

# PhD Innovation Initiative Final Report to President Daniels

## I. Introduction

Johns Hopkins University, as the oldest and one of the most prominent research institutions in the country, has a well-earned reputation as a leader in doctoral and postdoctoral education. JHU is home to nearly 3,000 PhD students in 63 different PhD programs and has another 2,500 postdoctoral fellows. Graduate students and postdocs are an essential part of Hopkins' success and contribute immensely to research at the University. In return, graduate students and postdocs are exposed to top-flight research, receive a world-class education, and earn the prestige of a Johns Hopkins degree. As the job market and funding climates evolve, however, students and postdocs face changing expectations as future job candidates and changing realities about employment prospects.

In recent years, PhD education has come under scrutiny as fewer graduates obtain tenure-track academic positions and as narrowly-focused doctoral training seems less applicable to pressing global problems. At JHU, a majority of PhD students and postdoctoral fellows do not enter academic positions upon receipt of their degree.<sup>1</sup> Moreover, according to the [Office of the Provost Committee on the Future of PhD Education Report](#), only 20-30% of Johns Hopkins PhDs and postdoctoral fellows take traditional tenure track academic positions. These figures are consistent with broader trends, which find that only 20-25% of PhDs nationwide secure a tenure-track academic position.<sup>2</sup>

Two separate issues are embedded in these statistics. First, there are students who want to get tenure-track jobs – how can JHU maximize their potential for success and at the same time prepare them for alternative pursuits? Second, there are students who are comfortable or eager to pursue non-academic options – how can JHU ensure that the education and training they receive is as useful and valuable for their future career plans?

In this context, the PhD Innovation Initiative (PII) was launched in 2012 to “reexamine and reinvigorate” PhD education at Johns Hopkins and to serve as a model nationwide. The aim was to incubate great ideas that could strengthen mentorship and career guidance, improve student teaching skills, make students compelling candidates both in and outside of academia, and diversify the paths of post-graduate success. As stated in the PhD and Postdoctoral Fellow Career and Professional Development

---

<sup>1</sup> The Commission on Pathways Through Graduate School stated in their final report that more than half of all PhDs in the sciences, engineering, and health fields work outside of academia. Indeed, “based on surveys conducted by the registrar’s office, of 134 PhD students that graduated from the School of Medicine in 2012, 47% are still seeking employment or are employed outside of academia.”

<sup>2</sup> The Postdoctoral Experience Revisited. National Academies Press, Washington DC, 2014. Accessed 12/18/2014 at - National Science Foundation, Survey of Earned Doctorates 2013, Tables 46 and 51. Accessed 12/19/2014 at <http://www.nsf.gov/statistics/sed/2013/><sup>11</sup><sub>SEP</sub>

Working Group Report & Proposal: “We must provide information about the range of careers for PhDs early in their curriculum and training, and build upon this base as they progress; we must connect students and postdoctoral fellows with internship opportunities and alumni networks to help expose them to and define career paths.”

In 2013, a request for proposals was circulated appealing for submission of projects directed to improving PhD education and training. Twenty-eight proposals from the PhD-granting divisions of JHU were received and eight diverse grants were funded for up to 2 years under the PII (see Appendix 1). Proposals ranged from certificate programs to make Johns Hopkins doctoral and postdoctoral candidates as competitive as possible on the academic job market to training programs that positioned them for success in non-academic careers through industry internships, professional skills workshops, networking events, and entrepreneurship development.

This report reviews and summarizes the individual PII grants below, examining their contributions to the following areas: (1) Preparing Successful Academics, (2) Preparing for Success Outside of Academia, and (3) Fostering Innovation and Flexibility in Graduate Education. We conclude the report with several recommendations based on the conclusions from the funded proposals.

## **II. Preparing Successful Academics**

Traditionally, students pursued doctoral and postdoctoral studies in order to secure tenure-track faculty appointments. But with an increasing number of PhDs on the job market and a national movement toward lower-cost adjuncts and lecturers, securing a tenure track academic position is increasingly difficult. While Johns Hopkins doctoral and postdoctoral students have unrivalled research opportunities, many have limited or no exposure to teaching experience or mentorship. In part, this is because several doctoral programs (including all programs housed in the Schools of Medicine, Nursing, and SAIS) have no feeder undergraduate populations to support graduate student teaching opportunities. In part, it comes from an understandable prioritizing of lab time over teaching time. Even for doctoral students who have the opportunity to serve as teaching assistants, there may be little time or resources to seek out pedagogical training and/or to receive pedagogical mentorship. Nevertheless, most tenure-track academic positions will demand that candidates have both exemplary research and teaching skills.

In order to address these concerns, the Center for Educational Research launched the *Preparing Future Faculty Teaching Academy (PFFTA)*, an institution-wide initiative to provide instructional training and enhance the competitive advantage of Johns Hopkins doctoral students and postdoctoral fellows who seek academic careers. PFFTA provides pedagogical training and mentored teaching experiences via courses, workshops, and teaching opportunities designed to accommodate the time constraints imposed by participants’ research commitments. For those with interest and schedule flexibility, a certificate program is available for inclusion on their CVs to acknowledge completion of three phases of increasingly demanding training.

In Phase I, students complete 6-10 hours of introductory training on a pedagogical topic of their choice, selected from the PFFTA website. Topics include research-informed teaching, active learning, leading a lab, and “backward design.” Some of the Phase I materials are available through MOOCs, enabling busy doctoral students and postdocs to complete this phase of work on their own timeline without interfering with their research obligations.<sup>3</sup>

In Phase II, students complete hands-on instructional resource development. One option for fulfilling this requirement is attendance at the Summer Teaching Institute, a three-day immersive instructional training experience, specifically developed under the PFFTA project and modeled on similar programs supported for faculty by the NSF, the National Academies, and professional organizations of many disciplines. Ten Johns Hopkins faculty provide the training, and approximately 130 students participated in the Institute during the two years that it has so far been offered. Topics for Phase II include crafting a teaching statement, building a syllabus, designing grading rubrics, developing active learning exercises, and participating in micro-teaching.

