines as the postdoc's training institution; those postdocs receive 8 weeks of paid parental leave in alignment with Boston University's employee handbook. Other fellowships include specific specifications for receiving parental leave that is different from Boston University policy, though those postdocs are still eligible for some form of parental leave benefits. However, postdocs who are paid stipends on private or foreign fellowships that do not specify parental leave guidelines are a vulnerable population and are often left negotiating for leave directly with their PI.

National postdoc survey

From February to September of 2016, a team of researchers at the University of Chicago collected responses from postdoctoral researchers at universities, colleges, and research institutes across the country. A total of 7,674 researchers from over 300 institutions completed the survey, with 53% female respondents, and 49% U.S. citizens. Survey questions covered a range of topics, including postdoc demographic information, cost of living / personal responsibilities, perceptions of their training experience, perceptions of their training environment, and current career aspirations. Boston University participated in this survey in lieu of administering a local survey last year in order to benchmark our successes and

challenges within a national context. The national survey team is currently working to analyze the full data set, conducted as a follow-up to the 2005 Sigma Xi national postdoc survey, and it is likely that this data will be used by advocacy groups (e.g. National Postdoctoral Association, Future of Research) to recommend institutional changes and increased benefits and resources for postdocs.

Of the 7,674 responses, 64 are from Boston University. 48% are female, 48% are U.S. citizens, 64% are married or partnered, and 19% have children. Most of our postdocs that responded obtained their PhDs in the last four years: 6% in 2016; 35% in 2015; 22% in 2014; and 25% from 2012-2013. The demographics of our current postdoc population can be found in the next section.

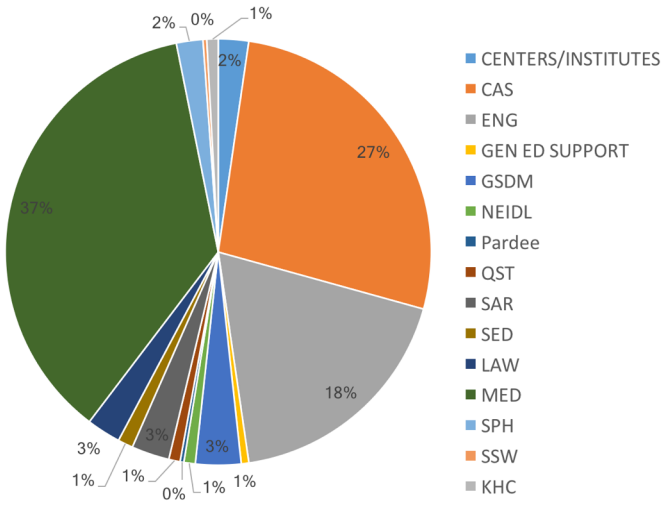
At the time of the survey, Boston University had not yet established our Policy for Postdoctoral Scholars, and so we did not have a formal minimum salary/stipend. The self-reported salary distribution from our participants in this survey reflects the distribution reported in our 2015 annual report, with 14% earning below the NIH minimum at the time, $42,840. Our current salary distribution for full-time postdocs is shown in Figure 2 (pg. 11).

The data suggests that Boston University is providing a supportive training environment to those that responded to the national survey. 87% of Boston University respondents are very satisfied or satisfied with the professional development offerings at Boston University, and 67% of postdocs reported being either very satisfied or satisfied with the mentoring they receive. 76% reported having mentors that are either supportive or very supportive of their career plans. However, 63% have not received a performance evaluation while working as a postdoc. This is consistent with our local annual survey data, which showed that 65% of postdoc respondents do not currently have an individual development plan (Appendix 3).

Demographics of our postdoctoral community

Following the trend of prior years, the BU postdoc population continues to decrease in size, from 475 in 2015, to 377 in 2016, to 348 in 2017. As in past years, the majority of our postdocs work in MED, ENG, and CAS (Figure 1). However, interestingly the majority of our postdocs are now located on the Charles River Campus (54.8%), with 41.6% on the Medical Campus and 3.4% off-campus. Of the off-campus postdocs, the majority are employee postdocs in LAW (8 of the 12, or 75%). We believe there are a number of contributing factors that have influenced the declining number of postdocs and their overall distribution across the University: 1) The term-limit continued to affect 7% of the postdoc population in 2016, particularly on the Medical Campus. Those postdocs moved on to external positions or were promoted internally and are no longer included in this count. 2) The postdoc minimum salary increased 11% in 2016 in

Figure 1: Postdoc Appointments by School/College, 2017



response to anticipated changes to the Fair Labor Standards Act (FLSA). University bridge funding has ended, and so some appointments may not be renewed or posted until pending grant submissions have been awarded that have the higher postdoc salary reflected in their budgets. 3) NIH funding has become increasingly competitive, and so principal investigators funded through NIH-based mechanisms may be conservative in the number of research positions they are currently able to support and/or maintain. 4) As career development programs for PhD students increase nationwide, more PhD students may exit academia earlier to pursue non-academic career pathways of interest rather than pursuing a postdoc position before doing so.

There are more males (57.7%) than females (42.2%), a slight increase from 2016. Despite this, there are places where both genders are not well-represented, such as those within research institutes & centers (7/8 male), School of Engineering (49/64 male), School of Education (4/4 female), and School of Law (8/9 female). Table 1 details the breakdown of gender by school/college.

Table 1: Gender distribution by School/College

School/College	Female	Male	Total
Institutes & Centers	1	7	8
CAS	35	59	94
ENG	15	49	64
GEN ED Support	1	1	2
GSDM	6	6	12
NEIDL	2	1	3
Pardee	1	0	1
QST	1	2	3
SAR	6	4	10
SED	4	0	4
LAW	8	1	9
MED	60	67	127
SPH	5	2	7
SSW	1	0	1
KHC	1	2	3

We have almost as many international postdocs as we do US Citizens, with 50.9% of postdocs identifying as American citizens. The next greatest majority is Chinese citizens (10.3%) and Indian citizens (5.4%). Eleven, or 3.2% of the postdocs, are not assigned. The racial diversity of our postdocs has remained consistent over the past few years, and Table 2 details the racial identities within our population.

Table 2: Racial identities of Boston University postdocs

Race	**n**	**%**
White	169	48.6%
Asian	90	25.9%
Not assigned	80	23.0%
Black or African American	5	1.4%
Multiracial	4	1.2%

The proportion of postdocs in the non-employee category remains consistent with previous years. 16.3%, or 57 of the 348 total, are considered non-employees based upon their funding sources. Most non-employee postdocs are on the Medical Campus (37/57, or 64.9%).

Summary of 2016 Strategic Goals and Activities

Our strategic goals in 2016-17 focused on engaging and surveying our postdoctoral community, developing and implementing professional development programs, and influencing the development of new University policies using a data-driven approach.

Engagement: Getting to know our postdocs and helping them establish a community

Our inaugural year focused on outreach aimed at establishing PDPA as the 'go-to' office for all postdoc-related issues and ensuring that faculty and staff understood our mission and the resources available to assist them. PDPA is now a recognizable resource and regularly collaborates with offices and departments across both campuses in an advisory capacity as well as in the development and implementation of joint initiatives.

This year our focus has been to help empower our postdocs to proactively become more involved in the operations of our office and to help them build and sustain their own community. In addition to representing Boston University within the wider Boston-wide postdoc association (PDA), a small group of postdocs created and led our own Boston University PDA (BUPDA). BUPDA holds regular leadership elections, manages a small budget ($5000) provided by PDPA, and holds monthly meetings for postdocs to plan social events, coordinate their participation in the Boston-wide PDA, share concerns or identify potential issues to be addressed, and provide advice/input to PDPA on upcoming programming, policies, or postdoc-related issues as requested. Director Hokanson and Program Manager Baker meet monthly with the BUPDA leadership team to ensure that we are working collaboratively to

consider the needs and voices of our postdocs as well as to develop ideas for increasing postdoc engagement in our community.

Engagement: Shaping a Boston-wide network of institutional offices and postdoc associations

PDPA hosted the inaugural quarterly meeting between Boston-area postdoc offices and associations to facilitate more collaboration between institutions and better dissemination of best practices. Our first meeting covered coordination of professional development opportunities and information sharing between institutions as well as between postdoc offices and postdoc associations. Subsequent meetings have been hosted by Tufts University and the Broad Institute. Establishing this network has increased collaboration and transparency between institutions, and has helped identify ways to streamline the operations of the Boston-wide postdoc association to reduce duplication of institutional efforts and the administrative burdens associated with co-sponsoring large-scale events.

Engagement: Developing resources for Schools/Colleges and Departments

Postdoctoral Appointments

In Fall 2016, Program Manager Baker participated in an Operational Excellence (OP EX) course along with other Research Administrators across the University. Participants in the course learned to improve process management through actively applying LEAN/Six Sigma practices to an existing workflow. PDPA identified the postdoc appointment process as an opportunity for improvement, and aimed to implement a pilot process in the School of Medicine in winter 2016-2017.

There were several motivating factors for PDPA to take on a more prominent role in the appointment process. The most pressing of these factors was the opportunity to reduce PDPA's time to engagement with new postdocs. In addition to a streamlined appointment process, PDPA also expected that the pilot would result in improvements in morale for administrators, satisfaction for postdocs, and an increase in the quality and quantity of data available to inform policy. Additionally, we expected that our involvement in this process would result in improved time to hire, reduced turnaround time, and improved recruitment and retention of top postdoctoral candidates. Combined, these improvements have resulted in increased collaboration between PDPA and departments and should continue to increase the number of postdocs that work with our office over time, which we can track through numbers of queries and participation in our events and programs.

Throughout OP EX, Program Manager Baker went through the following steps to define a new appointment process: developed a process flow diagram; pinpointed key stakeholders, inputs, and outputs; identified key changes and their associated rewards; and created a project charter with explicitly stated deadlines, costs, assumptions, risks, and constraints. In December 2016, PDPA launched a pilot of this new process with the School of Medicine, chosen because the high volume of postdoc appointments was a challenge for their local faculty actions team. The key changes we made to their existing process based on the materials developed through OP EX were to: 1) Employ a simultaneous review of the position request by both Finance and PDPA, rather than waiting for each step to occur concurrently; 2) Eliminate the need for PDPA to sign

both the offer letter and request forms – instead, creation of offer letter by PDPA now signifies our approval and 3) Revise the request form to better capture PI and department administrator contact information.

PDPA was involved in 118 appointments in fiscal year 2017, 58 of which were processed as part of the pilot with the School of Medicine (and the remaining 60 involved information shared with us from the College of Arts and Sciences and other schools). For the postdocs that PDPA appointed, the average appointment time is approximately 1.5 years, with some as short as a few months and some as long as 3.5 years. The average salary of entering postdocs is $51,238.87. 15 of the 58, or 25%, were non-employee postdocs. Slightly less than half of the School of Medicine appointments involved postdocs requiring visa sponsorship. Ten are known to be reappointments, a few of whom elected to attend orientation when asked, suggesting that they may not have been captured previously. Average time to appointment from request to approval to offer letter generation was approximately 3 business days. 42% of the School of Medicine-appointed postdocs attended our postdoc orientation sessions held between November 2016 and August 2017.

In addition to quantitative metrics related to turnaround time and attendance at orientation, we also used qualitative interviews with administrators to evaluate the pilot six months in. Based on the data and their feedback, we have revised the request form to improve our collaborations with departments, streamline the approval process, and increase the quality of information that we collect. The form now includes the postdoc's personal email information to help onboard postdocs at the time of their appointment, clearly identifies whether the appointment is a new appointment or a renewal, and more specifically identifies the postdoc's funding source.

Working with departments directly on postdoc appointments has yielded new ways of working and sharing information. In the summer of 2017, PDPA collaborated with Grants Administrator Michael Galatis (Grants Administrator for the Epidemiology training award in the Department of Medicine), to develop a Postdoctoral T32 Training Grant Data, Policy and Procedures Repository (Appendix 1). We intend to make this a living document accessible to all training grant administrators in order to create transparency and collaboration around the complex management of non-employee postdoctoral appointments.

Mentoring resources for faculty

PDPA has also expanded our work to develop resources for faculty mentors. In partnership with the Office of the Ombudsman and Office of General Counsel, we offered a Managing Research Staff Bootcamp to 34 new junior faculty members in fall 2016. Faculty members learned about the various stages postdoc lifecycle at Boston University, from recruitment and interview processes to onboarding and managing the postdoc once they arrive on campus. This year we plan to expand this series to also develop online resources and instructional video content to provide continuous support for new faculty mentors and encourage their continued engagement with our office post-workshop.

Director Hokanson also co-authored a book chapter on proactive postdoc mentoring that will be published in the fall as part of *The Postdoc Landscape* (Appendix 2). In the chapter, Hokanson and Goldberg review the research-based mentoring literature and identify strategies that institutions and faculty can employ to mitigate some of the overarching challenges that negatively impact faculty mentoring practices and the postdoc-faculty relationship. Through case studies, critical aspects of positive postdoc-faculty mentoring relationships are highlighted – establishing expectations, clear communication, fostering independence, and creating inclusive research and teaching environments. This chapter and its accompanying case studies with reflection questions are designed to be tools that institutions can use within faculty development workshops or as a resource for faculty mentors to become aware of the evidence-base that shapes current best practices in mentoring.

Policies and guidelines: Recommendations in response to anticipated changes to the Fair Labor Standards Act (FLSA)

PDPA worked with stakeholders in Human Resources to review the 189 full and part-time employees within the Academic Research Job Family affected by the anticipated Fair Labor Standards Act (FLSA) overtime rule, which was ultimately overturned by a federal judge and not implemented as expected. Boston University went forward with making several changes as a result of the pending legislation, factoring in both the roles and responsibilities and the relative salary distributions of each ARJF job category.

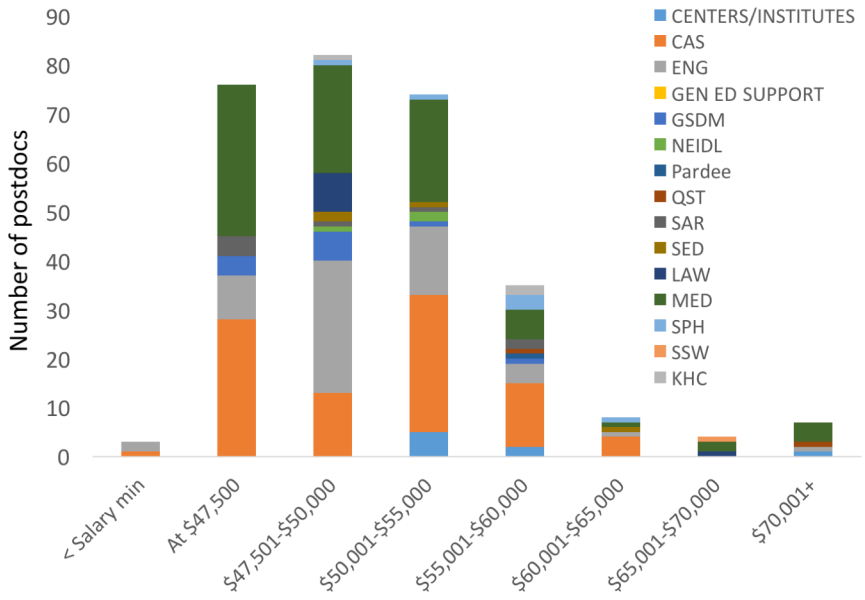
$47,500 was established as the minimum salary/stipend for postdoctoral scholars as of December 1, 2016. This increase corresponded to the anticipated increase to the NIH minimum salary in response to the anticipated FLSA changes and established a standard for full-time postdoc salaries and stipends across all Schools/Colleges and Research Centers/Institutes. The impact of raising the salaries of the 116 full-time postdocs was $374,211 annually, and seven months of this increase was covered by University bridge funding to help faculty manage the cost transition.

Concerns were raised over the possibility that departments could appoint postdocs at less than full-time in order to circumnavigate the salary minimum. Thus, postdoc appointments at Boston University are now required to be full-time, 100% effort appointments unless an exception (e.g. parental responsibilities, leave) is granted by PDPA.

Policies and guidelines: Implementing the Policy for Postdoctoral Scholars

The *Policy for Postdoctoral Scholars* and accompanying procedures defined the postdoc role and created consistency across our Schools and Colleges and Research Centers and Institutes through defining a minimum salary/stipend, defining a five-year term limit for postdoctoral appointments, and establishing health benefits for non-employee postdocs. The policy has been in effect for one year, and PDPA is now working with departments to ensure compliance with the minimum salary/stipend levels as well as helping postdocs that exceed the term limit transition to other positions (internally or externally) successfully.

Figure 2: Postdoc Salary Distribution by School/College, 2017



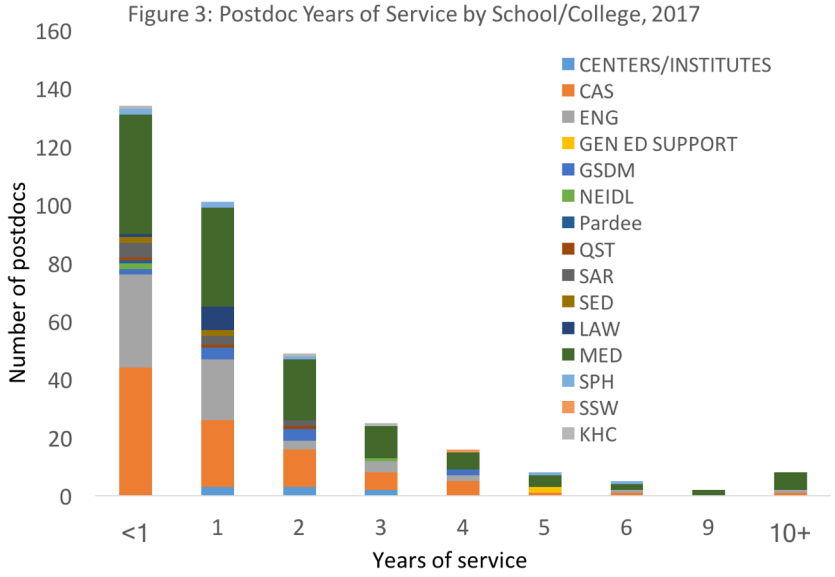
Minimum salary/stipend

Salary data was available for 83.0%, or 289, of our postdocs. This is in part because non-employee postdocs are paid through accounts payable or directly through external sources, and annual stipend information is not stored centrally for those individuals. Of postdocs with salary information available, only 3 postdocs on the Charles River Campus are below the salary minimum. Figure 2 shows the distribution of full-time postdoc salaries by School/College. From the data available, the average salary of a postdoc at BU is $51,984.36 with a minimum of $35,625.06 and a maximum of $83,000.

Term limits

The average length of service for our current postdocs is approximately 2 years. Figure 3 depicts the distribution of schools/colleges across years of service at BU. Medical Campus postdocs have accrued about 25% more time at BU than the average (2.4 years), and Charles River Campus postdocs have accrued about 20% less time at BU than the average (1.6 years). 23 of the 348 postdocs have exceeded the five-year term limit policy; eight of these have been with BU for longer than 10 years. Seven of the 23 are non-employee postdocs, and a majority of the 23 work on the Medical Campus.

Figure 3: Postdoc Years of Service by School/College, 2017



Non-employee health benefits

The Policy for Postdoctoral Scholars also included a provision that established health care benefits for non-employee postdocs. Non-employee postdocs are individuals who are either fellowship-supported (paid through training awards administered by Boston University) or externally paid (directly to fellow) and are paid stipends for training rather than salary for services.

In order to meet this goal, a plan equivalent to the employee plan was developed in collaboration with Human Resources, and open enrollment launched in summer 2016. However, this plan required a minimum enrollment of 50 individuals, and only 9 postdoctoral fellows enrolled. We surveyed postdocs to understand how these benefits did not meet their needs sufficiently to motivate enrollment, and found that many of them would have taken advantage of these benefits had they been offered at the start of their non-employee appointment, but that they were not incentivized to switch after obtaining benefits independently. Thus, we sought to offer a benefits plan that did not require a minimum enrollment so that we could establish a program that would be available long-term to incoming non-employee postdocs.

As of August 1, 2017, non-employee postdocs were able to enroll in the Aetna Student Plus plan (also offered to graduate students). Special features of this plan include options for individual or family/dependent coverage, a nationwide network of providers, vision and dental discounts, optional month-to-month enrollment, and no minimum required enrollment. More information about the plan is available in Aetna's Health Insurance Plan for Postdoctoral Fellows document.

In order to ensure that postdocs pay a single rate for health coverage regardless of their classification, the costs associated with these new plan options for non-employee postdocs will be subsidized centrally by the Office of the Provost to make out-of-pocket costs equivalent between employee and non-employee postdocs.

Discounted MBTA transportation passes for non-employee postdocs

With the cost savings associated with offering postdocs affordable health care coverage through our existing graduate student health care plan, the Office of the Provost will also subsidize MBTA passes for non-employee postdocs to match the current MBTA subsidies offered to all Boston University faculty and staff. This new benefit will launch in September 2017 for MBTA passes that begin October 1, 2017.

Professional Development: Develop and implement high-quality professional development opportunities; expand resources for postdocs at BU.

Our model for providing professional development is a balanced approach including both programming and new services, and our weekly newsletter advertises all of the professional development opportunities open to postdocs across the University. In 2016/2017, we continued the business card and travel award programs launched in the prior financial year, providing business cards to 55 postdocs and funding six ($500) travel awards. We also launched

a new seed funding award ($5000) to promote interdisciplinary collaborations and skill development in collaboration with the Interdisciplinary Biomedical Research Office (IBRO).

The programming that we provide is focused on skills, specifically on the core competencies identified by the NPA as being important for all postdocs – discipline-specific knowledge, research skill development, communication skills, professionalism, and leadership and management skills. We offered ten in-person and four online professional development opportunities in 2016/2017.

D3 course with Novartis

Part of the success of our programming relies upon our partnerships with external organizations to enhance our content and maximize our resources. We continue to partner with the Novartis Institutes of BioMedical Research (NIBR) to offer their Drug Discovery & Development (D3) Simulation to graduate students and postdocs. This short course allows nine participants to develop an understanding of drug discovery and development and gain exposure to the scientific strategies deployed by a pharmaceutical company. Four postdoc participants in this program have successfully transitioned into industrial careers, citing this course as a major contributor to their success, both in identifying industry as the right career path for them and as a preparation for job interviews.

CIRTL cross-Network programming

A major partner for our professional development offerings is the Center for the Integration of Research, Teaching, and Learning (CIRTL) Network, an alliance of 42 member institutions committed to the training of future faculty. This partnership raises the visibility of PDPA's work, enables us to reach a more diverse audience than we would within our local community, allows us to incorporate best practices from peer institutions, and develops long standing research-focused collaborations to improve the quality of professional development we provide to our graduate students and postdocs. Since 2015, Director Hokanson has co-developed and co-facilitated four workshops with CIRTL faculty partners, reaching an audience of 22 Boston University participants and 218 external participants. Hokanson and her collaborators at Northwestern University (Bennett Goldberg and Sharisse Grannan), Michigan State University (Henry Campa, III), and the University of Wisconsin-Madison / CIRTL (Donald Gillian-Daniel, Robin Greenler) are currently preparing a manuscript for submission to *Innovative Higher Education*.

Each workshop centered on the completion of a specific product (e.g. individual development plan, teaching statement, work/life resilience action plan) coupled with structured peer feedback, designed around the hypothesis that completing a product and receiving feedback would translate into higher engagement and motivate greater behavioral changes over time. We combined pre-surveys, post-surveys, and surveys distributed six months following workshops with one-on-one telephone interviews to obtain critical feedback on the workshop model, understand participant behavioral and attitudinal change (or lack thereof), and understand participants' perspectives of the culture that defines their engagement in professional development. Our participants perceive community and structured reflections as

the principal elements they valued in successful professional development, adding to their ongoing internal dialogue or skill-building processes. Also, work products serve valuable roles in learning and skill development, even if they are not fully integrated into participant's daily professional habits. These findings support a workshop model that integrates skills application with deliberate moments of reflection and community building, strategies that other institutions can use when designing professional development opportunities.

CIRTL AGEP at Boston University

PDPA was awarded a National Science Foundation Alliances in Graduate Education and the Professoriate (AGEP) grant as part of a ten-institution CIRTL alliance, including: Boston University, Cornell University, Howard University, Iowa State University (lead), Northwestern University, University at Buffalo, University of Georgia, University of Maryland College Park, and University of Texas at Arlington. Our program seeks to advance knowledge about models to improve pathways to the professoriate and success of historically underrepresented minority (URM) students, postdoctoral fellows and faculty in STEM disciplines.

This CIRTL AGEP program aims to tackle a complex, multifaceted social problem of inclusive climate through a Networked Improvement Community (NIC) with the participating institutions. NICs draw on improvement science that deploys rapid tests of change to guide the development, revision and continued fine-tuning of new tools, processes, work roles and relationships. A strength of our NIC is the varied contexts for testing across our different institutional environments. NICs also strongly integrate research with practice, and our research questions focus on features of interventions that are effective across varied universities and the relative importance of connected change levers. Integrating these data in discussions at leadership and program delivery levels reorients planning and implementation around the outcomes – a perspective required to support continuous improvement.

Our efforts aim to:

- produce a set of measurements on URM student interest in faculty careers, the climate experienced by all students and perceptions of mentoring and advising
- undertake planned, coordinated initiatives to improve graduate student advising and mentoring interactions
- develop and test initiatives on building an inclusive community amongst graduate students
- implement measures to assess the effectiveness of these initiatives and use data in intentional cycles that improve each initiative
- develop a model set of initiatives for advisors, mentors and graduate students that have been tested at nine universities and result in increased interest in and pursuit of faculty careers.

Proposals

Director Hokanson submitted five collaborative proposals in 2016/2017 focused on creating new professional development programs. A summary of PDPA submitted proposals can be found in Table 3.

Table 3: Proposals submitted and awarded in 2016/2017

Funding source	Mechanism	Title	Award amount	Status
National Science Foundation	**Improving Undergraduate STEM Education (IUSE)**	**Preparing Future Faculty to Improve STEM Education: Broadening the National Impact of the CIRTL Network**	***$113,327***	**Awarded - begins September 1, 2017**
National Science Foundation	**DCL 16067 - Improving Graduate Student Preparedness for the Workforce**	**Preparing Boston University Graduate Students for the STEM Workforce (NSF GRFP Supplement)**	***$51,299***	**Awarded - began March 1, 2017**
National Institutes of Health	R25 Innovative Programs in Education, Research and Training (IPERT)	Postdoctoral Pathways – Broadening Access to Career Advancement	*$2,031,022*	Reviewed - scored 29; Pending Council review in September 2017
National Institutes of Health	NIMHD Specialized Centers of Excellence on Minority Health and Health Disparities (U54)	Mitigating Health Disparities by Addressing Health Literacy with Information Technologies	*$7,629,292*	Reviewed - scored 27; Pending Council review in September 2017
National Science Foundation	NRT: Innovations in Graduate Education	NRT-IGE: Collaborative Research: Next Steps - The PhD Competency Program	*$119,776*	Reviewed, not funded
Burroughs Wellcome Fund	Career Guidance for Trainees	Building capacity for professional development through a Train-the-Trainer program	*$30,289*	Reviewed, not funded

Director Hokanson also supported several other grant submissions across the University, including two National Science Foundation Research Training Program submissions (PIs Templer and Bishop) and the multi-institution National Science Foundation Engineering Research Center partnership (PI Bishop).

Data: Surveying our postdocs to measure our impact

In March 2017, we partnered with BU's BEST Program and the CTSI to conduct our Postdoctoral Experiences survey for a second time, first launched in 2015. The goals of this survey are to understand our impact as we expand our programs and services, receive feedback on the needs and interests of postdocs across both campuses, as well as to inform the development of new University policies. The full aggregated survey results are included in Appendix 3.

31% of postdocs took our Postdoctoral Experience Survey, which is a similar response rate to the 34% we received in 2015. It is clear from the data that PDPA is beginning to shift the tone of postdoc affairs at Boston University; the overall survey responses are more positive than in 2015 when we conducted our first survey. Though 81% of our respondents joined Boston University after PDPA had launched in 2015, many postdocs were still able to describe positive impacts PDPA had on their postdoctoral experience (Table 4).

Table 4: Impact of PDPA on the postdoctoral experience

Professional Development & Postdoctoral Affairs (PDPA) was significantly expanded in 2015 to provide you with meaningful support and services. Think back to when you first came to BU as a postdoc, and compare your experience then to your experience now. What, if anything, has changed in your postdoc experience at BU since this office was established? Write 'Nothing', if needed, instead of leaving blank. (n=34 total responses)	n
Resources / Programming - "…a tremendous amount of programming." - "Better communication about opportunities, better professional-development workshops and opportunities, and Sarah is generally awesome." - 3 referenced improved communications	16
No change - 5 "Nothing" - 2 said they joined around the same time as PDPA started - 1 said, "That is because I haven't been very involved" - 1 said, "still almost entirely programs oriented to the sciences, and not much of relevance for me as a humanities postdoc."	9
Sense of community - "…significantly more effort in building a community of postdocs"	7
Rights for postdocs - "Thanks for advocating for us for the raise in salary for postdocs."	3
Centralized point of contact - "It definitely feels like there is a place to go with concerns, ideas, and questions now."	2
General culture change - "…the Postdoc office in its previous conception was dedicated to "the reality that postdocs are going to get jobs outside of academia." This led to a negative environment where the office that was designed to promote me told me I would fail in my ambitions to become a faculty…[now] tone is far less negative."	1
Other - "In this challenging jungle like world, I had received decent "protection" from PDPA, scientifically, mentally, and emotionally." - "I have a lot of experience with my postdoc, PDPA was surely a part of that but it's difficult to pinpoint how much PDPA contributed to that. I hardly use their services."	5

One of the open response questions we use to solicit feedback from postdocs is, "If you could meet one-on-one with the Director of Professional Development and Postdoctoral Affairs today, what would you want her to know about your postdoctoral experiences at BU?" (Table 5) This question was intentionally designed to be open-ended, and to create an opportunity for postdocs to share the aspects of their training experience that are significant to them. In 2015, only 15% of the responses contained positive feedback, in comparison to 41% in 2017.

Table 5: Aspects of the Boston University postdoc experience

If you could meet one-on-one with the Director of Professional Development and Postdoctoral Affairs today, what would you want her to know about your postdoctoral experiences at BU? (n=66 total responses)	n
Positive	26
Negative	24
Other	14

Positive themes reflect the quality of the support provided by our office as well as the overall training climate at Boston University.

Table 6a: Positive comments (n=26)	n
Resources and Programming - "There is plenty of support available from PDPA. I feel more ready now to move on to the next career step"	8
Sarah / PDPA Team - "I am having a great post-doc at BU that is certainly in part due to Sarah and all the work she and Kate do for the office" - "It has been rewarding and learning experience. I really appreciate all the efforts put in by professional development and postdoc affairs team." - "I appreciate the work that she and her department do for us postdocs, it has a tangible effect on us."	6
Climate - "I feel comfortable in BU. The atmosphere is great for focusing on my research and exchanging ideas" - "Overall I've had a very positive experience at BU and I'm very glad that I chose BU." - "I feel like a valued member of the BU community"	4
Mentor - "My great mentors and department"	1

The non-employee classification remains a source of confusion and frustration for that subset of postdocs, though this survey was completed before the new health insurance and MBTA benefits were finalized (we expect these responses to improve in our next survey).

Postdocs also expressed the need to increase our resources for postdocs that are not doing laboratory-based research and/or postdocs outside of biomedical disciplines. With exception to the seed funding award, which was biomedically-focused in its first year, all of our other resources are open to postdocs of all disciplines. However, given the other resources

specifically for postdocs in biomedical disciplines across the University (e.g. BU's BEST Program) it is important for PDPA to be more intentional about creating resources for postdocs in non-biomedical fields in the upcoming year.

Table 6b: Negative comments (n=24)	n
Benefits - "Discuss how difficult it is to be a non-employee postdoc" - "…the lack of benefits for postdoctoral fellows is a significant and negative incentive for recruiting top postdocs to BU" - "…designation of "non-employee postdoc" which has complicate some things for me, in taxes and borrowing from banks" - (6 of the 8 mentioned non-employee status)	8
Resources - "Most of the programming seems geared toward medical postdocs or others involved in laboratory sciences." (4 mentioned this) - "The postdocs need better career services."	6
Bureaucracy / institution - "All administrative related issues are complicated and not clear." - "…small departments do not know how to handle or answer questions pertaining to postdocs" - ISSO mentioned twice as an issue	6
Other - Difficulty finding living situation coming from Europe, anxiety for job search as international scholar, "no help with strange tax situations", "it can be better"	4
Community / culture - "We are somewhat "forgotten" in the university community" - "Creating more opportunities for post-docs to meet within each department would be great. Not as interested in meeting post-docs in other departments" - "One of the biggest problems I see on campus is the difficulty with forming communities between the postdocs and ask that they continue to find inventive ways to get us away from the benches and talking to each other to form both professional and personal connections."	3
Need for clearer expectations - "I guess would be helpful to have some seminar/discussion with faculties about postdocs expectations from them" - "The expectations of postdocs at BU are unclear."	2

Projected Activities for 2017/2018

Our strategic goals and projected activities in 2017/2018 will increase the connections among postdocs the greater Boston University community, expand the services and resources we provide, establish new University policies and guidelines, and position PDPA as a leader on postdoc-related issues within the University community and the national postdoc community at large.

Engagement

Goal 1: Increase the connections among postdocs and their peers and between postdocs and our wider University community

Though some of the responses to our open-response questions in the Postdoctoral Experiences Survey indicate that some postdocs are beginning to feel connected to one another and to Boston University more broadly, many postdocs do not report strong connections to their peers or our institution (Table 7).

Table 7: How connected do you feel with the following groups?
Left hand number = percentage of responses, right hand number = number of responses

Group	A Lot		Somewhat		A Little		Not At All		n
Postdocs in my department/discipline	19%	18	35%	34	31%	30	15%	14	96
Colleagues in my department/discipline	17%	16	57%	55	19%	18	7%	7	96
Postdocs in other departments/disciplines on MY BU campus	2%	2	10%	10	31%	30	56%	54	96
Postdocs in other departments/disciplines on the OTHER BU campus	0%	0	4%	4	17%	16	79%	76	96
Staff at BU	5%	5	46%	44	38%	36	11%	11	96
Faculty at BU	8%	8	49%	47	33%	32	9%	9	96
BU community as a whole	1%	1	27%	26	59%	57	13%	12	96

We plan to implement several strategies to ensure our postdocs become better connected to one another and to stakeholders across Boston University. We intend to host department- and center-specific events to bring together postdoc colleagues with similar research interests. These events will be a mix of social opportunities and professional development workshops, and will hopefully create initial connections that will encourage postdocs to continue to interact with one another outside of the events our office provides. This year we will also pilot small postdoc learning communities – one will target postdocs in humanities and social and behavioral disciplines, and another will bring together all postdocs that have teaching as part of their training responsibilities.

We have also launched a pilot incentive program to reward postdocs that bring a fellow postdoc with them to professional development events, offering a raffle each semester based

on event attendance. We hope this incentive system will help motivate postdocs to reach out to their peers as well as create an accountability system for ensuring that they regularly participate in the professional development opportunities that will enhance their career success.

We are also building resources to help postdocs stay connected after their appointments at Boston University are completed. We have re-invigorated our LinkedIn page and have created it specifically as a personal profile rather than as a group page to facilitate networking between postdocs and alumni rather than to be used as a venue for sharing office announcements.

Goal 2: Expand the tools that we use to communicate to our postdocs
Responses to the annual survey provided insight and direction on how to improve the way we disseminate information to our postdoc audience. Respondents to the survey overwhelmingly listed regular e-communications (61.1%), newsletters (42.9%), and the website (35.7%) as their preferences for receiving news from our office.

This year, PDPA aims to improve the functionality and look and feel of our website. Our new website will have a theme independent from the Research theme, creating a brand for PDPA and for postdocs that is unique to them. We will represent the (internal and external) resources and services available to postdocs by tying the information to the different stages of the postdoc experience in a visually appealing way. The Postdoc Guidebook will also be updated to reflect our new policies and will now include guidelines for obtaining the subsidy reimbursements associated with our new non-employee health insurance and MBTA benefits.

Goal 3: Position Boston University as a key convener and leader in local and national postdoc conversations.
Director Hokanson continues to represent Boston University on leadership committees within several national organizations related to our work. She is currently serving a three-year term on the CIRTL Network's Cross-Network Operations Group (CNOG), as well as a two-year term as co-chair of the National Postdoctoral Association's Resource Development Committee. This fall, Hokanson was also elected as member of the Graduate Research, Education, and Training (GREAT) Group Postdoctorate Steering Committee and named to the Advisory Board of Future of Research, a non-profit advocacy group.

Policies and Guidelines
Goal 1: Identify new institutional resources to support postdocs with family obligations
Based on the recommendations contained within *Parents in the Pipeline: Retaining Postdoctoral Researchers with Families*, PDPA will explore ways that we can provide support to our postdocs with children or family caregiving responsibilities. We will work with the BUPDA to research benefits offered by peer and peer-plus institutions and identify potential postdoc needs. Potential programs could include small grants to support caregiving costs incurred due to a postdoc's professional travel obligations, family-friendly events that allow postdocs to network alongside their families, and the development of a lunch group for postdocs that are parents.

Goal 2: Create a new policy to define postdoc engagement in external work opportunities
Though Boston University has a policy that explicitly defines how much time/effort faculty can spend engaged in external consulting opportunities, we do not have equivalent policies for research staff, including postdocs. Start-up firms are beginning to form in the Boston area that match trainees with industry partners to complete short-term research or consulting projects, and they are marketing directly to our postdocs via social media platforms and professional society mailing lists. Additionally, many of our postdocs engage in external adjunct teaching opportunities in addition to their postdoc research training at Boston University. As more and more postdocs proactively seek opportunities for career and professional development during their appointments, we will need to develop guidelines to ensure that the time that they spend away from their training obligations is appropriate. The Research and Scholarly Activities Committee will revise the current policy to include new external effort limits for research staff, including postdocs, that will provide clarity for postdocs and their faculty mentors.

Goal 3: Implement recommendations for a new Academic Research Job Family
In response to the Provost's charge, the Non-Faculty Academic Research Job Family Task Force (co-chaired by Director Hokanson) reviewed data and information related to the current Academic Research Job Family structure at Boston University. The Task Force examined the current data held within SAP on academic research staff, market research data on academic research positions nationally, as well as the practices of seven of our peer institutions. Our discussions focused on distinguishing this classification of positions at Boston University from research support or research faculty roles, and identifying the specific roles and responsibilities of researchers across both campuses. We also considered what academic responsibilities these roles should have, such as developing proposals, teaching, and formally supervising undergraduate or graduate students. As we developed and finalized our recommended classifications and considered their policy implications, we consulted with stakeholders across the University, including University leadership, faculty, administrative staff, and members of the current job family themselves (primarily postdoctoral scholars).

The Task Force has presented a series of findings and recommendations that describe a smaller set of non-faculty research roles and create a clear promotion pathway for non-faculty researchers desiring a longer-term career at Boston University. These recommendations are under review within the Office of the Provost and PDPA anticipates that many or all of these recommendations will be implemented in the upcoming fiscal year. The American Society for Biochemistry and Molecular Biology (ASBMB) has highlighted these recommendations in an upcoming report showcasing how institutions have streamlined administrative processes to better serve populations of trainees.

Professional Development
Goal 1: Increase the number of postdocs with written career development plans
The Sigma Xi postdoc survey revealed that postdoctoral scholars who created a written career plan or individual development plan (IDP) with their mentors were 23% more likely to submit papers, 30% more likely to publish first-authored papers, and 25% less likely to report that their

mentor did not meet their initial expectations. However, despite the overwhelming evidence that IDPs support postdoc success, 65% of our postdoc survey respondents have not yet completed an IDP (Appendix 3).

PDPA offers a workshop each semester focused on developing IDPs that is open to all postdocs and graduate students University-wide. We will continue to do so, but also plan to offer targeted workshops in departments with large populations of postdocs over the coming year, with the goal of reaching four new departments annually. We will recruit faculty co-facilitators in each department to help create buy-in for the use of IDPs as well as to create a mechanism to disseminate our content and sustain these offerings long-term. We will also partner with the Office of the Associate Provost for Graduate Affairs to develop coordinated policy initiatives that support the use of IDPs for both postdocs and graduate students across Boston University in all disciplines.

Goal 2: Launch of CIRTL AGEP programs and web-based resources at Boston University
PDPA will begin implementing AGEP-sponsored activities across our campuses for postdocs, graduate students, and faculty this fall. We have obtained IRB approval to conduct an annual climate survey that assesses: perceptions of the graduate program, departmental and institutional climate; inclusive research advising, mentoring and peer interactions; and understanding of and interest in faculty careers. We will also launch graduate student and postdoc professional development workshops designed to increase their awareness of bias literacy and the factors that influence climate. Finally, a mini-grant program has been established to support opportunities for faculty to engage in professional development related to diversity and inclusion topics/challenges, and will award up to $5000 to departments and programs over the next financial year.

A new CIRTL AGEP@BU website will be a repository of resources for graduate students, postdocs, and their faculty mentors. Graduate students and postdocs will have access to asynchronous content to help prepare them for faculty careers, as well as to video diaries of individuals that have successfully transitioned into junior faculty positions. Faculty resources will provide faculty with best practices in inclusive mentoring and will also provide information and strategies to help them advise their trainees that are preparing for a career in academia.

Goal 3: Launch of CIRTL IUSE programs and web-based resources
Though we do have a small population of teaching postdocs at Boston University (in Kilachand Honors College, Biology, and Chemistry), often the postdoctoral career stage lacks any opportunity to advance teaching skills. For postdoctoral scholars who seek to become faculty, lack of teaching development is particularly untimely, because this career stage can immediately precede many 4-year college and university faculty hires and entry into the classroom. PDPA is a subcontract on a newly awarded CIRTL Network NSF Improving Undergraduate STEM Education (IUSE) grant to provide scaffolded professional development opportunities focused on advancing postdoc teaching skills. We will partner with the University of Colorado-Boulder to develop weekend teaching bootcamps, a year-long postdoc teaching institute comprised of in-person and synchronous online workshops, evidence-based teaching

resources that are discipline-specific, and postdoc-centric CIRTL MOOC-Centered Learning Communities with integrated career development activities focused on preparing postdocs to apply for and enter into faculty careers.

Goal 4: Secure grant-funding to support the development of a virtual Postdoc Academy
With seed money provided by the Office of the Vice President and Associate Provost for Research, PDPA developed a pilot series of professional development workshops in collaboration with Northwestern University and Michigan State University toward the goal of developing a digital professional development program for postdocs called *Postdoc Academy*. Our *Postdoc Academy* program will increase postdoc access to professional development and will help advance postdoc career skills.

All materials that we have developed to date is freely accessible to peer institutions across the CIRTL Network to expand the reach of our pilot, and has fostered collaborations with new institutional partners. Assessments have been integral to this project and the data we have collected will enable us to implement effective content, produce scholarship that develops standards for and informs postdoc professional development, and direct the expansion of the program in the longer term. We have submitted an NIH IPERT application to support this project long-term that is pending Council review in September 2017.

Data
Goal 1: Collaborate with University stakeholders to develop a plan for postdoc data management across the different data platforms at Boston University
Postdoc data is collected and stored on many different platforms across the University – SAP, myCV, BU Profiles, and manual databases (owned by our office, ISSO, or by individual departments and/or training programs) – but the data does not cohesively integrate together into a comprehensive data set, and data on some postdoc populations (e.g. biomedical postdocs) is more complete than than data we have on others. In the coming year, PDPA will work collaboratively with stakeholders across the University to understand postdoc data needs and develop a plan for how the various data silos at Boston University can be better managed centrally through integration across platforms and data clean-up/entry within SAP.

Conclusions
Since its expansion, PDPA has established itself as the 'go-to' office for postdoc related issues at BU, providing services and resources to postdocs, their faculty mentors, and research support staff. We have built a network of partnerships within the University and we will leverage these collaborations to help us build our postdoc community and increase postdocs' connectivity within the University. PDPA also continues to be a recognized leader within the national community of postdoc offices, both in establishing policies that create a supportive postdoc training environment at BU and developing cutting edge professional development programs that build postdocs' transferable skills toward their successful transition into the workforce.

Boston University
Postdoctoral T32 Training Grants
Post Award Process Guide

Table of Contents

Program Recruiting/Advertising

T32 recruiting and advertising can be done on an individual level, but routinely departments that have T32 grants have advertised in academic journals including New England Journal of Medicine, Journal of American Medical Association, or other journals relevant to the grant study. More effective recruiting has been done by tapping into faculty networks and distributing training information through mentors, Principal Investigators and associated faculty members.

Professional Development & Postdoctoral Affairs can help recruit by circulating positions throughout their network of postdoc offices and graduate programs. There is now also a postdoc-specific job board run through the National Postdoctoral Association that accepts T32 postings.

T32 trainee advertising can be posted on the BU HR Careers website, although the position has to include language about the T32 stipend and non-employee position type. To do this, contact your HR Business Partner. If you are unaware who your business partner is, you may find them at https://www.bu.edu/hr/home/contact-hr/contacts-for-managers/

Trainee Onboarding

Identify a Candidate

- Each group has their own way of choosing candidates
- Candidates must:
    - Be US citizen or hold a green card
    - Not have more than 3 years total on postdoctoral NRSA funding

Offer Letter

Note: The offer letter, and job creation is completed by the mentor/hiring department, NOT the grant administrator. If the candidate will work in a different department, send instructions to the administrator of the department to complete steps 'Offer Letter' and 'Job Creation'.

1. Identify candidate
2. Prepare ProFoma for PDPA. This can be completed at http://www.bu.edu/research/information-for/professional-development-postdoctoral-affairs/appointment-request-form/.
    - Information needed:
        - First, Last, Middle name
        - Start and End date
        - Proposed Job title – postdoctoral fellow
        - Highest Degree received and year received
        - Effort, Salary and Grant Funding Source, paid from where, visa?
        - In comments, indicate extra training funds accessible to applicant (e.g. computers, supplies, etc)
        - Summary of role in laboratory and role on publications
        - Signed by PI
        - This is returned to you, signed by PDPA with a draft offer letter
3. Prepare Offer Letter/edits from PDPA (see appendix A)
    - Draft comes from PDPA based on information in ProForma
    - Complete address
    - Obtain signatures
    - Return to PDPA who signs and returns to you
    - Obtain signature from trainee
4. Send for signature (PI, Chair, Director, PDPA, Candidate)

Job Creation (in SAP)

1. Create NONCOMP position in SAP, attach offer letter, use job #20001558
    - Use Job code 20001558 to create job
    - Be sure to indicate NON COMP, Stipend from Accounts Payable in Comments
    - Attach fully executed offer letter
    - Follow the process electronically reminding folks to sign off along the way
    - Receive notification the positon has been created
2. Receive notification position is created
3. Hire person into position using ss#, attach offer letter and COI, Patent (all obtained from candidate)
    - Acquire the necessary forms from trainee:

- BUMC noncomp ID form http://www.bu.edu/hr/documents/buidrequest.pdf
- COI form http://www.bu.edu/hr/documents/coi_employment_disclosure_form.pdf
- Patent form http://www.bu.edu/hr/documents/patentpolicy.pdf
- Hire trainee into staff position using social security number
- Attach employee forms and offer letter to the new hire
- Follow electronic signatures to completion and a BU ID#

4. Receive notification that person hiring is complete, BU ID assigned

eRA Commons Set-Up

1. Go into system for BU ID#, send to candidate, direct them to ID room
   710 Albany Street
   Open M-F 7:00 – 9:00 AM and 12:30 – 3:00 PM
2. With ID, candidate can receive BU email from IT
3. With email, instruct the trainee to set up eRA commons account through OSP by having trainee request eRA commons account at https://www.bu.edu/researchsupport/forms-policies/request-for-era-commons-access/
   - If candidate already has eRA commons, contact OSP to add BU as an affiliate on the eRA commons account.
4. With eRA commons login, appoint trainee to training grant
   - Follow signature pathway until appointment is accepted by the NIH (*see 'eRA Commons – Create Appointment' instructions on page 7*)

Trainee Payment, Paymode & Direct Deposit

1. With appointment, complete disbursement form for stipend at http://www.bu.edu/ap/resources/forms/disbursement-form/
   - If you are supplementing the stipend (must be non-federal funds), you must include in the 'notes' section a brief explanation of the supplement is required
2. Send e-mail to Eddy Igl at eigl@bu.edu to set up Paymode – send trainee to Paymode website to begin registration
   - *See 'Paymode Instructions' on page 6*
3. The trainee should be made aware that taxes will not be deducted, and they will receive a 1099 at the end of the year

Paying stipend

- When appointment is accepted by agency, save the document
- Send the appointment and a disbursement request form via: http://www.bu.edu/ap/resources/forms/disbursement-form/
- Any extra supplement not training grant stipend has to be from NON-Federal funds on a separate line on the disbursement form
- Send trainee directions for direct deposit through pay-mode

Paymode Instructions

Subject: Post Docs & Stipend Recipients - Bank of America Paymode & Boston University
Importance: High

To our BU post docs,

You currently receive Boston University payments via check and, since we are moving towards electronic payments, we ask that you register at www.paymode.com/bu to sign up for ACH payments. With ACH payments, your funds will be directly deposited into your bank account along with complete remittance information that can be accessed at any time. Please complete the online registration as soon as possible, as it typically takes two weeks to activate. (See image below for instructions on how to fill out the Paymode registration for Company Information.) Please also send a signed copy of your W9 to Eddy Igl's attention at fax number 617-353-3600 or via DataMotion (SecureMail provided by BU). A blank W9 template can be downloaded from the www.irs.gov website.

Please contact Eddy Igl @ (eigl@bu.edu) or (617-358-6615) for assistance.

Thank you for your cooperation.

Accounts Payable

eRA Commons – Create Appointment

In eRA:

- Login to eRA Commons
- Click on 'xTrain' tab on menu
- Click on 'View Trainee Roster' corresponding to applicable training grant (if PI has multiple grants)
- Click on 'Create New Appointment'
- Enter Trainee User ID (eRA Commons ID)
- Click on 'Create New Appointment' under applicable trainee
- Select Field of Research Training or Career Development
- Enter start and End date (one year maximum)
- Enter Stipend Salary Level and Stipend/Salary/Other Compensation
- Route to trainee
- Once approved, route to agency
- Print and mail Payback agreement to agency
- Send a copy of the Statement of Appointment to the trainee and administrator for the mentor (hiring department)

More detailed instructions on creating appointments in eRA can be found at:
https://era.nih.gov/files/xTrain_Initiate_Appointment.pdf

Responsible Conduct of Research

*The following was adapted from instructions for Oct 2016 (Fall Session) Registration

Registration for Advanced Responsible Conduct of Research (RCR) Workshops
Doctoral degree candidates and Post-doctoral researchers

ADVANCED RCR TRAINING: Doctoral candidates and post-doctoral researchers who have a RCR compliance requirement due to funding by a NIH training grant or a NSF research grant are required to complete the online Introductory (**Step 1**) & Intermediate (**Step 2**) RCR training modules before participating in the 4 Advanced RCR live workshops. Grant funded individuals are required to complete **Steps 1** and **2** within 30 days of the start of funding and complete all 4 live advanced RCR workshops within 2 years. For all other doctoral and post-doctoral researchers who will be taking advanced RCR training, including those who are meeting a departmental mandate, they must also complete **Steps 1** and **2** before registering for the 4 workshops. Doctoral students should complete all 4 workshops by the end of their fourth year. Postdoctoral researchers are recommended to complete **Steps 1** and **2** as early as possible and commence the 4 RCR workshops in the semester in which online preparation is completed. We recommend completion of the 4 workshops at the rate of at least one per semester.

COMPLETING ONLINE STEPS 1 and 2:

Step 1: Introductory RCR Principles

1. Log in to your Blackboard Learn homepage at http://www.bu.edu/tech/services/teaching/lms/blackboard/
2. Click on the second tab: All Blackboard Learn Courses
3. On the left hand side of the All Blackboard Learn Courses page search for "RCR"
4. Select Introductory Responsible Conduct of Research (RCR) (Ongoing) from the list and follow directions

Step 2: Intermediate RCR Principles

1. Sign up for a CITI Account at https://about.citiprogram.org/en/homepage/
2. Affiliate with Boston University (please note that if you affiliate with Boston University Medical Campus through CITI, you will not be able to access the RCR course).
3. Click "Add a Course or Update Learner Groups"
4. Select "Responsible Conduct of Research (RCR Courses)"
5. Select "BU RCR Program for Doctoral candidates and Post-Docs: All Audiences"

Benefits

Health Insurance

Trainees are eligible to use their training-related funds to pay for health insurance. It is up to the PI if they want to cap the health insurance reimbursement per month. Health Insurance is considered taxable income. Health Insurance payments are reimbursed through disbursement request forms, similar to stipends:

Paying Health Insurance

- Have the trainee submit to you:
    - Health/Dental Insurance invoice
    - Receipt
    - Proof of payment for their insurance premium
- Send the attachments and a disbursement request monthly via: http://www.bu.edu/ap/resources/forms/disbursement-form/

UPDATE AS OF 07/20/2017:

Non-Employee postdocs are now eligible for health insurance through Aetna. There are two plans available to non-employee postdocs, basic and plus. Additional information can be found at: https://www.aetnastudenthealth.com/en/school/711110/index.html and https://www.bu.edu/provost/2015/12/22/health-coverage-for-postdoctoral-scholars/.

MBTA Discounts

The Office of the Provost now subsidizes MBTA passes for non-employee postdocs to match the current MBTA subsidies offered to all Boston University faculty and staff. Current rates can be found on the Boston University Parking and Transportation Services website. Interested postdocs should contact Professional Development & Postdoctoral Affairs at postdocs@bu.edu to take advantage of this new benefit, which will launch in September 2017 for MBTA passes that begin October 1, 2017.

Tuition Reimbursement

Tuition Reimbursement: School of Public Health Courses

If a Trainee takes a course at Boston University School of Public Health, a fund number to charge tuition to must be set up

To set up a fund number, contact Emir Morais, emorais@bu.edu, Enrollment and Student Affairs, Student Financial Services, BUSPH. He will work with Ryan Manganelli, rsmang@bu.edu, Admissions Coordinator at SPH to set up a fund key number and award the funds to the trainee's tuition bill.

Next, complete a fund data sheet and submit to Emir. The fund data sheet can be found at: http://www.bumc.bu.edu/gms/files/2011/10/Fund-Data-Sheet-Online-Form2.pdf. Communicate to Emir how many trainees and how much tuition they expect to expend. A table should be submitted similar to the below table:

Trainee	UID	BU Scholarship	Training Grant	Total
John Smith	U12345678	$3074	$3074	$6148
Brian Smith	U12345678	$3074	$3074	$6148
Jamie Smith	U12345678	$3074	$3074	$6148
Susan Smith	U12345678	$3074	$3074	$6148
Bill Smith	U12345678	$3074	$3074	$6148

In addition, submit to Emir the proof of scholarship.

Ryan, Emir, and others including Scott Harrison, Assistant Director of Student Financial Services at BUSPH will then work to apply tuition costs to the training grant and towards the SPH scholarship.

Contacts:
Emir Morais, emorais@bu.edu, Enrollment and Student Affairs, Student Financial Services, BUSPH
Ryan Manganelli, rsmang@bu.edu, Admissions Coordinator, BUSPH
Scott Harrison, harrisos@bu.edu, Assistant Director, Student Financial Services, BUSPH

Tuition Reimbursement: Graduate Medical Sciences (GMS) Courses

If a Trainee takes a course at Boston University GMS, GMS must be notified that the student is going to take a GMS course that is funded by the training grant before the class begins. This is done by completing a 'GMS Student Training Grant & Fellowship Form – Tuition & Non-Service Stipend Requests' Form. This form can be found at http://www.bumc.bu.edu/gms/files/2016/10/GMS-SNSFS-FORM-2.pdf. **This form must be completed before the start of the semester that the student is enrolled in courses.**

After the 'GMS Student Training Grant & Fellowship Form – Tuition & Non-Service Stipend Requests' Form is completed, it must be sent to Sherill Ashe, Financial Aid Administrator – GMS at sashe@bu.edu. She can also answer any questions, comments or concerns.

Travel and Training Related Expense Reimbursement

Trainee Reimbursement

For both Travel and Training Related Expenses, trainees can purchase travel arrangements and training related expenses out of pocket, and they can be reimbursed through Concur. To do this, you must create a 'Guest Account' in concur. A 'Guest Account' can be created with the help of Travel Services, which can be contacted at travelexpense@bu.edu. Please note: You must get authorization from the Section Chief in order to create a guest account in Concur.

Travel that falls outside the trainee's appointment on the training grant cannot be charged to the training grant. In order for the travel to be eligible, the event must fall within the trainee's appointment.

Faculty Travel Card

In some cases, you may be able to have trainees avoid paying for out of pocket expenses onto the training grant. If you have a faculty member who is willing to use their travel card, you can purchase items on their travel card where appropriate (for example: memberships and/or flight arrangements). Using this method, you can then allocate the travel expenses directly to the grant without having to reimburse the trainee. Unfortunately, you may not use the travel card for hotel arrangements, because the travel card must be present at hotel check out.

Please see Training Related Expense Regulations on page 20 and Travel Cost Regulations on page 21 for more guidance on what are allowable expenses for travel and training related expenses.

Trainee Re-appointment and Termination

Re-appointing Trainees

If the trainee appointments span more than one year, they will have to be re-appointed in eRA commons. This can be done by logging into eRA commons at https://public.era.nih.gov/commons/, and accessing the 'xTrain'. From there:

- In 'xTrain' section of eRA commons, click 'View Trainee Roster'
- Under applicable trainee that you wish to re-appoint, enter 'Reappoint trainee' from right side of trainee roster'
- Follow applicable steps to complete the training re-appointment
- Send re-appointment to trainee, then to funding source

A new Payback agreement is **not** necessary when reappointing trainees on a training grant.

More detailed instructions can be found at: https://era.nih.gov/files/xTrain_Initiate_Appointment.pdf

Onboarding reappointed trainees

When reappointing trainees, they must also have an updated disbursement form sent to Accounts Payable for their updated stipend payments (if applicable). To do so, follow the same instructions as initial onboarding:

Paying stipend

- When appointment is accepted by agency, save the document
- Send the appointment and a disbursement request form via: http://www.bu.edu/ap/resources/forms/disbursement-form/
- Any extra supplement not training grant stipend has to be from NON-Federal funds on a separate line on the disbursement form.

Terminating Appointees

Information taken from:
https://grants.nih.gov/grants/policy/nihgps/html5/section_11/11.3_institutional_research_training_grants.htm#Terminat

The Termination Notice (along with the PHS 2271 Statement of Appointment form) is the basis for validating the total period of Kirschstein-NRSA support and establishing the amount of payback obligation, if any, for each Kirschstein-NRSA trainee. The PD/PI is responsible for submitting a Termination Notice for each trainee within 30 days of the end of the total period of support even if the trainee is not available for signature. In all cases, the information on the form must be verified by the program director and an institutional business official. The lack of timely and accurate information on this form could adversely affect data collected associated with aggregate NRSA support and the payback process. Recipients are required to submit the PHS 416-7 data electronically using the xTrain application. More information on xTrain is available at http://era.nih.gov/services_for_applicants/other/xTrain.cfm.

Trainees must be terminated at the end of their appointment in eRA commons. This can be done by logging into eRA commons at https://public.era.nih.gov/commons/, and accessing the 'xTrain'. From there:

- In 'xTrain' section of eRA commons, click 'View Trainee Roster'
- Under applicable trainee that you wish to re-appoint, enter 'Initiate TN' from right side of trainee roster'
- Follow applicable steps to complete the training re-appointment
- Send re-appointment to trainee, then to funding source

Completing the Research Performance Progress Report (RPPR)

The RPPR is due 3 months before the start date of the new grant year. These reports are submitted through the eRA commons website at https://public.era.nih.gov/commons/ . Instructions to complete the RPPR can be found at https://grants.nih.gov/grants/rppr/index.htm

Tracking Training Activities Per Trainee

It is extremely useful to track all Training Related activities by your trainees. This will save time at the grant end, where activities are reported to the funding sources. Additionally, these activities can be used if/when the trainees are interviewed for their evaluation of the training program. A useful way to record these activities is a standard sheet that includes the following table:

Activity	Description	Location	Date	Ongoing?

Trainee Review and Evaluation of Training Grant

As was said before, these tables can be used if/when trainees are interviewed for their thoughts on the training program. An annual review of the training program is useful in presenting to any external or review committee of the training grant. Without consistent program evaluation, the training grant is at risk to completing without meeting the training grant objectives, while the PI and external/advisory committee are unaware.

In the past, Deborah Fournier, Assistant Provost, School of Medicine - Provost & Dean Office Admin has been extremely supportive in completing these interviews. She can assist in creating the training evaluation interview questions, completing questionnaires to be sent out to trainees, and even completing the interviews themselves. She can be contacted at fournier@bu.edu.

Year End Rollover

FFR (Final Financial Report)

A Final Financial Report is due 90 days after the end date of the grant year. The report is formally completed by PAFO and sent to the funder, but PAFO will need assistance in verifying the expenses on the grant. At the time the grant year has ended, PAFO will contact for verification of expenses. Once the expenses are confirmed, PAFO will complete and submit the report to the funder.

New grant Internal Order Number

Prior to grant year end, a new Internal Order number must be created to charge expenses to for the following grant year. A new Internal Order number can be requested IPAR (https://www.bu.edu/researchsupport/files/2017/05/Internal-Prior-Approval-Request-IPAR.pdf) a month before the end date of the grant so it is ready to charge expenses to as of the new grant start date. It is important to charge all expenses to the new IO# at the start of the next grant year, regardless if funds have fully spent in the current IO#'s. If the existing IO#'s are continued to be charged, costs will have to be moved onto the new IO#'s once the FFR is complete.

Carry over funds

Please refer to the Notice of Award for specific carry over requirements. In many cases, unspent expenses can be carried over to the next grant year with prior approval from the funding Grant Manager.

Professional Development & Postdoctoral Affairs (PDPA)

Boston University has a department which assists not only postdoctoral fellows and trainees, but grant administrators with any questions they may have regarding their training grant. Specifically, Sarah Hokanson, Director, is a great resource to have when administering a training grant. She can be contacted at sch1@bu.edu, 617-358-2111 or 617-638-5206.

Furthermore, PDPA at Boston University strives 'to make sure BU provides a supportive environment for postdoctoral training, and we do that by offering professional development opportunities to our postdocs and their faculty mentors, capturing and reporting postdoc data, and informing BU policy development.' More can be found at http://www.bu.edu/research/information-for/professional-development-postdoctoral-affairs/.

Because T32 postdocs do not attend HR orientation, it is extremely important that they attend the monthly orientation session offered by PDPA to learn more about BU as a whole and get questions answered about the MBTA and healthcare benefits for non-employee postdocs. Postdocs can email psotdocs@bu.edu to register.

Trainee Requirements

Taken from the NIH Grants Policy Statement (see 'NIH Grants Policy Statement' on page 16)

11.2.2 Eligibility
11.2.2.1 Research Areas

Kirschstein-NRSA fellowships may be made for research training in areas that fall within the missions of the NIH ICs. Applications that do not address these areas will be returned. An increased emphasis has been placed on the research training of physicians. The HHS Secretary is required by law, in taking into account the overall national needs for biomedical research personnel, to give special consideration to physicians who agree to undertake a minimum of 2 consecutive years of biomedical, behavioral, or clinical research training. For those who have a doctoral-level health professional degree, the proposed training may be used to satisfy a portion of the degree requirements for a master's degree, a doctoral degree, or any other advanced research degree program.

11.2.2.2 Research Training Program

The Kirschstein-NRSA fellowship must be used to support a program of research training. It may not support studies leading to M.D., D.O., D.D.S., D.V.M., or other similar clinical, health professional degrees except when those studies are part of a formal combined research degree program such as the M.D./Ph.D. Similarly Kirschstein-NRSA fellowships may not support the clinical portion of residency training. Research fellows in clinical areas are expected to devote full time effort to the proposed research training and to confine clinical duties to those that are part of the research training.

11.2.2.3 Degree Requirements

Predoctoral Training. Individuals must have received, as of the activation date of their Kirschstein-NRSA pre-doctoral fellowship award, a baccalaureate degree and must be enrolled in and training at the postbaccalaureate level in a program leading to the award of a Doctor of Philosophy of Science (Ph.D. or Sc.D.) or a combined clinical degree and Ph.D. degree such as M.D./Ph.D.

Postdoctoral Training. Before a Kirschstein-NRSA postdoctoral fellowship award can be activated, individuals must have received a Ph.D., M.D., D.D.S, D.M.D., D.C., D.O., D.V.M., O.D., D.P.M., Sc.D., Eng.D., Dr. P.H., D.N.Sc., D.P.T., Pharm.D., N.D., D.S.W., Psy.D., or equivalent doctoral degree from an accredited domestic or foreign institution. Also acceptable is a statement by an AOR of the degree-granting institution that all degree requirements have been met. It is the responsibility of the sponsoring institution, not the NIH, to determine if a foreign degree is equivalent.

11.2.2.4 Citizenship

The individual to be trained must be a citizen or a noncitizen national of the United States or have been lawfully admitted for permanent residence by the time of award. Noncitizen nationals are individuals, who, although not citizens of the United States, owe permanent allegiance to the United States. They generally are people born in outlying possessions of the United States (e.g., American Samoa and Swains Island). Individuals who have been lawfully admitted for permanent residence must have a currently valid Permanent Resident Card (USCIS Form I-551) or other legal verification of such status.

Individuals on temporary or student visas are not eligible to apply for Kirschstein-NRSA individual fellowships unless they have begun the process for becoming a permanent resident and expect to be admitted as a permanent resident by the earliest possible award date.

11.2.6 Period of Support

No individual may receive more than 5 years of aggregate Kirschstein-NRSA support at the predoctoral level and 3 years of aggregate Kirschstein-NRSA support at the postdoctoral level, including any combination of Kirschstein-NRSA support from institutional research training grants and individual fellowships.

More can be found on the NIH Grants Policy Statement (https://grants.nih.gov/grants/policy/nihgps_2012/nihgps_ch11.htm)

NIH Grants Policy Statement

The NIH Grants Policy Statement (NIHGPS) makes available, in a single document, the policy requirements that serve as the terms and conditions of NIH grant awards. By accepting an award, grantees agree to comply with the requirements in the NIH Grants Policy Statement except where the notice of award states otherwise. Notices of policy changes published in the NIH Guide for Grants and Contracts can supersede information in the NIH Grants Policy Statement. Compliance with these policy updates also becomes a term and condition of award. NIH incorporates these notices into the annual update of the NIH Grants Policy Statement.

NIH Grants Policy Statement can be found at https://grants.nih.gov/policy/nihgps/index.htm

Trainee Stipends Regulations

Information taken from: https://grants.nih.gov/grants/guide/notice-files/not-od-16-047.html and https://grants.nih.gov/grants/guide/notice-files/NOT-OD-16-131.html

For institutional training grants, (T32, T90, TL1) and individual fellowships (F32), the stipend level for the entire first year of support is determined by the number of full years of relevant postdoctoral experience when the award is issued. Relevant experience may include research experience (including industrial), teaching assistantship, internship, residency, clinical duties, or other time spent in a health-related field beyond that of the qualifying doctoral degree. Once the appropriate stipend level has been determined, the fellow must be paid at that level for the entire grant year. The stipend for each additional year of Kirschstein-NRSA support is the next level in the stipend structure and does not change mid-year.

Postdoctoral Stipend levels for FY2017

***IMPORTANT* These stipend levels can be increased by NIH, please be appraised with any notices that come out regarding stipend levels from NIH NRSA**

Career Level	Years of Experience	Actual Stipend for FY 2016	Projected Stipend for FY 2017	Monthly Stipend
Postdoctoral	0	$43,692	$47,484	$3,957
	1	$45,444	$47,844	$3,987
	2	$47,268	$48,216	$4,018
	3	$49,152	$50,316	$4,193
	4	$51,120	$52,140	$4,345
	5	$53,160	$54,228	$4,519
	6	$55,296	$56,400	$4,700
	7 or More	$57,504	$58,560	$4,880

Relevant Policies:
It should be noted, that to be eligible for a NIH training grant, trainees cannot have more than 5 years of institutional support on previous training grants for predoctoral trainees (6 years for dual-degree training, e.g., MD/PhD, DO/PhD, DDS/PhD, AuD/PhD, DVM/PhD), and 3 years for postdoctoral fellows. The NIH provides eight levels of postdoctoral stipends to accommodate individuals who complete other forms of health-related training prior to accepting a Kirschstein-NRSA supported

position. (The presence of eight discrete levels of experience, however, does not constitute an endorsement of extended periods of postdoctoral research training.)

Trainee Tuition and Fees Regulations

Tuition and Fees, Training Related Expenses, and Institutional Allowance for Kirschstein-NRSA Recipients

The NIH will provide funds for Tuition and Fees, Training Related Expenses, and Institutional Allowance as detailed below.

A. Tuition and Fees

- Postdoctoral Trainees and Fellows: For institutional training grants (T32, T90, TL1) and individual fellowships (F32, F33), an amount per postdoctoral trainee or fellow equal to 60% of the level requested by the applicant institution, up to $4,500 per year, will be provided. If the trainee or fellow is enrolled in a program that supports postdoctoral individuals in formal degree-granting training, an amount per postdoctoral trainee or fellow equal to 60% of the level requested by the applicant institution, up to $16,000 per year, will be provided.

Training Related Expenses Regulations

Information taken from:
https://grants.nih.gov/grants/policy/nihgps/html5/section_11/11.3_institutional_research_training_grants.htm

B. Training Related Expenses on Institutional Training Grants

- For institutional training grants (T32, T35, T90, TL1), these expenses (including health insurance costs) for predoctoral and postdoctoral trainees will be paid at the amounts shown below for all competing and non-competing awards made with FY 2016 funds.

- *Predoctoral Trainees:* $4,200
- *Postdoctoral Trainees:* $8,850

Funds are provided to defray costs such as staff salaries, consultant costs, equipment, research supplies, staff travel, trainee health insurance (self-only or family as applicable), and other expenses directly related to the training program. Funds are requested and awarded as a lump sum on the basis of the predetermined amount per predoctoral and postdoctoral trainee approved for support. Levels are published in the *NIH Guide for Grants and Contracts*. Interested applicants should consult the program announcement regarding the specific level for programs such as the short-term training program, the MARC U*STAR program, or the COR program. Many of the costs allowable under Training-Related Expenses may cover global costs for an institutional training program where the Kirschstein-NRSA support covers only some of the participating trainees. For these types of global costs, institutions should allocate the appropriate portion of such costs to the training grant. Institutions are reminded that this budget category is a finite amount of money available to cover a variety of allowable costs. Institutions should be particularly mindful to apply core cost principles of allocation and consistent treatment.

Health Insurance. Health Insurance (self-only or family) are allowable trainee related expenses only if such charges are applied consistently to all individuals in a similar training status at the organization, without regard to their source of support. Health insurance can include coverage for costs such as vision and/or dental care if consistent with organizational policy. Historically health insurance was awarded as part of the tuition and fees category. This is no longer the policy. For any training grant that competed and was awarded in FY2006 and beyond, health insurance is awarded as part of the Training Related Expenses category.

Medical Liability and Other Special Insurance. Medical liability (malpractice) insurance or other special insurance is an allowable cost to NRSA grants only if nature of the research training requires such special insurance. For instance, medical liability would be allowable if the research training experience involves direct contact with patients or human subjects. In all cases, for the cost to be charged to the NRSA grant, it must be consistently required for all in a similar training status, regardless of the source of support. Special insurances that are routinely offered as optional employee benefits (such as disability insurance, life insurance, or workman's compensation insurance), are not normally allowable charges (see separate section on Employee Benefits) unless the nature of the research training requires such special insurance.

Staff Salaries. Institutions are reminded that applicable cost principles apply. Training programs may qualify as a "major project" where administrative salaries are allowable as a training-related expense.

Speaker Fees. When speakers are part of program required for NSRA-supported trainees, a portion of such a cost could be charged as Training-related expenses.

Meals. As stated in IIA, the cost of meals may be allowable if they are provided in conjunction with a meeting considered an ancillary activity to the training grant. A portion of such a cost could be charged as Training-related expenses. See Cost Considerations-The Cost Principles in IIA for specific guidance on the need institutional policies on consistent treatment and reasonableness.

Extraordinary Costs. Under exceptional circumstances, which can include accommodating the disabilities of a trainee, it is possible to request organizational costs above the standard level. Requests for additional costs must be explained in detail and justified in the application. Consultation with NIH program staff in advance of such requests is strongly advised.

C .Travel Costs Regulations

Information taken from: https://grants.nih.gov/grants/guide/notice-files/not-od-16-047.html

Travel Costs: Up to $1,400 per trainee per year may be requested for trainee travel (for pre- and post-doctoral trainees only)

Information taken from:
https://grants.nih.gov/grants/policy/nihgps/html5/section_11/11.3_institutional_research_training_grants.htm

If requested by the recipient, the NIH awarding IC may provide grant funds to cover the costs of trainee travel, including attendance at scientific meetings, which the organization determines is necessary to the individual's training. Trainees must be appointed to the training grants at time of the actual travel for this to be an allowable cost. Funds may not be expended to cover the costs of travel between the trainee's place of residence and the training institution, except that the recipient organization may authorize a one-way travel allowance in an individual case of extreme hardship.

In addition, support for travel to a research training experience away from the recipient organization may be permitted. Research training experiences away from the parent organization must be justified on the basis of the type of opportunities for training available, the opportunities offered that are different from those at the parent organization, and the relationship of the proposed experience to the trainee's career stage and career goals. This type of research training requires prior approval of the NIH awarding IC. Letters requesting such training may be submitted to the NIH awarding IC at any time during the appointment period.

Rebudgeting of Funds

Information taken from:
https://grants.nih.gov/grants/policy/nihgps/html5/section_11/11.3_institutional_research_training_grants.htm#Rebudget

According to NIH Grants Policy Statement: Funds may be rebudgeted only as follows:

- Trainee-Related Expenses. Rebudgeting of funds awarded in a lump sum for trainee-related expenses does not require NIH awarding IC prior approval.

- Trainee Costs. For rebudgeting purposes, trainee costs include funds awarded in the stipends or tuition/fees budget categories. These costs may not be used for other purposes except under unusual circumstances and then only with the prior approval of the NIH awarding IC. Unless otherwise restricted, rebudgeting into or within the stipends and tuition/fees is allowable without prior approval of the NIH awarding IC.

- Trainee Travel. For rebudgeting purposes, trainee travel is not considered a trainee cost and, therefore, may be rebudgeted into any other budget category without prior approval of the NIH awarding IC.

Proactive postdoc mentoring

Sarah Chobot Hokanson, Director of Professional Development & Postdoctoral Affairs at Boston University; Bennett B Goldberg, Director of the Searle Center for Advancing Learning and Teaching, Assistant Provost for Learning and Teaching, and Professor of Physics and Astronomy at Northwestern University

Abstract
Early career advantages in academia tend to accumulate, providing future advantages to postdocs as their careers continue (Merton, 1968b) Cumulative advantages can begin as early as in the training stage, where opportunities for success are primarily influenced by whether or not trainees have access to engaged, positive and supportive mentoring relationships. Strong postdoc-faculty relationships have been demonstrated to influence the postdoc's career satisfaction and success (Davis, 2005), but can be challenging to establish and maintain. The nature of the postdoc position itself is a paradox of autonomy (Trevelyan, 2001), with expectations of both training and independence that can be a hard balance for postdocs and faculty mentors to mutually attain. Though lack of structured mentorship is a commonly reported mentoring challenge that limits postdoc advancement (Fetzer, 2008, Committee on Science, 2014), micromanaged postdocs also face limitations in developing the skill sets required for their next career step (Laudel, 2008).

Faculty mentors are also increasingly under strain due to pressures within the overall training system (Alberts et al., 2014). These challenges affect the postdoc-mentor relationship in many ways: 1) Juggling many of their own responsibilities limits the time faculty can commit to career mentoring and professional development; 2) Faculty have limited knowledge and experience of non-academic careers, even though many of their postdocs will transition into those pathways; 3) Increased competition for research funding lowers faculty morale and increases the pressure on their trainees.
In this chapter, we review the research-based mentoring literature and identify strategies that institutions and faculty can employ to mitigate some of the overarching challenges that negatively impact faculty mentoring practices and the postdoc-faculty relationship. Through case studies, we highlight critical aspects of positive postdoc-faculty mentoring relationships – establishing expectations, clear communication, fostering independence, and creating inclusive research and teaching environments.

Introduction
The pillars of success within the academy – scholarship, teaching, and service – are largely social capital; they are built and maintained through productive relationships with others. Yet, on the whole, training to become a faculty member focuses more on human capital, which is attained through individual mastery of specific content within an area of scholarship rather than by demonstrating the skills needed to interact with and manage those that create it.

Mentoring postdoctoral scholars (postdocs) is a shared professional responsibility of all faculty and the institutions that support them. A good mentoring relationship is crucial to a postdoc's success in developing original research ideas and moving toward greater career independence. Successful mentoring relationships are part of a dynamic process (McGee, 2016), and the effective mentor may need to take on many roles in order to support the postdoc mentee – advocate, advisor, coach, and/or role model. Though successful interactions can take on many forms, breakdowns in faculty-postdoc relationships often happen by the same basic pathways: the faculty member and the postdoc do not trust one another, or each doubts the other's commitment, expertise, and identity. Breakdowns in trust negatively impact the collective investment in the working relationship and can lead to lowered levels of satisfaction and productivity; in severe cases, stalled career progression for the postdoc can result.

The quality of mentoring postdocs receive has been positively associated with their ability to strategically plan for and work toward their desired career pathway (Scaffidi, 2011). Yet many postdocs report dissatisfaction with the quality of mentoring they receive from their primary faculty advisor throughout their appointment (Miller, 2015). This is the challenge space – the gap between knowing what works and doing it. In this chapter, we explore the role of the research mentor, including the best practices identified through research on mentoring as well as identify the cumulative advantage that a good mentor can create for their trainees. We also discuss barriers created within the academy to achieving effective mentoring relationships and examine how these challenges can create complex faculty-postdoc interactions through illustrative case studies. Finally, we provide guidelines, tools and resources for faculty mentors, postdocs, and institutions to enable them to take a more proactive approach to building mentoring relationships that will lead to success.

What is mentoring?

The word 'mentor' originates from Homer's *Odyssey* (Homer and Fitzgerald, 1990), inspired by *Mentor* that was entrusted to look after Odysseus's household and son Telemachus while Odysseus was away. Through the responsibilities placed on Mentor -- father figure, teacher, role model, adviser, protector – scholars developed mentoring as an intentional process to nurture the potential of someone junior (Shea, 1997, Carruthers, 1993, Little, 1990, Anderson, 1995). Kram and Isabella (Kram, 1985) are credited (Bozeman and Feeney, 2007) with the first contemporary definition of mentoring, emphasizing both the professional and personal support mentors provide as part of their role:

"*Mentors provide young adults with career-enhancing functions, such as sponsorship, coaching, facilitating exposure and visibility, and offering challenging work or protection, all of which help the younger person to establish a role in the organization, learn the ropes, and prepare for advancement." (Kram, 1985)*

Later definitions began to shift from emphasizing the role of the mentor to defining the process itself. Bozeman and Feeney (Bozeman and Feeney, 2007) constructed their definition to be independent of organizational structures or hierarchy, focusing the inequality between the mentor and protégé on their differences in knowledge, wisdom, and experience rather than explicitly in their age or position:

"Mentoring: a process for the informal transmission of knowledge, social capital, and psychosocial support perceived by the recipient as relevant to work, career, or professional development; mentoring entails informal communication, usually face-to-face and during a sustained period of time, between a person who is perceived to have greater relevant knowledge, wisdom, or experience (the mentor) and a person who is perceived to have less (the protégé)." (Bozeman and Feeney, 2007)

Today, mentoring is not solely defined by the mentor nor is it defined as a process focused on addressing inequalities; instead, mentoring is described as a combination of the human and social capital that lead to reciprocity and mutual benefits for both the mentor and the mentee.

"Effective mentoring was described using the words collaborative; cooperative; confidential; confidence building; collegial; and comforting." (Phillips, 2010)

"…mentorship ideally consists of a reciprocal, dynamic relationship between mentor (or mentoring team) and mentee that promotes the satisfaction and development of both." (McGee, 2016)

Characteristics and outcomes of successful mentoring relationships

Mentoring relationships are generally considered effective when they result in the successful completion of career milestones and transitions and generate positive perceptions of the mentoring

experience. Greater productivity and self-efficacy in a given career as well as overall career satisfaction are three of the metrics associated with positive mentoring relationship outcomes (Cho et al., 2011, Sambunjak et al., 2006, Davis, 2005, McGee and Keller, 2007, Dolan, 2009). Mentees that have effective mentors have increased chances of advancement in a competitive academic landscape. Described by Merton's Matthew effect, early career advantages in academia tend to accumulate, providing future advantages to faculty as their careers continue (Merton, 1968a). Postdocs are likely to seek out well-known mentors in their field and/or choose appointments at prestigious institutions because they stand to receive long-term benefits from those associations if their short-term training experiences are positive and productive (Miller, 2015).

But there is more to mentoring than power and prestige, even if those criteria drive initial selection postdocs use to find a mentor. Mentoring models can vary in terms of their structure, function, and timing. Though the traditional definition of mentoring stems from a dyadic relationship, current models of mentoring in academia embrace networks of multiple mentors, such as peers (Kuhn and Castano, 2016, Santucci, 2008), coaches (Williams et al., 2015), multiple advisors/principal investigators (Ensher, 2001), or a hierarchal cascade (Davis, 1996). Ideally, networked mentors would be connected and working collaboratively, though just as often they operate as independent dyads or small groups to mentor a single individual (de Janasz, 2004). Though much has been published on mentoring relationships in academia, the diversity of training levels and disciplinary contexts make it difficult to identify an ideal relationship model (e.g. structure, proximity, duration) (Pfund, 2016).

Much of the research on mentoring focuses on the influence of effective mentoring on career choices and outcomes. A systematic review of 42 articles describing 39 studies that explored the impact of mentorship in academic medicine confirmed its value – faculty members that had effective mentors were more productive, promoted more quickly, and were more likely to stay at their institutions (Sambunjak et al., 2006). But what does 'effective' really mean? Straus *et al.* conducted a qualitative study across two academic health centers and found that faculty characterized successful mentoring relationships by reciprocity, mutual respect, clear expectations, personal connection, and shared values (Straus et al., 2013). In their *Entering Mentoring* training program, Handelsman *et al.* defined the skills faculty and mentee should reflect and work on toward more effective mentoring: aligning expectations; maintaining effective communication; promoting mentee professional development; assessing mentee growth and understanding; maintaining equity and inclusion; fostering independence; cultivating ethical behavior; and promoting mentee self-efficacy (Pfund, 2015). A randomized controlled trial conducted at sixteen academic medical centers validated this workshop-based approach, and an accompanying mentoring competency assessment (Pfund et al., 2013, Pfund et al., 2014, Fleming et al., 2013) demonstrated positive changes in faculty awareness, favorable mentees' ratings of their mentors' competency, and effective mentoring behaviors as reported by mentors and their mentees.

Our societal demographics are changing, and decades of research and funding efforts have focused on identifying strategies and interventions towards broadening participation in the scientific workforce. Recent studies have examined the role of the research mentor in the career aspirations and perceptions of PhD students (Gibbs et al., 2014) and postdocs (Gibbs et al., 2015). Gibbs *et al.* found that the decision to pursue postdoc training was not generally associated with well-informed career intentions, and that in the absence of structured career and professional development programs, vicarious learning from research mentors shaped postdocs' career perceptions and outcomes (Gibbs et al., 2015). This unpredictable vicarious learning is particularly problematic when it comes to the career advancement of early career underrepresented minority scientists, whose interest in postdocs and academic careers declines even more than their counterparts' (Gibbs et al., 2014). Successful mentoring relationships are those that are inclusive and responsive to the social and cultural identities each postdoc and faculty member bring to the collaboration (Pfund, 2016, McGee, 2016).

The National Research Mentoring Network (NRMN) is developing approaches to broaden participation in the scientific workforce. Recent attention has focused on new coaching models to complement mentoring, showing promise for improving underrepresented graduate students' perceptions of their ability to achieve academic (faculty) careers (Williams et al., 2015). NRMN is also developing a new training program to enable mentors to develop cultural awareness, designed for mentors that have completed initial mentor training and want to continue to build their skills (Byars-Winston, 2016). The intensive six-hour training program has three main objectives: facilitate participant self-reflection on their social identity to help them identify their personal assumptions, biases, and privileges that influence their mentoring style and relationships; create opportunities for the application of new knowledge through role play, group discussion, and case study activities; invite participants to develop an action or intention to become more culturally aware in their mentoring relationships, improving their ability to be more responsive to diversity issues as they may arise. This model has been pilot tested in several institutions, and NRMN is refining the preliminary evaluation data to launch a final version of this curriculum for mentors later this year (Byars-Winston, 2016).

Pfund *et al.* review four conceptual frameworks that have emerged in the literature that are useful in assessing the influence and effectiveness of mentoring relationships (Pfund, 2016) – academic persistence, social cognitive career theory, science identity, and social and cultural capital. Models of academic persistence (Tinto, 1993, Chemers, 2011, Manson, 2009) predict a student's completion of a degree or milestone, examining how aspects of students' social identities and lived experiences impact their ability to integrate within their institution. Social cognitive career theory (Lent, 1994) describes the drivers behind motivation, goal setting, and persistence toward a given academic outcome or career path, as well as how an individual's expectations and self-efficacy influence the career choices and actions they make. Science identity (Carlone H, 2007) explains how individuals develop a professional identity within the culture of their discipline, and how that professional identity is influenced both by the person's sense of recognition, performance, and competency as well as their perception of how others in the discipline view those qualities. Social and cultural capital research (Bourdieu, 1986, Smith, 1995) outlines the value that exists between individuals and the structures that control their access to resources and opportunity, describing the mechanisms behind how injustices are repeated over generations and the elite stay elite.

The synthesis of social science and anthropological theories allow researchers to develop a mentoring framework to support postdoc training programs to develop structured learning goals and activities. In their work, Pfund *et al.* propose a table of theory-based attributes, objectives, and assessment metrics for effective mentoring across five domains: research, interpersonal, psychosocial and career, culturally responsive/diversity, and sponsorship (Pfund, 2016). Crisp *et al.* describe mentoring research and interventions for undergraduates in terms of three different frameworks: typology-related frameworks classifying how mentoring is distinct from other relationships; process-related frameworks that establish the factors that influence how mentors and mentees engage, including how their identities shape their interactions; and outcomes-based frameworks that link mentoring to student outcomes (Crisp, 2017). Pfund, McGee, and others within the NRMN are in the midst of developing metrics and validated instruments to begin research studies that will, in time, enable us to more clearly articulate not just the factors that influence success, but how those factors have varying influence at each career stage across diverse disciplines (Pfund, 2016, McGee, 2016).

Encountering challenges – the complexities of real-life research mentoring in the academic social system

Mentor wasn't chosen by Odysseus because he was proven to be an effective mentor – instead, he was chosen based on his qualifications as an elder, derived primarily from his status and privilege within the community:

"Remember your old friend and the good turns I've done you in the past. Why, you and I were boys together." (Homer and Fitzgerald, 1990)

In our modern higher education environment, faculty are like Mentor, entering into mentoring responsibilities based on a status they have earned through academic qualifications and their professional networks. In the *Odyssey*, Mentor must deal with the mess Odysseus left behind, and one could argue the situation prevented him from becoming as effective a mentor as the current definition of the word might suggest (Roberts, 1999) – Odysseus's palace is overrun with suitors and Odysseus's son Telemachus runs away to find his father before Mentor is able to have much influence over his growth and development. Like their namesake Mentor, they too have inherited a mess. Current postdoc mentoring relationships are challenged by the research landscape itself; an overabundance of postdocs and limited research funds are just two of the pressures that create tension between the need for a postdoc to produce work outputs in addition to growing and developing professionally.

Though most are well-intentioned, faculty and postdocs are fraught with many challenges within the current academic social system, creating pressure and strain that can damage their mentoring relationships. The challenges in the postdoctoral training system have been widely documented in recent years (as identified throughout this book and (Pickett et al., 2015, McDowell et al., 2014, Committee on Science, 2014, Alberts et al., 2014)). Postdoc-mentor interactions have been linked to postdoc success and have also been linked to postdocs' self-reported dissatisfaction with their appointments (Miller, 2015, Davis, 2009).

There are many cultural and structural aspects of academia, often seen through the lens of socialization (Austin, 2006), that affect the alignment between faculty and postdocs around their expectations, values, responsibilities, and practices. Research and disciplinary communities have clear expectations of what is required in order to contribute and belong, and part of the mentor role is to translate these implicit understandings for their mentee into explicit goals and tasks that help them advance toward long-term career success (Austin, 2002, Austin, 2006). However, this socialization that happens within departments and institutions is not generally based on evidence or research-based approaches, but on perceptions of contribution and productivity largely shaped by the mentors' experiences, and their mentor's mentor before them.

As the diversity of our graduate students increases, departments need to adapt their socialization and development processes to retain them as postdocs in the academic pipeline – meeting their needs rather than assuming they will assimilate (Williams, 2005). Byars-Winston *et al.* reported a link between perceptions of mentoring and underrepresented graduate student academic outcomes (Byars-Winston A, 2011), underscoring the influence mentoring can have on underrepresented students remaining in academia. For those that do remain and enter into postdoc training experiences, we can infer the challenges underrepresented postdocs face in their academic relationships from research studying the underrepresented graduate student experience.

The primary source of both support and conflict for graduate students are their departments, graduate programs, and faculty mentors (Lovitts, 2001, Golde, 2005, Barnes, 2009), with underrepresented graduate students often having multiple experiences with subtle micro-aggressions, discrimination, and overt racial bias (Rowe, 1990) from peers and faculty. The inability and/or unwillingness of faculty to acknowledge race and gender during mentoring interactions of women, and women of color in particular, send direct and indirect messages that academic norms and the students' own personal values conflict (Felder, 2014, Haley, 2014, Griffin, 2015), especially at research-intensive universities (Jaeger, 2013). Underrepresented graduate students report feeling isolated (Ibarra, 2001) and frequently experience stereotype threats (Gonzales, 2002, Steele, 1997, Steele, 1995), which can be compounded by lower than average expectations from faculty (Solórzano, 1993). These feelings combined with tokenization and

perceived lack of respect from their academic community can lower the confidence of underrepresented students (Gonzalez, 2006, Figueroa, 2013) and convey messages that they don't belong (Solórzano, 1993, Gonzalez, 2006, Figueroa, 2013). At a minimum, to overcome these challenges within the graduate training environment, faculty need to be aware of the lived experiences of their underrepresented mentees (MacLachlan, 2006, Thomas, 2007), the impact of micro-aggressions (Rowe, 1990), and the positive impact that micro-affirmations can have (Cohen, 2006, Miyake, 2010).

The culture of mentoring within many disciplines is that it is a private and experiential space, a personal relationship between two people closed to the outside world. New faculty have varying degrees of experience mentoring others prior to their appointments, and varying levels of exposure to the vast literature and opinions on mentoring practices. The development of a faculty member's early mentoring style is informed by their experiences as a mentee, learning lessons from how their mentor mentored them as well as continuing behaviors that have enabled them to form strong relationships with other people personally or professionally. Later stage mentoring practices evolve through lessons learned through trial and error of mentoring others combined with the anecdotal experiences of their peers and colleagues. The engrained faculty scholarship practice of staying apprised of current literature in their field and synthesizing expert opinions to help inform their research directions does not extend to mentoring, much in the same way it does not extend to learning and teaching (Beach, 2016). Hence similar challenges exist in the field of teaching and learning, where new faculty have a range of teaching experience and do not use literature as a resource when developing their own instructional practice (Beach, 2016).

Another challenge within the academic culture is the misalignment between postdoc career outcomes and faculty experience. Faculty are not necessarily preparing their postdocs to have the same career outcomes as them, and so experiential mentoring can fail for those not destined to become future faculty. The number of postdocs training in academia far exceeds the number of faculty positions available to them (Committee on Science, 2014), and not all postdocs desire to join the tenure-track or stay in academia at all (Sauermann and Roach, 2012). A mentee's relationship with their mentor plays an integral role in shaping their career success (Austin, 2002, Austin, 2006, Jaeger, 2013) and forming their perceptions of their career choices (Gibbs et al., 2014, Gibbs et al., 2015). Mentors that are unwilling or lack the knowledge and/or time to effectively advise their postdoc on the availability of careers can negatively impact their progress toward achieving them. The underlying culture of academia is shifting slowly, thanks to career development programs like the National Institute of Health-funded Broadening Experiences in Scientific Training program (Meyers et al., 2016, Fuhrmann, 2016), but many faculty still strongly value research-intensive academic career outcomes over other career options (Gibbs et al., 2015, Gibbs et al., 2014, Sauermann and Roach, 2012), potentially limiting how effective they can be as a mentor for postdocs interested in non-academic career pathways.

The academic system also limits mentoring relationships through the competing demands of maintaining a productive research group while fostering the relationship's growth. Expectations of faculty continue to increase, limiting the amount of time that faculty may feel they are able to set aside for mentoring postdocs. Pressure to secure and maintain research funding continues to increase as budgets tighten and pay lines get shorter, and faculty are spending more time writing, submitting, revising, and re-submitting proposals than ever before (von Hippel, 2015). Research administrative burdens have also increased for faculty (Gruner, 2015), taking their time away from other laboratory management functions such as mentoring. Though some institutions like Cornell University (Gruner, 2015) have developed recommendations to streamline research administration responsibilities for faculty, shadow work and compliance-related duties are still challenges within many research-intensive institutions.

In the face of these challenges, academia has limited rewards for being an effective mentor and limited consequences for those that are not effective. Recognition-based efforts, such as institutional awards (e.g. University of North Carolina at Chapel Hill (Anderson-Thompkins, 2016)) and external awards dedicated

to excellence in postdoc mentoring (e.g. National Postdoctoral Association Mentor Award (NPA, 2017)) tend to be the primary way that faculty are rewarded for a job well done. In 2015, Purdue University approved a new promotion and tenure policy that included "an active role in mentoring, advising and supporting the academic success of students and postdoctoral scientists" as part of their review criteria (Bertoline, 2015). Though these are positive steps in affirming the importance of mentoring, lack certain elements that could address other challenges within the training system: nominations and review are experiential based, rather than being awarded by faculty or researchers knowledgeable in the scholarship of mentoring; and the outcomes associated with them (e.g. honorarium, plaque, reimbursement of conference fees) are not motivators for faculty less invested in mentoring because they are not tied to relieving other pressures (e.g. teaching buy-out, temporary extra resources, tenure and promotion metrics).

Finally, the nature of the postdoc position itself is confusing for postdocs and faculty alike to navigate – expectations of both training and independence are entwined within the same research role, creating a paradox of autonomy (Trevelyan, 2001) that can be a hard balance for postdocs and faculty mentors to find. Further complicating this dissonance is the variability that exists among graduate student programs in the United States, let alone those globally – two entering postdocs may present similarly on paper in terms of their qualifications and their scholarly achievements yet be starkly different in terms of the level of independence they are able to maintain in their initial approach to their postdoc research project(s) based on their prior experiences in graduate school. Though lack of structured mentorship is a commonly reported mentoring challenge that limits postdoc advancement (Fetzer, 2008, Committee on Science, 2014), micromanaged postdocs also face limitations in developing the skill sets required for their next career step (Laudel, 2008). To some extent, the culture of independence in research is just as much rooted in the faculty member's mentoring style as it is their trainees' abilities to be independent. Mismatches between those two factors during a postdoc appointment can create conflict and resentment within the mentoring relationship.

Most mentors and postdocs enter into working relationships with good intentions, but they do so within a challenging academic landscape. Social structures within training programs, experiential mentoring practices, broadening postdoc career outcomes, increased research demands, and lack of rewards can negatively affect the quality of mentoring postdocs may receive. Also, defining expectations for postdoc positions generally can be elusive for faculty, postdocs, and institutions alike, increasing the likelihood that misalignments and dissatisfaction within mentoring relationships will occur. The rest of this chapter illustrates how and why mentoring situations escalate, and provide guidelines and representative resources to help academic stakeholders work together to proactively anticipate and mitigate barriers to effective mentoring relationships.

Case studies

Before we delve into evidence-based strategies that have been shown to minimize, if not mitigate, many of these challenges, we offer three case studies based on real faculty-postdoc mentoring situations to illustrate how complex and nuanced these relationships can be. We hope these case studies will be useful in helping faculty and postdocs self-reflect and have open dialogues on prior situations they could have handled differently and/or to develop skills they can apply toward actions and new approaches to mentoring relationships moving forward. In each of these cases, the postdocs and mentors each bear some accountability for the situation reaching an escalation point. Consider these questions as you reflect on your own mentoring relationships.

1. What are the core values missing in each of these mentoring relationships? How do these values translate into the approaches you apply in your own mentoring relationships?
2. How would you describe the postdocs' needs in each of these cases? What needs can each of the mentors meet, and what are the gaps? How can mentors and mentees identify gaps in a mentoring relationship?

3. What current situations might require you to reset expectations and establish clearer communication? What steps will you take moving forward?

Case 1: Discovering misalignment
Professor Grimes is a junior engineering faculty member with an expanding research group and several new grants awarded in the last two years. One of his postdocs left abruptly before the end of their appointment, leaving an open position that Professor Grimes is anxious to fill. Professor Williams is a senior faculty member in the department with a long history of successful scholarship and mentoring many graduate students and postdocs. However, his research funding in recent years hasn't been stable, and his current star postdoc Mila is funded only for a few more months.

Mila showed incredible promise during her time in Professor Williams's laboratory and he is disappointed he cannot renew her contract. Upon learning that Professor Grimes has an open position, Professor Williams encourages Professor Grimes to hire Mila, offering to split her salary in the summer as a transition between the two laboratories. Mila joined Professor Grimes's laboratory, and the transition period came and went quickly. Professor Grimes and Mila continued with a normal one-year contract, but in a few short months, the working relationship fell apart and Mila was terminated. Following her termination, Mila hired a lawyer and filed a complaint alleging wrongful termination due to discrimination.

<u>Professor Grimes's perspective:</u>
Professor Williams was excessive in his praise for his current postdoc Mila, describing her as hard-working and the smartest postdoc he had ever trained, able to learn anything. Professor Grimes wasn't sure, but Professor Williams was a prominent faculty member that had trained a lot of postdocs – his experience counted for a lot, and Grimes also did not want to rock any boat before his promotion and tenure review next year.

The initial meeting with Mila was mixed. It was hard to draw out her research expertise because she was extremely quiet and mostly looked at the floor during the interview. Halfway through the meeting, Professor Grimes noticed a picture of her children on her keychain and asked her about her family to try to bring her out of her shell, which seemed to perk her up. Professor Grimes was on the fence about offering the position to Mila, but just after her interview, Professor Williams phoned him to ask how the meeting went. Without a candidate lined up and with pressure from Professor Williams, Professor Grimes agreed to hire her.

As the fall approached, Mila demonstrated some progress in small bursts, and Professor Grimes assumed that turning to his project full time would increase her ability to get things done efficiently. However, once Mila joined the laboratory full-time, her progress on the project plateaued even though she was now working full-time. Not only that, but she seemed to require more guidance to complete routine tasks than even some of his more junior graduate students; she was always stopping by his office. Finally, Professor Grimes terminated Mila so that he could search for a replacement that could work more independently and at a faster pace. He was surprised Mila alleged that he was discriminatory in his decision, focusing on her family situation; he felt that had nothing to do with his decision, he just needed a lot more work done than she had been able to do.

<u>Mila's perspective:</u>
During her initial meeting with Professor Grimes, Mila felt nervous. She relocated her family to join Professor Williams's laboratory, and she wanted this new position to work out so that her family would not need to relocate again. Midway through the meeting, Mila began to transition from feeling nervous to uncomfortable. Professor Grimes asked Mila several questions about her children, and she wondered why

he was so interested and if that would bias him against hiring her. She was relieved when Professor Grimes extended her an offer.

The transition to her new laboratory was difficult for Mila. Working in both laboratories over the summer highlighted their differences. Professor Williams had made time for Mila each day she was in his laboratory, reviewing data and brainstorming about new simulations. Professor Grimes seemed put off by Mila stopping by to talk to him, so she began avoiding his office. He was also much more demanding than Professor Williams, expecting Mila to complete several tasks with minimal instructions. During the initial weeks, she had to miss a few days since her son was sick and she wondered if this was the real reason that Professor Grimes was so hard on her.

When Professor Grimes terminated her appointment after only a few months, Mila was upset and went to see Professor Williams for guidance. Professor Williams felt Professor Grimes was unfair to Mila, and encouraged her to take action. Mila hired a lawyer, increasingly becoming convinced that her status as a woman and a mother may have impacted his decision to fire her.

Case 2: Role models
Jenna is a beginning her third year as a postdoc in Professor Smith's laboratory. At the start of her postdoc, Jenna was very interested in pursuing a tenure-track faculty position, but now her interests in academia were beginning to wane. With academia seeming a more remote possibility and less than a year remaining on her postdoc appointment, Jenna decided that she needed to start focusing on her next steps.

Jenna found an internship through the City Government writing policy briefs for a local Legislator. She had always been good at writing and thought it would be a good way to explore what a non-academic career in policy might look like. The internship would require her to work in City Hall fifteen hours per week, mornings from 9 am – 12 pm Monday through Friday. When Jenna approached Professor Smith about taking the internship, Professor Smith was dismissive. Professor Smith also reminded Jenna that her position was funded from her research grant, and that though she was welcome to explore policy careers on her own time, she could not take time away during the workday to pursue other jobs.

<u>Professor Smith's perspective</u>
Jenna is a talented postdoc, one of the brightest Professor Smith has worked with. Professor Smith was excited to recruit Jenna and have the opportunity to mentor another strong female into getting a faculty position. It would mean a lot to her to be able to mentor someone who reminded her of herself when she was a postdoc. Professor Smith's enthusiasm has only grown over time as Jenna continues to be productive. They are close to submitting two papers, and Jenna is ready to submit a K award application for her own independent NIH funding. Professor Smith also regularly gives Jenna opportunities to guest lecture in her courses and attend conferences as part of her preparation to become a faculty member. From Professor Smith's perspective, things could not be going better. Jenna always seems assured and happy when they meet, and is making excellent research progress.

Professor Smith felt blindsided when Jenna approached her with the internship opportunity in science policy. She wonders if Jenna is having second thoughts about becoming a faculty member because Jenna is truly unsure, if Jenna lacks confidence, or because Professor Smith has not been the right role model for her. However, Jenna seems to get defensive when Professor Smith reassures Jenna that she will be an excellent candidate for a faculty position. When Jenna reveals that she is interested in thinking about non-academic careers, Professor Smith relents, but reminds Jenna that fifteen hours a week outside of the laboratory is not a practical expectation for someone funded on a research grant.

<u>Jenna's perspective</u>

Jenna was intent about becoming a faculty member when she joined the laboratory two years ago, but now that future is harder and harder to visualize. Jenna has been successful in her research career to date but is burnt out from academia. She sees the way Professor Smith works at all hours and begins to realize that she isn't capable of that kind of work-life balance. Though she doesn't really know much about careers outside of academia, Jenna knows that she needs to find out quickly if she is going to make that transition. She found an internship that she felt she could balance with her work schedule and put together a plan to discuss with Professor Smith.

Jenna and Professor Smith have always gotten along very well, so Jenna was taken aback when Professor Smith was so dismissive when she tried to talk to her about the internship. Also, Jenna resents the notion that the internship will interfere with her getting work done. She has always been productive and doesn't understand why Professor Smith is being so rigid about missing time during work hours - Jenna works evenings and weekends anyway.

Case 3: The perpetual postdoc
Daniel has been a postdoc in Professor McKnight's laboratory for almost five years, approaching the end of his institution's term limit for postdoc appointments, and very soon will have to identify a next step. His productivity in the laboratory has been average – he has generated enough data and enough papers to warrant Professor McKnight continually renewing his appointment. Daniel intends to pursue a tenured faculty career, but he knows that he needs more on his CV in order to be competitive. He was unsuccessful at winning a fellowship in the first couple of years when opportunities existed, and doesn't yet have a track record of independent funding.

Professor McKnight is submitting a new grant, and Daniel would like Professor McKnight to add him to the proposal as a co-PI. If successful, it would provide longer term funding support for Daniel in the laboratory and help him submit an application to the department to become a research faculty member. Professor McKnight is less sure about committing to this long-term plan and does not immediately respond to Daniel's request. Daniel goes to meet with Professor McKnight to follow up in-person, and the conversation becomes difficult. Both sides feel the other should take more responsibility for Daniel's future success as a faculty member.

<u>Professor McKnight's perspective</u>
Professor McKnight has not known what to do with Daniel for a long time. It has been clear to Professor McKnight for almost two years now that Daniel doesn't have what it takes to become a tenure-track faculty member, even though that is the career he is still working toward. Still, Daniel has always asked for his appointment to be renewed each year, and Professor McKnight has always agreed. Daniel is productive enough that he is worth having around – Daniel frequently trains new graduate students, and he does generate results.

Daniel's term limit ending coincides with the submission of a new grant proposal that builds upon a project Daniel has been working on for several years. Professor McKnight could see Daniel continuing the work, but even as co-PI, Daniel would be in limbo. Professor McKnight truly doesn't think Daniel would develop the independence or drive he would need to gain additional independent support and move beyond this project in Professor McKnight's laboratory. Professor McKnight also doesn't feel comfortable putting Daniel up for a promotion because he is not sure that his fellow colleagues would be supportive. It might be better for Daniel to find a new position and a fresh start somewhere else, but Professor McKnight isn't sure yet how to approach that conversation with Daniel. Professor McKnight is caught off guard when Daniel stops by his office to follow up, and he pieces together his feedback awkwardly to finally tell Daniel that he is likely not going to be successful in pursuing a faculty career. He feels guilty when Daniel gets upset; he isn't exactly sure at what point he should have provided more

feedback, but he guesses there was one. So many of his other postdocs succeeded without much intervention from him – he assumed Daniel would be similar, or that he would find something else to do.

Daniel's perspective

Daniel has known that he has wanted to be a faculty member since his days as an undergraduate researcher – he has never even considered the possibility of a different career path because the faculty track is such a good fit for his intellectual curiosity and laid-back working style. Time has flown by faster than Daniel had even kept track of, and now five years into his postdoc, he still isn't where he needs to be relative to his friends who have transitioned to faculty positions successfully. At this point, Daniel thinks his best chance for success is to stay within the department, transition into a research faculty appointment, and work to get his own funding that will launch his independence. Professor McKnight's upcoming proposal is an opportunity to make that happen – Daniel can continue working on his project with longer term funding support, and he will obtain the PI-ship he needs to get promoted and be more competitive for other grant opportunities. Daniel doesn't see a downside – Professor McKnight has been happy enough with his work to keep him around this long.

Daniel is put off when Professor McKnight avoids his email request and goes to stop by to confirm he can help lead the proposal. He is even more frustrated and caught off guard when Professor McKnight instead suggests that Daniel begin to think about finding another position outside of the laboratory. Daniel has invested a lot of time in Professor McKnight's laboratory, and he feels he hasn't always gotten the same investment back from Professor McKnight. Professor McKnight hasn't been unsupportive, but also hasn't gone out of his way to help Daniel become more successful. In particular, Daniel thinks that his fellowship applications would have been stronger if Professor McKnight had spent more effort providing feedback. Daniel leaves the conversation without a clear resolution of what is next. He isn't sure what job in academia he would be competitive for without searching for a second postdoc, which from his perspective, would kill his already slim chances of a faculty career.

Case studies: reflection

Each of these cases highlights a particular situation that has magnified how a mentor and their postdoc can be disconnected from one another. By imagining themselves in the identities of the characters in these cases, faculty and postdocs can reflect on their own approaches and identify where they may need to adjust to build stronger working relationships. Proactive faculty and postdocs can frame their relationship in terms of their aligned values so that they are better equipped to navigate some of the challenging situations and conversations that they may encounter. In the next section, we will highlight the evidence-based strategies faculty and postdocs can apply to support their success, as well as approaches institutions can take to foster supportive mentoring relationships.

Application of evidence-based strategies to support success

Effective mentoring relationships are not passive, but are instead active exchanges that foster collaboration between the faculty member and the postdoc (McGee, 2016). There are steps that faculty, postdocs, and their institutions can take to ensure greater success. The solutions and resources provided here are not exhaustive, but instead are meant to be representative examples of evidence-based approaches that could be proactively used to mitigate or minimize the challenges described above.

Faculty

The ability to set expectations is an important leadership characteristic, but many faculty members struggle to clearly state how their research environment functions to their mentees. Often, the socialization of new postdocs into their new training environment is more implicit than explicit, and a postdoc's primary understanding of the political, ethical, economic, and social dynamics within their academic community is developed through their own lens rather than through the input from the perspective of their mentor (Miller, 2015). This style can work when the faculty member and postdoc

intrinsically share similar perspectives and personalities, but if not, it can result in loss of trust, miscommunications, and frustrations for both the faculty member and the postdoc.

Research on social identity and behaviors in groups (Tyler, 2003) has demonstrated that the more strongly people identify with a group, the more effort they put into working toward its mission and achieving mutual goals. All team members benefit from having a clear sense of what is expected within a given work environment (Lencioni, 2002); postdocs should understand what they can expect from their mentor, and faculty members should be clear about what they expect from their postdocs. Following through on these expectations builds a level of trust over time that can then allow faculty and postdocs to approach more challenging and unexpected situations successfully. Mentoring compacts are one tool that mentors and postdocs can use to establish their expectations and build trust at an early stage (AAMC, 2017), building trust that is then reinforced as expectations are met and refined throughout a postdoc's appointment. Giving postdocs a 'Welcome to My Lab' letter is one example of a mentoring compact framework for mentors and postdocs to develop working relationships and build trust (Michelle Bennett, 2014).

Letters generally cover the expectations for both the faculty mentor and the postdoc during the relationship, and should take into consideration that postdocs come from a wide variety of cultural and training backgrounds. Faculty should not assume that postdocs understand the norms within their institution, department, or research group; letters should cover the basic work expectations (e.g. hours committed, time overlapping with faculty member during working hours, professional conduct) needed for the postdoc to be successful.

Additional topics included within the letter could include:

- **General expectations:** goal of the research group, role of the faculty member and other leading members of the team, expectations of research group members
- **Expectations for team interactions:** team structure and reporting/supervisory roles, team meetings, journal clubs, sharing space and facilities, time and attendance, vacations and leave, networking and attending outside meetings, professional etiquette, expectations for collaboration with and training of other group members, expected work habits, faculty member's work habits
- **Expectations for collaboration:** description of external collaborations and expectations for the role of the postdoc in the project(s)
- **Responsible conduct of research:** research integrity, required record keeping and data sharing practices, definition of reproducibility within the research environment, institutional guidelines and required trainings, resources to report research misconduct
- **Communication:** preferred modes of communications, preferred style of meetings (e.g. scheduled with agendas, informal), process to follow if there is a disagreement
- **Work style:** turnaround time for emails or items to review, best times of day to reach faculty member
- **Authorship and acknowledgements of scholarly contributions:** criteria for deciding order of authorship or credit for scholarship, process for manuscript preparation and submission, other ways credit will be acknowledged for work contributed (e.g. talks, posters), guidelines for seminars/talks
- **Proposal writing:** expectations for individual fellowship applications, expectations for contributions to faculty member's proposals
- **Evaluation and feedback:** form of feedback (e.g. performance review, individual development plan) and frequency, process for obtaining reference letters
- **Mentoring:** expectations and style of faculty member, expectations for postdoc to mentor others in the group, expectations for how/if mentoring contributions are acknowledged
- **Career and professional development:** time committed to professional development, opportunities for professional development within the institution and externally

- **Institutional and local resources:** contact information for postdoc office, departmental administrators, human resources, international scholars' office, or other support structures within the University that assist postdocs

Imagine Mila had received a "Welcome to my Lab" letter from Professor Grimes. She would have known about his preference for independent working versus many face-to-face meetings, and she may have asked Professor Williams to help her find a lab that was better suited to the style of mentoring and feedback she needed to be successful. Or, she could have asked Professor Grimes or other members his group if there were opportunities to work collaboratively, building a network of peers to help her get more familiar within the group at her start. Either way, the letter would have provided a structure for them to clarify their expectations; without the letter, neither Professor Grimes nor Mila took the opportunity and both made assumptions that damaged their relationship.

These letters are most effective when they serve as a conversation starter rather than the end of these discussions. Providing the opportunity for postdocs to input their own goals and expectations into the mentoring compact creates buy-in and belonging that will increase their motivation to perform as part of the faculty member's team (Tyler, 2003). Once a postdoc has assimilated into a research group, the contents of a compact or letter can be translated into an Individual Development Plan (IDP). IDPs allow the postdoc to consider their current skills, interests, and values to assist them in developing career goals alongside their faculty mentor (FASEB, 2003, Fuhrmann, 2015). Career planning tools provide value because they ensure that mentor and postdoc expectations continue to align throughout the appointment, and such tools include an assessment of the postdoc's skills and progress, identification of research- and career-related goals, and action items for the postdoc and the mentor to guide future meetings. The benefits to the postdoc are clear – the 2005 Sigma Xi Postdoc survey of US postdoctoral scholars showed that postdoctoral scholars who created a written career plan or IDP with their mentors were 23% more likely to submit papers, 30% more likely to publish first-authored papers, and 25% less likely to report that their mentor did not meet initial expectations (Davis, 2005). However, IDPs have significant benefits to faculty as well, providing a framework for career discussions and performance feedback that can often be difficult to integrate into regular research progress meetings (Fuhrmann, 2016).

Daniel and Professor McKnight would have benefitted from using a career planning tool like an IDP to help Daniel monitor his research progress and align his short-term goals with long-term career preparation. Professor McKnight was an untapped resource for Daniel – their conversations did not seem to make the most of his expertise or the network of former postdocs that had gone on to successful careers. Reviewing an IDP regularly might have helped Professor McKnight identify opportunities to give Daniel feedback at an earlier stage, providing Daniel with insight to areas where Daniel needed to be more proactive to remain competitive with his peers. Based on this feedback, Daniel might have succeeded earlier in his postdoc, or he might have been able to identify other career opportunities or another postdoc position where he could be more successful.

Given the power dynamic created by the supervisory role faculty have over the postdocs that they mentor, the responsibility for creating an open environment to share expectations and feedback on a regular basis falls to the mentor to lead by example. Setting clear expectations and maintaining clear lines of communication can overcome many of the challenges faculty and postdocs may face together, even if these strategies alone are not enough to avoid challenging situations completely. Establishing expectations that are explicit and well-understood increases the trust created when faculty and postdocs recognize that those expectations are achieved.

Postdocs

In this section, we apply the principles of being proactive, developing open communication, and building and following through on expectations to postdocs – the other party within faculty-postdoc mentoring

dyads. Though their mentor will contribute to their career advancement and success, the postdoc also bears responsibility for and ownership of their own career path. In truth, the most successful mentoring relationships are those in which the mentee takes initiative and drives the mentoring partnership to fulfill their needs (Committee on Science, 2014, Fuhrmann, 2016, Miller, 2015, Scaffidi, 2011, Su, 2011).

Postdocs often believe that their mentoring relationship starts when they accept a job offer, but it can start much sooner – during the interview. Interviewing with a research group is the postdoc's first opportunity to understand group norms and expectations and decide if those align with their own goals and expectations. Though in today's competitive academic research landscape the prioritization is often on securing a job and less on evaluating the job itself, postdocs can and should proactively choose groups and mentors that align well not only with their scientific interests and desired career outcomes, but also with their own work style and professional goals.

In our experience, most of the time graduate students invest in postdoc interview preparation is generally spent reading recent publications from the research group and preparing the graduate student's research talk reflecting their thesis work. This type of preparation focuses solely on scholarship content and does not help the student assess the suitability of the research environment as a whole. Self-reflecting on their expectations for themselves as well as asking questions during an interview about the expectations and norms of the research group will identify points of alignment and misalignment, as well as allow for an assessment of the overall environment of the research group.

Though the goal should be to identify postdoc opportunities where the potential postdoc's expectations are as aligned with the mentor's expectations as much as possible, there will be points of divergence within this set of questions and any other aspects of the position the postdoc will consider. As part of this reflection exercise, postdocs should also consider which questions and issues are the highest priority for them right now, and they should anticipate what they think their priorities might be one year into the appointment. This will ensure that postdocs find alignment in the issues that matter most to them, which will hopefully make them more willing to find compromise in areas that are less important. Table 1 provides sample self-reflection questions as well as sample questions graduate students can ask their potential faculty mentor and/or members of their laboratory.

Table 1: Finding alignment – a checklist for postdoc interviews

Questions for self-reflection	**Questions for faculty mentor / research group**
What are my research interests in this laboratory? What skills do I want to develop?	How will my project contribute to the overall goals of your laboratory?
What are my top three priorities during my postdoc training?	What do you expect from postdocs that join your lab? What are your top three priorities for training?
What kind of job stability do I need?	Is this position renewable? How long is there funding to support this position?
What are my career goals right now? What support will I need to pursue that career?	What careers have other postdocs from your lab pursued? What resources did they have?

What professional development opportunities (e.g. conferences, workshops) do I expect?	What professional development opportunities do members of your lab routinely take advantage of?
What does productivity mean to me? What do I want to get out of my postdoc training for my CV?	What are your expectations related to productivity? What have past group members produced?
What are my expectations related to publication? What contributions do I think merit authorship?	What are your expectations related to publication? What contributions merit authorship in your laboratory?
What are my goals for proposal writing? Do I expect to write my own fellowships? Do I expect to contribute to larger grants?	Will I be able to write my own fellowship awards? What is your expectation related to collaborating on larger proposals?
How do I like to work? Am I more independent, or do I perform better with regular guidance and feedback?	What is your mentorship style? How frequently do members of the lab meet with you?
How do I like to communicate? When I am most comfortable?	What style of communication do you prefer?
How do I give and respond to feedback?	How do you give and respond to feedback? What is the best way to approach you?
Do I want to mentor other students during my training? Will I be mainly providing support/advice, or contributing to their research?	What are your expectations for mentoring in the lab? How are research contributions in mentoring situations weighed in terms of authorship?
Do I want to gain additional experience (e.g. teaching) during my postdoc?	What opportunities are there for me to build skills outside of those I will learn and apply in your group?
Is a sense of community important to me?	What is the social environment like in this laboratory? How can I meet other postdocs in the department or across the institution?
Do I have any hobbies that are a priority to me?	What resources are there for me to continue doing xx in my free time?

This checklist does not contain questions related to personal or family issues, though these are often a consideration in choosing a postdoc appointment. Job seekers have different areas of comfort in raising these issues during the interview process, but if a personal or family consideration is a "dealbreaker," then it is important for the postdoc to discuss that situation with the faculty member before accepting a new position. Some postdocs may feel comfortable raising personal or family issues in the interview setting, while others may choose to wait until an offer has been extended to follow-up. An advantage to bringing

up these issues before or during the interview is that the institution may have points of contact within other offices or resources that the postdoc could meet with during their visit.

It is unlikely that one mentor will fulfill all of a postdoc's specific needs (de Janasz, 2004). Rather than accepting a lack of mentorship in specific areas or skills, postdocs should also identify and seek out several other mentors to meet with regularly. A multi-mentored postdoc can capitalize on the unique skills of many individuals, cross-training across disciplines, sectors, and competencies. Postdocs can learn from the model developed by de Janasz and Sullivan encouraging multiple mentors for junior faculty members – identifying mentors based on their beliefs and identities, knowledge and skills, and networks or external relationships (de Janasz, 2004). This group of mentors may or may not be in the postdoc's institution, academic discipline, or even in academia at all, and they may change as the postdoc evolves throughout their appointment.

Jenna's case study highlights one pathway by which postdocs become drawn to non-academic careers, but it does not mean to imply that one has to be burnt out from academia in order to determine that a career outside of the academy is the right fit. It is hard to say from the information in the case why Jenna was drawn to a career outside of academia, and because Jenna wasn't having regular conversations with her mentor about how she was feeling throughout her appointment, Jenna likely isn't completely sure either. It could be that Professor Smith wasn't the right role model for Jenna, and a role model more aligned to Jenna's way of working might have helped her envision staying on an academic path. Or, it could be that Jenna would have found her way out of academia even with a faculty role model more like her – maybe policy is just truly the right fit, and it took a longer time working in academia for Jenna to realize that. But, if Jenna had developed a network of mentors outside of Professor Smith earlier in her postdoc, she might have been more prepared to explore her career choices earlier and might have felt more supported in an intense working environment.

The strategies we suggest here provide early opportunities for postdocs to take charge of their own mentoring relationships. However, being proactive as a postdoc means being an active partner even after the relationship is established, including taking the following actions: accepting responsibility for actions (present and future); building strong relationships with others to fulfill mutual goals; respecting a mentor's time; establishing clear lines of communication; accepting criticism and feedback constructively; and playing a role in solving problems (Muller, 2009).

Institutions

Institutions share responsibility in supporting successful faculty-postdoc relationships through creating systemic changes that prioritize and incentivize good faculty mentoring behaviors and practices. Ultimately, while individual faculty members shape the environment of their research group and can influence the culture of their department, institutions must address the broader opportunities, abilities, and motivations (Rothschild, 1999) required to achieve larger shifts in culture over time (Henderson, 2012, Wieman, 2010).

One challenge institutions can address is the lack of professional development opportunities to support the mentoring relationships between faculty mentors and their postdocs. Faculty are essential to creating culture change within higher education, but for many, the only context and model for their mentoring is experiential rather scholarly. Faculty need intentional opportunities for self-reflection combined with professional development opportunities to become proficient in mentoring skills. The current practice of assuming faculty members and postdocs will enter into productive relationships on their own, without consistent resources and interventions provided by their research institution, favors postdocs that have already developed or innately possess the social skills to create connections with their particular faculty mentor (Pfund, 2016).

Though the 'Welcome to My Lab' exercise described above is a useful self-reflection tool, it is still a tool representing the faculty member's own personal approaches to and perspectives on mentoring rather than reflecting evidence-based practices. Institutions can help faculty become aware of scholarly-based approaches to research mentoring through establishing regular training opportunities, drawing on the resources developed through the Entering Mentoring program at the University of Wisconsin-Madison (Pfund, 2015) or National Institute of Health-funded programs such as the National Research Mentoring Network and Clinical and Translational Science Institutes. Many institutions currently offer research mentor training support through optional 'one off' faculty development opportunities through a workshop or series of workshops. To affect change, research mentor training should shift to become an expectation rather than a choice, and it should be habitual rather than a single activity completed and done with. Research-active faculty should have access to training materials and resources on a renewing basis to provide a framework for them to be regularly conscious of their own progress as a mentor and allow them to have access to and adopt evidence-based mentoring practices as they continue to emerge in the literature. Institutions can reinforce these resources for faculty by also offering professional development for postdocs that empowers them to take ownership of their career advancement.

In addition to the foundational mentoring skills described above, professional development opportunities for postdocs should help them identifying their needs and learn the advocacy skills they will need to gain sponsorship and support from their mentor, adopting 'mentoring-up' approaches similar to those employed at the University of Wisconsin-Madison and Northwestern University (Lee SP, 2015). Part of institutional support for 'mentoring-up' could be adopting policies that provide consistent access and adoption of career planning tools such as IDPs (Fuhrmann, 2015, FASEB, 2003) across all disciplines and postdoc training programs. Career planning tools are linked to postdoc career success and satisfaction (Davis, 2005), and they are a powerful way for postdocs to develop more agency in their own career and within their mentoring relationships.

Additionally, most institutions have or are now developing career development resources to support how faculty help postdocs prepare for their next career step, building off of the success of programs like those at the seventeen NIH-funded BEST institutions. Gibbs *et al.* recently studied the career development of postdocs and the efficacy of previously described success factors as predictors of postdocs' interest in specific career pathways (Gibbs et al., 2015). They found that in the absence of structured career and professional development programs, vicarious learning from research mentors shaped postdocs' career perceptions and outcomes. It is important that what postdocs pick up vicariously from their mentors be well-informed. Institutional leaders responsible for professional and career development opportunities for postdocs must recognize the importance of including faculty in at least supporting their postdocs to attend career development opportunities, and even better, to get faculty engaged themselves. Our experience has shown us that faculty are more likely to participate in the following conditions: there is a low level of engagement, for example as an occasional co-facilitator; one of their current or former students is already participating; they see tangible benefits to their research program (e.g. better performance, career success, and recruiting); and/or they are members of large-scale postdoc training grant programs and appreciate sharing the administrative and training loads in professional development.

Institutions must also remain committed to developing and implementing ongoing strategies related to increasing diversity and inclusion. While over half of PhD students begin graduate school with the career goal of obtaining a faculty position (Golde, 2001), one-third lose their interest in faculty careers during their PhD and half lose an initial interest in becoming faculty at a research university (Mason, 2009, Fuhrmann et al., 2011, Sauermann and Roach, 2012). For underrepresented students, this decrease in interest is 50% larger than the corresponding drop for majority males, the group whose interest remains the highest (Gibbs et al., 2014). Many underrepresented early career researchers have difficulty envisioning themselves in academia as faculty because they do not have access to mentors with similar social identities. Gibbs *et al.* demonstrated that the postdoc-faculty transition is the biggest barrier to

advancing underrepresented groups within academia; despite dramatic increases in diversity within the PhD student population, researchers from underrepresented backgrounds are not being hired into faculty positions at the rate needed to establish parity within medical school basic science departments (Gibbs, 2016). Institutional efforts and resources directed at improving the climate within academia, such as those published by Gutierrez *et al*. (Gutierrez et al., 2014) and the culturally aware mentoring programs developed by the National Research Mentoring Network (Byars-Winston, 2016), can be coupled with intentional recruitment and retention programs at all stages of the academic pipeline, increasing the strength of underrepresented postdoc-faculty relationships over time.

In the longer term, strategies to incentivize and reward good mentoring practices will reinforce faculty buy-in and participation in interventions such as those outlined above. Defining institutional standards for mentorship based even on the current understanding of theoretical metrics for mentoring success would be a powerful first step. Over time, institutions recognizing successes and creating expectations for improving failures will motivate faculty to work to establish new social norms for their departments and research groups. Mentors who take pride in their mentoring often reference their positive feelings about supporting their trainees' successes as an internal driver for their time investment. Institutions may not need to develop external motivators as much as ensure that the professional development opportunities they develop for faculty activate and enhance the intrinsic motivations within faculty to be good mentors. Recent work by the NRMN demonstrates that when faculty develop mentoring skills coupled with awareness of the integral role mentoring can play in sustaining effective work teams, the majority of faculty will modify their behaviors toward practices that support success (McGee, 2017).

Conclusion

Cumulative advantage in academia begins as early as the training stage, where opportunities for success are influenced by whether trainees have access to engaged, positive and supportive mentoring relationships. Critical aspects of positive postdoc-faculty mentoring relationships include establishing expectations, facilitating clear communication, fostering independence, and creating inclusive research environments. As postdoc-faculty relationships have been demonstrated to influence the postdoc's career satisfaction and success, the future of the research workforce depends upon getting these relationships (and those within the postdoc's wider mentoring networks) right.

We recognize that longer term changes within the academic social structure are hard to achieve, and that the solutions and applications we present here are not necessarily designed to address the systemic problems at large. However, we hope that the resources and case studies in this chapter are valuable for individual faculty and postdocs in the context of future professional development opportunities, as they are reflective of the types of situations they will likely encounter and potentially can overcome together. Improvements in individual postdoc mentoring outcomes will largely depend upon the ability of faculty and postdocs to shift their approach to mentoring relationships from experiential to scholarly, being more reflective of their own practices and adopting evidence-based practices proactively. Institutions can help them by creating an infrastructure that encourages self-reflection by both mentors and their mentees, thus generating the awareness that leads to the adoption of the evidence-based practices needed to ensure mentoring success.

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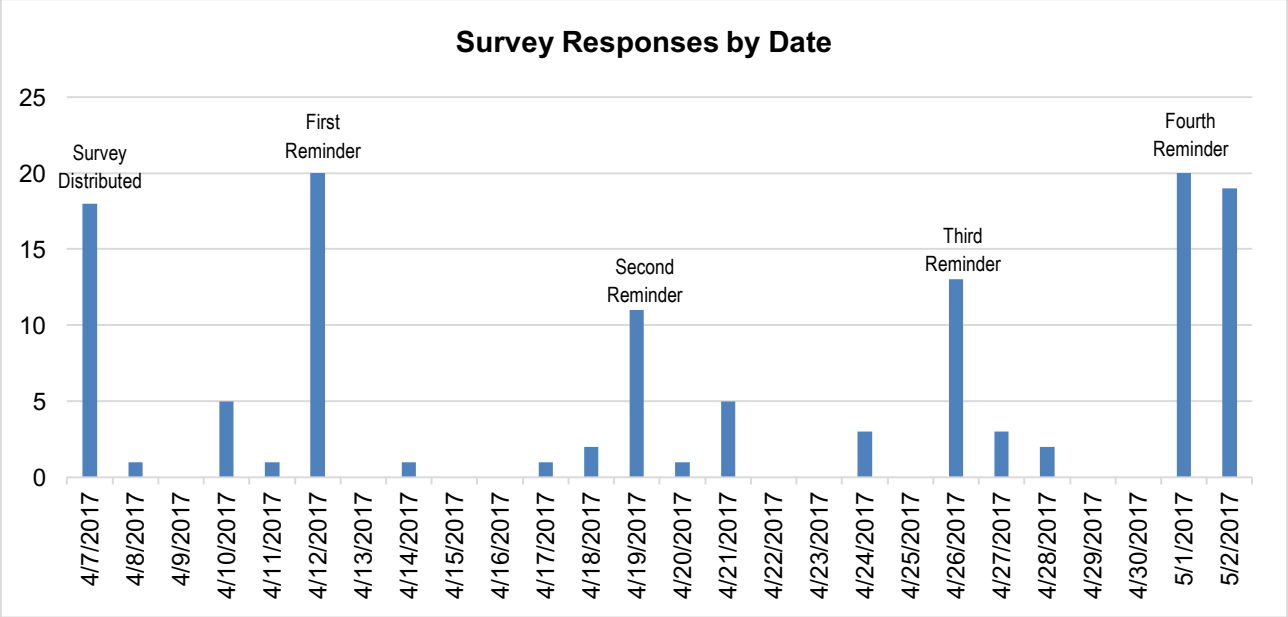
PROFESSIONAL DEVELOPMENT & POSTDOCTORAL AFFAIRS AND BU'S BEST PROGRAM
BI-ANNUAL SURVEY OF POSTDOC EXPERIENCES AT BOSTON UNIVERSITY
Interim Aggregate Data Analysis Report 5/24/17
Postdocs Surveyed: N=403 Total Respondents: 126 (31%)



1. How many years have you been a postdoc at BU?

Answer	Response	%
Less than 1 year	62	49%
1 year	16	13%
2 years	24	19%
3 years	17	13%
4 years	4	3%
5 years	2	2%
More than 5 years	1	1%
Total	126	100%

2. Professional Development & Postdoctoral Affairs (PDPA) was significantly expanded in 2015 to provide you with meaningful support and services. Think back to when you first came to BU as a postdoc, and compare your experience then to your experience now. What, if anything, has changed in your postdoc experience at BU since this office was established? Write 'Nothing', if needed, instead of leaving blank.

Text Response
1-6. Nothing.
7. A tremendous amount has changed from when I started as a postdoc ~3 years ago. There is now a tremendous amount of programing that really provides a wide array of opportunities to learn about different career options as well as training targeted on identifying and learning additional skills required for all career paths. I think that the PDPA office has done great things to allow postdocs to not worry about needing to be advocates but rather allows them to work on advancing their career without some of the stressors of low paying wages and finding health insurance.
8. Really great to see BUPDA able to provide funding opportunities for conference travel. Not all postdocs have the resources to attend conferences the way they did as students.
9. It changed a lot. When I first got to BU, I was looking to meet other BU postdocs, without really knowing how and where to meet them. This is something I can do now with the PDPA events. Plus thanks for advocating for us for the raise in salary for postdocs.

10. I joined in 2014 and there have been a lot of changes. There are very regular workshops and seminars on career opportunities now.
11. I am not sure, I have not participated in any activities by PDPA.
12. The amount of career option seminars and workshops (such as informational interview, My IDP, difficult discussions) for postdocs has greatly increased. A resource that I can go to that answers all of my questions pertaining to postdoc training at BU. Before 2015, this resource was not present or I did not know about it. It was difficult and time consuming to find answers that pertained to postdocs because we are not faculty and most offices did not know how to treat us.
13. Many more resources available, and also guidance.
14. In this challenging jungle-like world, I had received decent “protection” from PDPA scientifically, mentally, and emotionally.
15. There are more support programs (jobs, career planning)
16. Things have really improved since PDPA started. 1. It is very important for postdocs to have a go-to person/office to help us with issues that we face. 2. I benefit a lot from all the workshops/seminars/retreats that have been organized with PDPA. 3. It is very important to have an office to convey our concerns and needs to the university.
17. I have a lot of experience with my postdoc, PDPA was surely a part of that but it's difficult to pinpoint how much PDPA contributed to that. I hardly use their services.
18. I think a lot of additional activities are organized, which can help postdocs with different career goals to achieve their goals.
19. Nothing. I came to BUMC as a postdoc in 2015.
20. It is better than 2015.
21. There are more development and socializing opportunities for postdocs, though most of them pertain to Biomed-related subjects as opposed to engineering/math/CS.
22. PDPA has made significant strides to improving the quality of the postdoctoral experience at BU. I am grateful for the changes, most significantly the Postdoc office message. In its previous conception, it was dedicated to “the reality that postdocs are going to get jobs outside of academia”. This led to a negative environment where the office that was designed to promote me told me I would fail in my ambitions to become a faculty. The office now strives to improve all aspects of our lives and offers a much more diverse offering of classes and workshops, and the tone is far less negative. I also am appreciative that the PDPA is making strides to create community amongst the postdocs. Although I feel this is one area that needs to be continued to be developed, I hope that the PDPA maintains this as a mission.
23. I am not sure what the PDPA does for new postdocs now (perhaps now new hires get help getting settled in?). But for everything after that the PDPA has been great for me: providing a place to meet people and help with my professional development, including preparations for my career after this postdoc.
24. No real change--still almost entirely programs oriented to the sciences, and not much of relevance for me as a humanities postdoc.
25. More opportunities to meet other postdocs across the university. More attention being paid to non-employee postdocs and things they need that the university could provide (i.e. benefits).
26. Better communication about opportunities, better professional-development workshops and opportunities, and Sarah is generally awesome.
27. Nothing. But that is because I haven’t been very involved with the PDPA.
28. PDPA has done a lot so far and it is really active. I might be bias but I feel the main focus is on medical campus! Also we as postdocs would need more sessions/help with cover letter and converting our C.V. to a resume.
29. Increased opportunities to meet with other postdocs and provided assistance with career development.
30. My joining and the PDPA opened happened almost simultaneously. So no change for me.
31. More awareness of postdoc and professional development-related activities.
32. I think I'm more aware of existing grant and networking opportunities.
33. It definitely feels like there is a place to go with concerns, ideas, and questions now. It certainly helps a lot with feeling welcome and part of the university, and it gives me confidence that I have the resources I will need to get a job later.
34. Significantly more resources are available now than when I first started. Given my timing and career path, I did not have much opportunity to take advantage of these resources or they were no applicable. However there was also significantly more effort in building a community of postdocs.

3. In 2015, the anonymous survey data provided by postdocs revealed that postdocs felt that there were wide discrepancies in postdoc salaries across departments and colleges at BU. How has the new salary minimum policy ($47,500 annually) implemented on December 1, 2016 affected you? Write 'No impact', if needed, instead of leaving blank.

Text Response
1-18. No impact.
19. Very minimal impact, but, it was still nice.
20. It was a welcomed change.
21. Yes, it had an impact on my salary, but still lower than NIH postdoc salary in terms of experience.
22. I appreciate the effort, because my department did not adhere to these NIH minimums before, and this has meant a significant increase for me from around 43K. I did not know that the increase was initiated by the PDPA.
23. No impact (I am on European grant money).
24. No impact - NIH funded.
25. Little impact.
26. No impact. I came at BU with a negotiated salary that I was happy about.
27. Because I was on an NIH grant, the new policy only led to a small increase for me personally. I am glad for the new policy though; I think it's important that postdocs receive comparable treatment across the university.
28. It did not affect me, but it is something I would have been very happy with if I earned less $47.5K.
29. Yes, my salary increased to the amount because of the policy.
30. Yes it did affect me. Without the raise I would still be at $42,000 annually. Since BU is making the bridge in my salary until this summer, it is hard to tell how will affect me yet. For example I don't know if my PI will shorten my contract because of the raise, since he is on a limited budget.
31. I think the extra money has been very useful and makes me feel that Boston is now livable.
32. Affected greatly. My earlier salary was very low and I appreciate the minimum policy as it is hard to make ends meet when the salary is low and there is no regulations to keep a check.
33. I received a slight bump in salary to reflect this change.
34. No impact, since my salary is more than that.

4. In 2016, BU implemented a five-year term limit for postdocs at BU. How has the new term limit policy affected you? Write 'No impact', if needed, instead of leaving blank.

Text Response
1-25. No impact.
26. No impact on me personally, but I think it is an important move to help reduce the stagnation in that position, especially in the biological sciences where I believe these longer terms are rampant.
27. No impact (already passed 10 years).
28. It doesn't impact me yet. However, I think it is important to make sure we professionally develop as I know many PIs will be happy to continue employing us on minimum salary.
29. None so far.
30. Not much, I plan to go back to China. If there is no 5 year policy, I may stay a little bit longer.
31. No impact, yet, but I imagine based upon my career goals that it will be impactful for me. I intend on an academic faculty position in the next ~4 years, but I am realistic in the fact that I'm only going to be looking in the Boston area and that may take some time. My PI and I have already discussed that we work well together and that I may have the opportunity for a promotion (after my 5 years) within his lab. This policy will support me in that.
32. I don't understand this limit at all especially at the time that most postdocs find academic positions in their 4th or 5th year! This adds more pressure and in my opinion does not help unless it is after 5 years, postdocs can stay and work under a different title with BETTER PAY!
33. This makes me very nervous. At least in faculty positions, new mothers can get a year added to their tenure track to onset the difficulties of mothering and working. As a postdoc who can't count on working on the evenings and weekends, I feel hopeless about getting enough publications within 5 years to have a competitive CV for faculty applications, and feel a lot of stress about wanting a second child and feeling that I have to completely give up on the faculty track if I do. I am open to going into industry though.
34. I am deeply concerned about how the position is defined, as it might negatively impact grant opportunities. The NIH considers K awards for individuals who stay within the track towards a tenure position. If the new policy defines the new position as a terminal postdoc, this dramatically reduces our likelihood for successful funding.

5. If you could meet one-on-one with the Director of Professional Development and Postdoctoral Affairs today, what would you want her to know about your postdoctoral experiences at BU?

Text Response
1-7. Nothing.
8. I don't think I had a typical postdoctoral experience, as my research had me based in high schools, rather than on campus.
9. Overall I've had a very positive experience at BU and I'm very glad that I chose BU.
10. As a T32 postdoc, I would hope to get to be treated as other employee postdocs.
11. The only things that would make a difference to me are (1) improvements in salary, (2) improvement in the visa policy. They are the only two factors that have a substantial impact on me. The low salary and high cost of living in Boston is really detrimental to the experience of being a postdoc at BU. For the visa issue, being on a J1, as most postdocs are, is not a great deal. It makes it very tough to stay in the country if you leave academia, which will be the case for most postdocs. Being uncertain about whether you can stay in the country, when you're in your late 20's / 30's, is tough. Other than those two factors, everything else about being a postdoc at BU has been great.
12. So far things seem alright, although, I admit I still don't really know the other postdocs in my department (sadly) but I suppose that really just depends on how 'social' the other postdocs are willing to be. I like that BPDA has Boston-wide social events.
13. I have been mostly involved with my project.
14. Base salary of $55K is pretty low given the cost of living in Boston, MA. Postdoc retreats and professional development opportunities seem geared toward biomedical postdocs. More opportunities for postdocs aiming to transition into advocacy, policy, nonprofit, and/or governmental spaces would be appreciated.
15. The postdoc as a whole has gone well. There are times that I've enjoyed it and times that I haven't. But there is plenty of support available from PDPA. I feel more ready now to move on to the next career step.
16. Very good.
17. A recommendation: term limit policy should consider all postdoc history, not just at BU.
18. There is still a major divide between postdoc support for medical programs and the rest of the University. Most of the programming seems geared toward medical postdocs or others involved in laboratory sciences. Those of us doing social science and field sciences have less to gain from these programs.
19. Struggle to find a job, transition from academia to industry, not all mentors are created equal! My first mentor at BU did not do a good job at all since he was up for tenure. I guess it would be helpful to have some seminar/discussion with faculties about postdoc's expectations from them.
20. The disadvantages of being on a training grant, pay not matching cost of living, not being a benefited employee, no help with strange tax situations, etc.
21. My BU postdoc experience has been up and down, but mostly I feel like I haven't really gained a lot of skills that will further my independence as a scientist. I have struggled with feeling like I've been micromanaged and like I have little control over scheduling how my projects will proceed on a weekly basis. It only started getting better after I was "productive enough". My main struggles involve my relationship with my advisor and how she can be very unprofessional and unfair in how she deals with things. I generally feel un-acknowledged for my efforts and am frequently told that I haven't gotten anything done in the last "X" months. I also feel that I was not mentored well for my future career, especially if that path does not involve academia. Anyway, this is my second postdoc position, I'm working on resilience mechanisms, and can't wait to not be a postdoc anymore.
22. That in general postdoc job gives an unstable time in life (it is not anyone's fault though!) and simple improvements in our daily life cannot make a quality change of that!
23. It has been great, she has been great!
24. I have been given considerable freedom in my research, and a large amount of resources. I feel like a valued member of the BU community.
25. It has been a really pleasant experience. Everyone has been very collegial and supportive. However, as an international person on a visa, I had some difficulties dealing with ISSO while applying for my OPT extension. The funny thing was that my OPT is through another university where I did my PhD and all that the ISSO needed to do was to give me a letter and the e-verify number. I observed the difference between that university where I studied, whose international office was totally supportive and the BU ISSO's defensive and bureaucratic approach.
26. It can be better.
27. It is been rewarding and learning experience. I really appreciate all the efforts put in by professional development and postdoc affairs team.

28. It's been ok so far. I would say that creating more opportunities for postdocs to meet within each departments would be great. Not as interested in meeting postdocs in other departments.
29. Career development.
30. That the expectations of postdocs at BU are unclear.
31. I would like to say that the experience in BU as a postdoctoral fellow is great. I have been in the USA for only a few months, and I am impressed by the academic atmosphere in BU. I can attend so many seminars and conferences which broaden my views of the scientific fields. People in the lab and in school treated me very well, and I get much help from them in work and in daily life. Until now, there are still some obstacles in my language, but I believe I can improve it soon.
32. I am having a wonderful time now at BU. I arrived about 3 months ago. The beginning was harder. The part that took more time at the beginning was sorting the bureaucracy related to different offices (ISSO, Payroll, HR) that would not pass information to each other. I counted more than 4 extra trips to all these offices due to wrong information or missing information with which they had issues. That was time consuming and made me not productive on my job. All these, plus the search for an apartment, since the BU short term accommodations are not pet friendly, and I had a cat, made the first few weeks really hard. I was coming from Europe, so had no credit history, no SSN, I had to pick a random apartment from which now I have to move because it is not great. I wonder if there is a way of optimizing that, such as providing an apartment for a month or two to new postdocs, have their forms copied only once and passed around from different offices.
33. I've had a great experience with plenty of support. Thanks for all the good work you do!
34. I think Sarah is doing her best. She's really pushing hard for making the postdoc experience at BU a meaningful one.
35. I appreciate the work that she and her department do for us postdocs, it has a tangible effect on us.
36. I do regularly meet with Sarah - however I am having a great postdoc at BU that is certainly in part due to Sarah and all the work she and Kate do for the office.
37. I was surprised at designation of "non-employee postdoc" which has complicated some things for me, in taxes and borrowing from banks. The upheaval in the individual insurance market also leaves us at risk. If necessary I will cut short my training here if I need to find an "employee" position with at least some benefits. On positive side - I was pleased to see a number of extra training opportunities (CREST seminars, every other week). I had not expected this.
38. I would express my gratitude for the advances they have made in the PDPA, I truly wish that these changes had occurred earlier in my postdoc experience. I would tell them that one of the biggest problems I see on campus is the difficulty with forming communities between the postdocs and ask that they continue to find inventive ways to get us away from the benches and talking to each other to form both professional and personal connections.
39. Not enough information to say right now.
40. That postdoc is still too strongly geared towards academia. There need to be systems in place to grant postdocs greater ability to transition into industry. Additionally, as a group, I feel we are somewhat "forgotten" within the university community.
41. Overall pretty good, because I am trying to find a position in China, not sure how much Postdoctoral Affairs can help.
42. Expand the program to have events targeting specific group of postdocs (engineering, liberal art, medical, etc.)
43. Overall my experience has been positive. Even though I'm often not able to take part of the events at BU and in Boston, I am glad that they are available.
44. The science is fun. However, all administrative related issues are complicated and not clear. Things have improved since PDPA started but there is still a lot to accomplish.
45. We might need more cross-talks between the postdocs in different disciplines.
46. There needs to be some differentiated programs/assistance for humanities postdocs, even if there are relatively few of us. You can't just assume that the model designed for the sciences (poster presentations, etc.) will translate to different types of academic work.
47. It was challenging but if BU postdoc can get the same health and dental insurance, it will be greater. Also, if the parking decal for the after-hour and weekend is provided (e.g. Boston Children's Hospital), it will help save our time.
48. So far it's been great. I just felt a bit isolated from other postdocs, more than else because in my department they are very few and scattered.
49. I am an international postdoc, so I would say that overall my experience at BU was good. I really appreciate the efforts put in place by PDPA to advocate for postdocs. For my personal experience, I would say that I am an isolated postdoc (we are only 3 postdocs and 2 grad students in the all department) so I really needed to

interact with other postdocs from BU. Which happens through your events and by joining BUPDA. In term of working conditions, I think it is really PI dependent. Because I am in a young team, we are only 3 people in the lab, my PI is really demanding, questions my productivity, even though I am usually at the bench from 10am to 8pm. I understand things are not easy for a young PI to establish their own lab, so I try to keep a good relationship. But I think more information about how to manage a team and what choices to make or not when you establish your own lab could be beneficial for postdocs and future PIs.

50. I feel comfortable in BU. The atmosphere is great for focusing on my research and exchanging ideas.
51. I would be curious if she could help with navigating finding non-postdoc research positions (i.e., soft money) within a university.
52. Thank you for creating a wonderful resource for postdocs and please continue with it. Small departments do not know how to handle or answer questions pertaining to postdocs.
53. My mentors and department are great. Discuss how difficult it is to be a non-employee postdoc, and share all of the issues this causes (health insurance, library access, facilities access, taxes, etc.).
54. That I have almost 7 years of experience (4 as a PhD candidate, almost 3 as a postdoc) as a highly educated, highly specialized researcher who routinely works 70 hours / week, and am struggling to make ends meet!
55. Help with CV and resume editing and introduce some connections in the field I want to step in.
56. I would like her to know about the anxiety for post-postdoc job search for the international scholars
57. Situation on benefits, especially health care, for postdocs with external funding sources.
58. It's been great for professional development and research experience. This is my second postdoc, so this is the type of environment I need to succeed.
59. Until now it's great! Right now I am seeping in as much knowledge about my project and other career options available for me. I require some time in understanding whether I am suitable for academics, industry, policy-making or something else altogether! Although I appreciate the fact that I did not have this level of exposure to other career options back in my home country and I am trying to make the most out of it. Teaching is something which I have never done in my home country as my institute was completely research based and I might be interested in exploring teaching as an option as well. Overall the experience is great and I would love to continue with the same for 1-2 years.
60. The postdocs need better career services.
61. There should be some department or authority above each PI who could monitor whether and how the PI is committed towards training and growth of each of his/her postdocs. There should be stringent measure of performance to PIs too, in terms of how satisfied their postdocs are by their overall lab environment and opportunity for growth.
62. My experiences with BU BEST, the PDPA, and Lauren Celano have been very positive. Having come from another institution with fewer career development resources, these resources have been amazing to have and I have tried to make full usage of all their offerings. My experience with BU as an institution has been atrocious, especially as compared to my previous experience as a postdoc at another institution. I am funded by an NIH grant and, rather than feeling rewarded for being funded by this award, I feel punished. I felt extremely underappreciated by not being allowed to have any employee benefits. My friend is a postdoc with slightly less postdoc experience as me at Dana Farber, similarly funded by an NIH grant, and is receiving a cost of living adjustment, so he has a higher salary, receives institutional health insurance, and is provided with employee benefits such as subsidized MBTA passes. For a postdoc who makes so little, the cost of MBTA passes can add up. It is *very* expensive to live in the Boston area and a postdoc who may be trying to financially support more than just themselves, as is the case with me. I also feel that much of my time since the day I started as a postdoc has been dealing with administrative issues that are aggravated by my "non-employee" status. I appreciate that Sarah Hokanson has been a champion for me when I face these issues. While I cannot emphasize enough how great the resources of the BEST, PDPA, and Propel Careers offices have been, my overall experience with being a postdoc at BU can only be described as "unhappy."
63. The lack of benefits for postdoctoral fellows is a significant and negative incentive for recruiting top postdocs to BU. Not to mention the absurdity of receiving external funds that pay overhead and losing benefits. Our lab, among others, have lost most of our top recruits to Harvard, which has much more reasonable benefit packages available to postdocs. I transferred my primary appointment to Harvard (as has every other fellow in our lab) upon receiving an NIH fellowship so that I could receive benefits.
64. They are generally positive. Interactions with PDPA were helpful upon writing and submitting an F32 proposal.
65. I've just started so I would let her know that "starting up" was made very easy.
66. My postdoctoral experiences at BU is so far so good.

6. Rank the order of the factors that MOST contribute to the length of time you have been a postdoc or will continue to be a postdoc. Drag relevant items into the box by order of most influence.

Answer	Rank 1		Rank 2		Rank 3		Rank 4		Rank 5		Rank 6		Total
Nature of Project	47%	35	27%	20	17%	13	7%	5	1%	1	1%	1	75
Time to find a position I want	38%	26	17%	12	26%	18	14%	10	4%	3	0%	0	69
Time for publications	23%	16	41%	28	23%	16	9%	6	4%	3	0%	0	69
Time for writing grant proposals	2%	1	15%	7	28%	13	21%	10	26%	12	9%	4	47
Spouse/partner/family situation	16%	7	32%	14	23%	10	9%	4	16%	7	5%	2	44
Time to obtain green cars	0%	0	11%	2	17%	3	28%	5	0%	0	44%	8	18
Other (specify)	75%	6	25%	2	0%	0	0%	0	0%	0	0%	0	8

Other (specify):	Freq.
Set time limit for funding	1
Carry-over from difficult PhD experience	1
Stress of the job	1
Gender, race	1
Available funding	1
Time to find a position I want	1
Funding situation	1
Time to find any more long-term academic position at all	1
How much I enjoy the postdoc	1
It was my mentor's preference to hire a postdoc for two years as it takes time to get trained on his project. I also liked that it would give me more time to develop professionally, get licensed, and take time to look for the next job.	1

7. How long do you expect to CONTINUE to be a postdoc at BU?

Answer	Response	%
Less than 1 year	28	29%
1 year	30	31%
2 years	26	26%
3 years	11	11%
4 years	2	2%
5 years	1	1%
Total	98	100%

8. How connected do you feel with the following groups?

Question	A Lot		Somewhat		A Little		Not At All		Total
Postdocs in my department/discipline	19%	18	35%	34	31%	30	15%	14	96
Colleagues in my department/discipline	17%	16	57%	55	19%	18	7%	7	96
Postdocs in other departments/disciplines on MY BU campus	2%	2	10%	10	31%	30	56%	54	96
Postdocs in other departments/disciplines on the OTHER BU campus	0%	0	4%	4	17%	16	79%	76	96
Staff at BU	5%	5	46%	44	38%	36	11%	11	96
Faculty at BU	8%	8	49%	47	33%	32	9%	9	96
BU community as a whole	1%	1	27%	26	59%	57	13%	12	96

9. Rank order the resources from Professional Development & Postdoctoral Affairs (PDPA) that have been useful to you during your time as a postdoc. Drag relevant items into the box by order of most influence.

Answer	I have used these resources from PDPA		I have not used these resources from PDPA yet but might use them		I do not intend to use these resources from PDPA		Total
Postdoc Guidebook	46%	37	43%	35	11%	9	81
Free business cards	37%	30	52%	42	11%	9	81

PDPA Travel Awards	11%	9	78%	63	11%	9	81
PDPA Seed Funding	1%	1	76%	59	23%	18	78
Professional development workshops	51%	44	43%	37	6%	5	86
Postdoc Orientation	56%	44	23%	18	22%	17	79
Other (please specify):	60%	3	40%	2	0%	0	5

Other (specify):	Freq.
Used none of the above listed	1
One-on-one meeting with PDPA director	1
Need to have free MBTA pass	1
Workshops oriented specifically toward humanities postdocs	1
F32 assistance	1

10. Rank your preferences for receiving communications about professional career development news such as workshop opportunities, internships, research tools and resources to use, policy changes, results from surveys and action steps taken, etc. Drag relevant items into the box by order of most preferred.

Answer	Rank 1		Rank 2		Rank 3		Rank 4		Rank 5		Rank 6		Rank 7		Rank 8		Total
Regular e-communi-cation	70%	54	18%	14	8%	6	4%	3	0%	0	0%	0	0%	0	0%	0	77
Website	7%	3	40%	18	38%	17	13%	6	2%	1	0%	0	0%	0	0%	0	45
newsletter	46%	25	37%	20	13%	7	2%	1	0%	0	2%	1	0%	0	0%	0	54
Mobile phone app	14%	2	36%	5	7%	1	14%	2	7%	1	7%	1	14%	2	0%	0	14
Mobile phone alerts	10%	1	20%	2	10%	1	10%	1	10%	1	10%	1	0%	0	30%	3	10
LinkedIn	20%	3	27%	4	33%	5	13%	2	0%	0	0%	0	7%	1	0%	0	15
Twitter	0%	0	6%	1	50%	9	17%	3	11%	2	11%	2	6%	1	0%	0	18
Other (specify):	0%	0	18%	2	18%	2	18%	2	9%	1	9%	1	9%	1	18%	2	11

Other (specify):	Freq.
Using this survey software, it is very difficult to change the ordering of items in my ranking.	1

11. Are you aware that BU has a postdoc-led association, known as the BUPDA, that promotes community building, social programming, and leadership opportunities (among other initiatives)?

Answer		Response	%
Yes, but I have NOT participated in any of its opportunities		57	60%
Yes, and I have participated is some of its opportunities		28	29%
No, I have not heard about it		10	11%
Total		95	100%

12. Which BUPDA-sponsored activities would you participate in? Check all that apply.

Answer		Response	%
Networking with early career individuals		60	65%
Social outings (pub nights, sports events, etc.)		46	49%
Informing postdoc-related policy		32	34%
Volunteering/community engagement events		32	34%
None		17	18%
Other (please specify):		3	3%
Total		190	100%

13. Are you aware that there is a Broadening Experiences in Scientific Experiences Program at BU called BU's BEST that has career development programming and resources for postdocs?

Answer	Response	%
No, I have not heard about it	39	41%
Yes, but I have NOT participated its programming and/or services	30	31%
Yes, and I have participated in some of its programming and/or services	27	28%
Total	96	100%

14. What programming and/or resources through BU's BEST do you find most useful? Drag relevant items into the box by order of most influence.

Answer	Rank 1		Rank 2		Rank 3		Rank 4		Rank 5		Rank 6		Total
Career Explorations Seminars	65%	13	20%	4	5%	1	10%	2	0%	0	0%	0	20
Skill Enhancement Workshops	32%	6	42%	8	16%	3	11%	2	0%	0	0%	0	19
Site Visits	50%	1	0%	0	50%	1	0%	0	0%	0	0%	0	2
Internships	0%	0	0%	0	100%	1	0%	0	0%	0	0%	0	1
Career Coaching w/ L. Celano	18%	2	45%	5	36%	4	0%	0	0%	0	0%	0	11
Meeting w/ Program Director to discuss career options available to me	29%	2	43%	3	14%	1	14%	1	0%	0	0%	0	7
Industry Scholars Lunch & Learns (co-sponsored by BU Corporate Relations)	44%	4	0%	0	22%	2	22%	2	11%	1	0%	0	9
NRSA Grant Writing Workshop	40%	2	20%	1	20%	1	0%	0	20%	1	0%	0	5
Alumni Mentoring webpage	0%	0	25%	1	50%	2	25%	1	0%	0	0%	0	4
Workforce data webpage/Data in Brief in the newsletter	13%	1	13%	1	13%	1	0%	0	50%	4	13%	1	8
BU's BEST lending library of career development books	0%	0	0%	0	0%	0	50%	1	50%	1	0%	0	2

15. What day(s) of the week/time(s) of the day is/are most convenient for you to attend professional development events/seminars? Check all that apply.

Answer	Response	%
Weekdays - morning	33	15%
Weekdays - lunchtime	51	24%
Weekdays - afternoon	33	15%
Weekdays - evenings	46	21%
Saturday morning	17	8%
Saturday lunchtime	11	5%
Saturday afternoon	15	7%
Other (specify):	2	1%
None - I am not able to leave my lab/research, but I am interested in accessing seminars online	8	4%
None - I am not interested in attending at this time	0	0%
Total	216	100%

Other (specify):	Freq.
Weekends or week nights would be perfect, but weekdays are fine too	1
I would be interested in online seminars	1

16. What was the quality of the career advising you received during your PhD graduate studies?

Answer	Response	%
Excellent	12	13%
Good	35	36%
Fair	36	38%
Poor	12	13%
Total	95	100%

17. How satisfied are you with the quality of career development advising you have received from your PI/Advisor since starting as a postdoc at BU?

Answer	Response	%
Very Satisfied	15	16%
Satisfied	37	39%
Neutral	35	37%
Dissatisfied	6	7%
Very Dissatisfied	2	2%
Total	95	100%

18. At the START of your postdoc appointment at BU, what career path was your FIRST CHOICE to pursue?

Answer	Response	%
Faculty researcher in a research-intensive institution doing research AND teaching	46	49%
Researcher in industry	16	17%
Faculty researcher in a research-intensive institution only doing research	13	14%
Staff researcher in a research-intensive institution only doing research	7	8%
Faculty in a teaching-intensive position (ex. at a Liberal arts college)	3	3%
Entrepreneur in research (start-up biotech/pharma)	2	2%
Policy analyst	2	2%
Medical writer	1	1%
Clinical researcher	1	1%
Instructor	1	1%
Career not related to science or biomedical research	1	1%
Business analyst	0	0%
Business development director	0	0%
Patent agent	0	0%
Corporate counsel	0	0%
Product manager	0	0%
Strategy consultant	0	0%
Editor	0	0%
Deputy director/ director of national member society (ASBMB, ASM, SfN, ASCB, etc)	0	0%
Other	0	0%
Medical science liaison	0	0%
Marketing manager	0	0%
Patent attorney	0	0%
Technical writer	0	0%
Operations management director	0	0%
Health director	0	0%
Intellectual property	0	0%
Sales representative of science-related products	0	0%

Technical support professional of science-related products		0	0%
Director/manager in research administration		0	0%
Scientific writer		0	0%
Teacher in science education (K-12)		0	0%
Teacher in science education for non-scientists		0	0%
Total		93	100%

19. Has your thinking about your FIRST CHOICE career path changed during your postdoc?

Answer		Response	%
Yes		29	30%
No		67	70%
Total		96	100%

20. What career path are you considering now as your FIRST CHOICE?

Answer		Response	%
Researcher in industry		7	26%
Research staff in a research-intensive institution		6	22%
PI in a research-intensive institution		5	19%
Other (specify):		4	15%
Business of science		2	7%
Science education (K-12)		1	4%
Combined research and teaching position		1	4%
Technical support of science-related products		1	4%
Entrepreneurship		0	0%
Sales and/or marketing of science-related products		0	0%
Career not related to science		0	0%
Clinical research management		0	0%
Drug/device approval and production		0	0%
Science writing		0	0%
Clinical practice		0	0%
Science education for non-scientists		0	0%
Teaching-intensive faculty position		0	0%
Public health related careers		0	0%
Scientific/medical testing		0	0%
Science policy		0	0%
Research administration		0	0%
Intellectual property		0	0%
Total		27	100%

21. Are you comfortable discussing these changes in your career path with your PI/Advisor?

Answer		Response	%
Yes		19	70%
No		8	30%
Total		27	100%

22. Whom do you routinely seek out to have open, candid discussion about your professional career planning goals and decisions? Select ALL that apply.

Answer	Response	%
My PI / Advisor	58	17%
Family member	53	16%
Other postdocs at BU	48	14%
Professional peer/colleague	48	14%
Friend (non-professional peer/colleague)	38	11%

Other postdocs NOT at BU	36	11%
Faculty member at another institution	19	6%
BU faculty member in my department	16	5%
BU faculty member NOT in my department	8	2%
BU's BEST Program (Lauren Celano)	8	2%
Other (specify):	4	1%
Total	336	100%

23. Are you comfortable in doing the following by yourself?

Question	Yes, Without Any Assistance		Yes, With a Little Assistance		Yes, With a Lot Assistance		Not At All		Response
Prepare a competitive CV/resume that is well-targeted to a specific position	25%	23	63%	59	11%	10	1%	1	93
Prepare a competitive cover letter that is well-targeted to a specific position	20%	19	53%	49	25%	23	2%	2	93
Prepare for conducting an effective job interview	17%	16	47%	44	30%	28	5%	5	93
Conduct informational interviews with individuals already in positions you want	25%	23	41%	38	25%	23	9%	8	92

24. How often does your current PI/Advisor…

Question	Very Often		Often		Sometimes		Almost Never		Never		Response
. . . talk with you to understand your thoughts about career options you are considering and explore the required skills?	7%	6	20%	18	45%	41	20%	18	9%	8	91
. . . convey support when you try to talk to him/her about your interest in a career that is not traditional academics?	11%	8	32%	23	36%	26	14%	10	7%	5	72
. . . encourage you to participate in career development seminars and workshops?	7%	6	19%	17	31%	27	24%	21	19%	17	88
. . . talk with you about how to effectively prepare for a job search and interview?	3%	3	12%	10	36%	31	29%	25	20%	17	86

25. Formally written Individual Development Plans (IDPs) have been demonstrated to enhance postdoctoral satisfaction and career outcomes. Do you have an IDP, and if so, have you discussed it with your mentor?

Answer		Response	%
No, I do not have an IDP		60	65%
No, I wrote an IDP, but never discussed it with my PI		13	14%
Yes, I wrote an IDP and we discuss it at least annually		11	12%
Yes, I wrote an Individual Development Plan, but we only met once and never met again about it		9	9%
Total		93	100%

26. If you could recommend one action or behavior that could strengthen the mentoring relationship between you and your PI, what action would that be? Write 'None', if needed, instead of leaving blank.

Text Response
1-37. None
38. I think an open conversation towards the academic career is good. But if the career doesn't lead to an academic job, I don't think the mentoring relationship would continue well.
39. My advisor is a little hands-off, sometimes I think it would be better if he actually pesters me to take job applications more seriously.
40. My PI is conflict adverse so I'm never sure if he agrees with what I'm doing or is just going along with it.
41. Instilling the understanding that this is an essential component of postdoc mentorship.
42. More encouragement to go to career seminars etc.
43. More structural postdoc training as graduate programs.
44. More chats on things other than the project in progress: e.g. future goals and plan, family matters, etc.
45. IDP might be nice
46. Be more involved with grant writing.
47. None, our relationship does not include long term goal planning, rather training for my long term goal.
48. Me learning not to ride the emotional roller coaster as much in response to my advisor's negative comments. (am always working on this)
49. We are good.
50. None. Because my postdoc is clinical in nature and my PI does mostly research, I feel like there is very little overlap between our interests. He is not a very open/available person anyway, so I have not approached him for advice.
51. My IDP was very informal, and discussions with my PI about it too. I like it that way (as long as it goes well) and I like that it is possible to be informal/not officially on paper about everything. I like that I was able to find out about career development workshops myself and go to whichever one I liked. My PI thinks publishing good papers is the most important for an academic career (he might be right!) and tries to be of help in that area. There are ways in which the mentoring relationship could be improved, but none that the PDPA should organize (I think).
52. To have a better understanding of his network and encourage him to reach out to his network for me.
53. Regular meetings.
54. Greater interest in the daily science.
55. Developing an IDP.
56. None, I cannot change the person my PI is. He believes the work is all that matters. In fact, recently I was at a research conference in Boston and he suggested to me that my time would be better spent in the lab (after paying for me to attend this conference).
57. Regular time to discuss progress in career development.
58. More support for career development in addition to research.
59. I don't know, perhaps a specific meeting just for mentoring/career development.
60. To keep in mind my professional development and interests.
61. Assign me a dedicated mentor who works in my field/discipline.
62. Talking more often about human relationships and careers development.
63. Mentor's success is expected to propagate to mentees.
64. Write grants/fellowships/review in articles together.
65. More regular meetings.
66. Being more present.
67. Discuss the specific aims of a potential K award writing.
68. I am very satisfied with my PIs at BU. The reason why they do not yet encourage me to survey non-academic career opportunities is that they have a lot of faith in me getting a faculty job.
69. If the department mandated certain requirements from them with respect to postdocs; my PI would not be open to doing so otherwise.
70. More open to alternate careers, less money focused.
71. Possibly being more focused about jobs I want. I know I'll need to search soon, but I haven't had a detailed discussion with my advisor about what that is going to look like. It's the top priority in my mind though (along with my girlfriend and other non-research activities).
72. Every PI should go through a strict investigation procedures if any of his/her postdoc underperforms or leaves the lab prematurely (i.e. before the end of initially agreed date).

73. Since my career goals are vastly different from any experiences my mentor has had, even though she tries to help, I have felt that other sources are more equipped to provide informed mentorship.
74. More frequent meetings to discuss career trajectory, rather than just data.
75. It's really too early in the postdoc to say.
76. More communication.
77. Support me for my future job applications and help me with contacting my future employer.

27. While you are a postdoc at BU, what skills would you like to further strengthen through targeted training workshops? Drag relevant items into the box by order of most influence.

Answer	Response	%
Writing Skills	47	11%
Communication Skills	47	11%
Building Effective Relationships Skills	47	11%
Leadership Skills	45	11%
Mentoring Skills	39	9%
Presentation Skills	32	8%
Organizational Skills	31	8%
Collaboration Skills	29	7%
Planning Skills	24	6%
Editing Skills	21	5%
Problem Solving Skills	20	5%
Teamwork Skills	16	4%
Troubleshooting Skills	11	3%
Other (please specify)	2	1%
Total	84	100%

Other (specify):	Freq.
Technical Skills	1
Programming	1
Bioinformatics/Computational Biology Skills	1

28. Which school are you most closely affiliated with at Boston University?

Answer		Response	%
MED		32	36%
CAS		28	31%
ENG		15	17%
SAR		5	6%
SPH		4	4%
Other (specify):		3	3%
QST		2	2%
STH		0	0%
SSW		0	0%
SDM		0	0%
CFA		0	0%
COM		0	0%
SED		0	0%
Total		89	100%

Other (specify):	Freq.
Pardee Center	1
KHC	1
SCI	1

29. What is your primary source of compensation at Boston University?

Answer	Response	%
Federal research grant/contract	52	57%
Federal fellowship	8	9%
Training grant	10	11%
Non-federal nationally awarded grant	3	3%
Department or university-based funds	10	11%
Foreign government / foreign-based fellowship	2	2%
Don't know	4	4%
Other (specify):	3	3%
Total	92	100%

Other (specify):	Freq.
Fee for service	1
Grants from private foundations	1
Internationally awarded fellowship	1

30. How do you describe yourself?

Answer	Response	%
Non-Hispanic White	46	49%
Asian or Asian American	30	32%
Prefer not to answer	7	8%
Other (specify):	7	8%
Hispanic or Latino	2	2%
Black or African American	1	1%
Hawaiian or Other Pacific Islander	0	0%
American Indian or Alaska Native	0	0%
Total	93	100%

Other (specify):	Freq.
Caucasian and Native American (non-affiliated)	1
Chinese	1
European	1
English and Indian	1

31. What is your gender?

Answer	Response	%
Female	45	48%
Male	44	47%
Prefer not to answer	4	4%
Prefer to self-describe:	0	0%
Non-binary/third gender	0	0%
Total	93	100%

32. What is your citizenship status?

Answer	Response	%
Non-immigrant visa (J1 or H1B)	41	45%
U.S. Citizen (born in U.S.)	34	37%
Legal permanent resident (green card)	10	11%
Other (specify):	4	4%
Naturalized U.S. citizen	2	2%
Total	91	100%

2017 Survey of Postdoc Experiences

Q1 How many years have you been a postdoc at BU?
- ❍ Less than 1 year
- ❍ 1 year
- ❍ 2 years
- ❍ 3 years
- ❍ 4 years
- ❍ 5 years
- ❍ More than 5 years

Q2 Professional Development & Postdoctoral Affairs (PDPA) was significantly expanded in 2015 to provide you with meaningful support and services. Think back to when you first came to BU as a postdoc, and compare your experience then to your experience now. What, if anything, has changed in your postdoc experience at BU since this office was established? Write 'Nothing', if needed, instead of leaving blank.

Q3 In 2015, the anonymous survey data provided by postdocs revealed that postdocs felt that there were wide discrepancies in postdoc salaries across departments and colleges at BU. How has the new salary minimum policy ($47,500 annually) implemented on December 1, 2016 affected you? Write 'No impact', if needed, instead of leaving blank.

Q4 In 2016, BU implemented a five-year term limit for postdocs at BU. How has the new term limit policy affected you? Write 'No impact', if needed, instead of leaving blank.

Q5 If you could meet one-on-one with the Director of Professional Development and Postdoctoral Affairs today, what would you want her to know about your postdoctoral experiences at BU?

Q6 Rank order the factors that MOST contribute to the length of time you have been a postdoc or will continue to be a postdoc. Drag relevant items into the box by order of most influence.

Factors that contribute to my length of time as a postdoc:
_____ Nature of my project
_____ Time to find a position I want
_____ Time for publications
_____ Time for writing grant proposals
_____ Spouse/partner/family situation
_____ Time to obtain a green card
_____ Other (specify):

Q7 How long do you expect to CONTINUE to be a postdoc at BU?
- ❍ Less than 1 year
- ❍ 1 year
- ❍ 2 years
- ❍ 3 years
- ❍ 4 years
- ❍ 5 years

Q8 How connected do you feel with the following groups?

	A Lot	Somewhat	A Little	Not At All
Postdocs in my department/discipline	❍	❍	❍	❍
Colleagues in my department/discipline	❍	❍	❍	❍
Postdocs in other departments/disciplines on MY BU campus	❍	❍	❍	❍
Postdocs in other departments/disciplines on the OTHER BU campus	❍	❍	❍	❍
Staff at BU	❍	❍	❍	❍
Faculty at BU	❍	❍	❍	❍
BU community as a whole	❍	❍	❍	❍

Q9 Rank order the resources from Professional Development & Postdoctoral Affairs (PDPA) that have been useful to you during your time as a postdoc. Drag relevant items into the box by order of most influence.

I have used these resources from PDPA:	I have not used these resources from PDPA yet but might use them:	I do not intend to use these resources from PDPA:
_____ Postdoc Guidebook	_____ Postdoc Guidebook	_____ Postdoc Guidebook
_____ Free business cards	_____ Free business cards	_____ Free business cards
_____ PDPA Travel Awards	_____ PDPA Travel Awards	_____ PDPA Travel Awards
_____ PDPA Seed Funding	_____ PDPA Seed Funding	_____ PDPA Seed Funding
_____ Professional development workshops	_____ Professional development workshops	_____ Professional development workshops
_____ Postdoc Orientation	_____ Postdoc Orientation	_____ Postdoc Orientation
_____ Other (please specify):	_____ Other (please specify):	_____ Other (please specify):

Q10 Rank your preferences for receiving communications about professional career development news such as workshop opportunities, internships, research tools and resources to use, policy changes, results from surveys and action steps taken, etc. Drag relevant items into the box by order of most preferred.

I prefer professional career development news to come from:
_____ Regular e-communications (not including newsletters)
_____ Website
_____ Newsletter
_____ Mobile phone app
_____ Mobile phone alerts
_____ LinkedIn
_____ Facebook
_____ Twitter
_____ Other (specify):

Q11 Are you aware that BU has a postdoc-led association, known as the BUPDA, that promotes community building, social programming, and leadership opportunities (among other initiatives)?

- ❍ No, I have not heard about it
- ❍ Yes, and I have participated is some of its opportunities
- ❍ Yes, but I have NOT participated in any of its opportunities

Q12 Which BUPDA-sponsored activities would you participate in? Check all that apply.

- ❑ None
- ❑ Networking with early career individuals
- ❑ Informing postdoc-related policy
- ❑ Social outings (pub nights, sports events, etc.)
- ❑ Volunteering/community engagement events
- ❑ Other (please specify): _____

Q13 Are you aware that there is a Broadening Experiences in Scientific Experiences Program at BU called BU's BEST that has career development programming and resources for postdocs?

- ❍ No, I have not heard about it
- ❍ Yes, and I have participated in some of its programming and/or services
- ❍ Yes, but I have NOT participated its programming and/or services

Q14 What programming and/or resources through BU's BEST do you find most useful? Drag relevant items into the box by order of most influence.

I have used these resources from BU's BEST:	I have not used these resources from BU's BEST yet but might use them:	I do not intend to use these resources from BU's BEST:
_____ Career Explorations Seminars	_____ Career Explorations Seminars	_____ Career Explorations Seminars
_____ Skill Enhancement Workshops	_____ Skill Enhancement Workshops	_____ Skill Enhancement Workshops
_____ Site Visits	_____ Site Visits	_____ Site Visits
_____ Internships	_____ Internships	_____ Internships
_____ Career Coaching with Lauren Celano	_____ Career Coaching with Lauren Celano	_____ Career Coaching with Lauren Celano
_____ Meeting with the Program Director to discuss career options available to me	_____ Meeting with the Program Director to discuss career options available to me	_____ Meeting with the Program Director to discuss career options available to me
_____ Industry Scholars Lunch & Learns (co-sponsored by BU Corporate Relations)	_____ Industry Scholars Lunch & Learns (co-sponsored by BU Corporate Relations)	_____ Industry Scholars Lunch & Learns (co-sponsored by BU Corporate Relations)
_____ NRSA Grant Writing Workshop	_____ NRSA Grant Writing Workshop	_____ NRSA Grant Writing Workshop
_____ Alumni Mentoring webpage	_____ Alumni Mentoring webpage	_____ Alumni Mentoring webpage
_____ Workforce data webpage/Data in Brief in the newsletter	_____ Workforce data webpage/Data in Brief in the newsletter	_____ Workforce data webpage/Data in Brief in the newsletter
_____ BU's BEST lending library of career development books	_____ BU's BEST lending library of career development books	_____ BU's BEST lending library of career development books
_____ Other (please specify)	_____ Other (please specify)	_____ Other (please specify)

Q15 What day(s) of the week / time(s) of the day is/are most convenient for you to attend professional development events/seminars? Check all that apply.

- ❑ Weekdays - morning
- ❑ Weekdays - lunchtime
- ❑ Weekdays - afternoon
- ❑ Weekdays - evenings
- ❑ Saturday morning
- ❑ Saturday lunchtime
- ❑ Saturday afternoon
- ❑ None - I am not interested in attending at this time
- ❑ None - I am not able to leave my lab/research, but I am interested in accessing seminars online
- ❑ Other (specify): _____

Q16 What was the quality of the career advising you received during your PhD graduate studies?

- ❍ Excellent
- ❍ Good
- ❍ Fair
- ❍ Poor

Q17 How satisfied are you with the quality of career development advising you have received from your PI / Advisor since starting as a postdoc at BU?

- ❍ Very Satisfied
- ❍ Satisfied
- ❍ Neutral
- ❍ Dissatisfied
- ❍ Very Dissatisfied

Q18 At the START of your postdoc appointment at BU, what career path was your FIRST CHOICE to pursue?

- ❍ Faculty researcher in a research-intensive institution only doing research
- ❍ Staff researcher in a research-intensive institution only doing research
- ❍ Faculty researcher in a research-intensive institution doing research AND teaching
- ❍ Researcher in industry
- ❍ Researcher in a government agency
- ❍ Faculty in a teaching-intensive position (ex. at a Liberal arts college)
- ❍ Clinical researcher
- ❍ Entrepreneur in research (start-up biotech/pharma)
- ❍ Teacher in science education (K-12)
- ❍ Teacher in science education for non-scientists
- ❍ Instructor
- ❍ Scientific writer
- ❍ Medical writer
- ❍ Technical writer
- ❍ Editor
- ❍ Marketing manager
- ❍ Director/manager in research administration
- ❍ Director/manager in clinical research management
- ❍ Director/manager of an IRB Office
- ❍ Consultant on Regulatory/IRB/Accreditation Affairs
- ❍ Product manager
- ❍ Business analyst
- ❍ Business development director
- ❍ Sales representative of science-related products
- ❍ Strategy consultant
- ❍ Operations management director
- ❍ Technical support professional of science-related products
- ❍ Medical science liaison
- ❍ Policy analyst
- ❍ Lobbyist
- ❍ Health director
- ❍ Science policy director
- ❍ Deputy director/director of government agency
- ❍ Deputy director/ director of national member society (ASBMB, ASM, SfN, ASCB, etc)
- ❍ Intellectual property
- ❍ Regulatory manager
- ❍ Compliance officer
- ❍ Patent attorney
- ❍ Patent agent
- ❍ Corporate counsel
- ❍ Career not related to science or biomedical research
- ❍ Other

Q19 Has your thinking about your FIRST CHOICE career path changed during your postdoc?

- ❍ Yes
- ❍ No

Q20 What career path are you considering now as your FIRST CHOICE?

- ❍ PI in a research-intensive institution
- ❍ Researcher in industry
- ❍ Research staff in a research-intensive institution
- ❍ Combined research and teaching position
- ❍ Teaching-intensive faculty position
- ❍ Science education (K-12)
- ❍ Science education for non-scientists
- ❍ Clinical practice
- ❍ Public health related careers
- ❍ Scientific/medical testing
- ❍ Science writing
- ❍ Research administration
- ❍ Science policy
- ❍ Intellectual property
- ❍ Business of science
- ❍ Entrepreneurship
- ❍ Sales and/or marketing of science-related products
- ❍ Technical support of science-related products
- ❍ Drug/device approval and production
- ❍ Clinical research management
- ❍ Career not related to science
- ❍ Other (specify): _____

Q21 Are you comfortable discussing these changes in your career path with your PI / Advisor?

- ❍ Yes
- ❍ No

Q22 Whom do you routinely seek out to have open, candid discussions about your professional career planning goals and decisions? Select ALL that apply.

- ❑ My PI / Advisor
- ❑ BU faculty member in my department
- ❑ BU faculty member NOT in my department
- ❑ Faculty member at another institution
- ❑ Other postdocs at BU
- ❑ Other postdocs NOT at BU
- ❑ Family member
- ❑ Professional peer/colleague
- ❑ Friend (non-professional peer/colleague)
- ❑ BU's BEST Program (Lauren Celano)
- ❑ Other (specify): _____

Q23 Are you confident in doing the following by yourself?

	Yes, Without Any Assistance	Yes, With a Little Assistance	Yes, With a Lot Assistance	Not At All
Prepare a competitive CV/resume that is well-targeted to a specific position	❍	❍	❍	❍
Prepare a competitive cover letter that is well-targeted to a specific position	❍	❍	❍	❍
Prepare for conducting an effective job interview	❍	❍	❍	❍
Conduct informational interviews with individuals already in positions you want	❍	❍	❍	❍

Q24 How often does your current PI / Advisor . . .

	Very Often	Often	Sometimes	Almost Never	Never	Not Applicable
. . . talk with you to understand your thoughts about career options you are considering and explore the required skills?	❍	❍	❍	❍	❍	❍
. . . convey support when you try to talk to him/her about your interest in a career that is not traditional academics?	❍	❍	❍	❍	❍	❍
. . . encourage you to participate in career development seminars and workshops?	❍	❍	❍	❍	❍	❍
. . . talk with you about how to effectively prepare for a job search and interview?	❍	❍	❍	❍	❍	❍

Q25 Formally written Individual Development Plans (IDPs) have been demonstrated to enhance postdoctoral satisfaction and career outcomes. Do you have an IDP, and if so, have you discussed it with your mentor?

- ❍ No, I do not have an IDP
- ❍ No, I wrote an IDP, but never discussed it with my PI
- ❍ Yes, I wrote an IDP and we discuss it at least annually
- ❍ Yes, I wrote an Individual Development Plan, but we only met once and never met again about it

Q26 If you could recommend one action or behavior that could strengthen the mentoring relationship between you and your PI, what action would that be? Write 'None', if needed, instead of leaving blank.

Q27 While you are a postdoc at BU, what skills would you like to further strengthen through targeted training workshops? Drag relevant items into the box by order of most influence.

Skills I would like to strengthen:
_____ Building Effective Relationships Skills
_____ Communication Skills
_____ Editing Skills
_____ Mentoring Skills
_____ Organizational Skills
_____ Problem Solving Skills
_____ Presentation Skills
_____ Planning Skills
_____ Teamwork Skills
_____ Leadership Skills
_____ Collaboration Skills
_____ Troubleshooting Skills
_____ Writing Skills
_____ Other (please specify):

Q28 Which school are you most closely affiliated with at Boston University?

- ❍ CAS
- ❍ CFA
- ❍ COM
- ❍ ENG
- ❍ MED
- ❍ SAR
- ❍ SDM
- ❍ SED
- ❍ QST
- ❍ SPH
- ❍ SSW
- ❍ STH
- ❍ Other (specify): _____

Q29 Which is your primary source of compensation at Boston University?

- ❍ Federal research grant/contract
- ❍ Federal fellowship
- ❍ Training grant
- ❍ Non-federal nationally awarded grant
- ❍ Department or university-based funds
- ❍ Foreign government / foreign-based fellowship
- ❍ Don't know
- ❍ Other (specify): _____

Q30 How do you describe yourself?
- ❍ American Indian or Alaska Native
- ❍ Hawaiian or Other Pacific Islander
- ❍ Asian or Asian American
- ❍ Black or African American
- ❍ Hispanic or Latino
- ❍ Non-Hispanic White
- ❍ Other (specify): _____
- ❍ Prefer not to answer

Q31 What is your gender?
- ❍ Male
- ❍ Female
- ❍ Non-binary/third gender
- ❍ Prefer not to answer
- ❍ Prefer to self-describe: _____

Q32 What is your citizenship status?
- ❍ U.S. Citizen (born in U.S.)
- ❍ Legal permanent resident (green card)
- ❍ Naturalized U.S. citizen
- ❍ Non-immigrant visa (J1 or H1B)
- ❍ Other (specify): _____

Q33 Thank you for your time and feedback. Please click the 'submit' button below; you will be taken to a separate form to submit your contact information for entry into the prize raffle. Remember, the next form is optional and your contact information WILL NOT BE CONNECTED to any of your survey responses.