Phase III requires that students apply what they have learned in actual teaching situations, by teaching a full-semester course, teaching a summer or intersession course, or apprenticing for a full term with a faculty member and serving as instructor of record for at least 6 hours of that course. As not all JHU doctoral students and postdoctoral fellows have easy access to undergraduate courses, PFFTA has worked to place students throughout the divisions and has partnered with the East Baltimore Professional Development Office to identify teaching opportunities in other area universities.

PFFTA also emphasized teaching-as-research (TAR) opportunities, encouraging students to engage in research directly related to pedagogy. To support this, PFFTA developed TAR@Hopkins, a program that offers doctoral students and postdoctoral fellows the “opportunity to engage in the teaching-as-research process by developing and implementing small teaching experiments and assessment plans to advance specific student learning outcomes.” Finally, PFFTA developed a Coursera MOOC that attracted initial enrollments of over 26,000 over the two offerings, drawn from over 150 countries. (In the spring 2014 offering, 1,265 students completed the course requirements, 478 of which were paid students who elected to sign up for Signature Tracking status, a modest fee-based authentication option, thus generating revenue for JHU.)

In its first two years, PFFTA had 99 certificate participants and has received enthusiastic support from faculty and leadership across nearly all divisions with doctoral or postdoctoral programs (BSPH, KSAS, SAIS, SOE, SOM, SON, and WSE)

---

<sup>3</sup> Care was taken throughout the certification process to ensure that the program did not interfere with students’ research demands and that research advisors were fully on-board with student and postdoc involvement. Indeed, research advisors are required to sign statements of agreement as part of a student’s initial application to the program.

### III. Preparing for Success Outside of Academia

In comparison to the PFFTA program that was aimed at preparing graduate students for tenure-track academic jobs, a number of other PII grants focused on helping students explore employment outside of academia. A prime example is the *Biomedical Careers Initiative (BCI)*, which provided resources for exploration, preparation, and networking for a wide-range of jobs within industry, the government, or nonprofit organizations. Central to BCI's mission was an internship program, which both increased the opportunities for developing industry contacts and gave interested students concrete experience applying academic knowledge to real-world situations and jobs. Over the course of two years, BCI leadership and staff built partnerships with 14 distinct companies and organizations who agreed to serve as internship host sites; the internship opportunities offered through BCI were created specifically for Johns Hopkins graduate students. PII funding was vital to BCI's ability to seek out and formalize these partnerships.

Twenty-two students out of 37 applicants from 13 different graduate programs were selected for internships at a wide range of commercial and research organizations, including Eli Lilly, Genentech, Noble Life Sciences, MedImmune, and the Ovarian Cancer National Alliance.<sup>4</sup> The program is still new, but the initial reviews are promising. One hundred percent of BCI interns indicated that they would recommend their internship to other students, and 84% of organizations rated their intern's performance as "excellent" or "very good". Three of the 19 interns have since graduated and found jobs related to their internship and within their desired field, and all three have credited their internship experience with their success.

In addition to facilitating internships, BCI has sponsored a number of presentations by recruiters, industry representatives, authors, and alumni on diverse career options within the biomedical field. Over 600 participants have attended at least one of the presentations during the first two years of the BCI program, representing both students and research fellows from 30 graduate programs and six JHU schools. 84% of students responding to surveys about the presentations said that they were satisfied or very satisfied with the event they attended. BCI also sponsored various networking clinics and offered travel awards to students to attend conferences or events for networking purposes.

As a further tool to help students exploring non-academic fields, BCI developed and maintained a comprehensive website that provided information on 10 different biomedical science career paths, a listing of JHU courses relevant to careers outside of academia, and a calendar of career exploration and networking events throughout Maryland. From its launch in April 2014 through April 2015, the website had more than 1,800 unique visitors and nearly 9,000 page views. 86% of the survey respondents who visited with website said that they were likely or very likely to return to the site, and 80% said they were likely or very likely to recommend the site to others.

---

<sup>4</sup> Three accepted students declined their internship offer.

Overall, of students surveyed who had visited the website or attended at least one BCI event, 70% agreed or strongly agreed that BCI provided a better understanding of careers they were already aware of, and 65% agreed or strongly agreed that BCI exposed them to training opportunities they were not aware of. Moreover, 85% of the respondents stated that they would be interested in attending an informational session that relates to careers outside academic research.

The success of BCI has not gone unnoticed. BCI has been featured in the careers section of *Nature*, highlighting JHU's innovative approach to supporting graduate students in careers beyond the academy. BCI also received a \$50,000 grant from the Burroughs Wellcome Fund in July 2015 to develop and pilot a hybrid course, "How to Be an Intern: Prepping for Life Outside Academia," which aims to better prepare our students for their internships and to ensure high-quality applicants for our partner sites. Over the course of four months, the class was developed and launched on the CoursePlus website in November 2015. Twelve students have enrolled in the course, which is ongoing and will conclude in February 2016. Anecdotal feedback suggests that the students derive great benefit from the course material, and partner sites are excited about the additional training provided to applicants.

Working in a similar vein under a separate PII grant, the *Biomedical Engineering Extramural Development in Graduate Education program (BME EDGE)*, also provided career guidance, training, and internship opportunities for students interested in non-academic jobs, drawing from the more than 200 PhD students in the Department of Biomedical Engineering.

Like the BCI, the BME EDGE program provided a wealth of internship opportunities to doctoral students. BME EDGE placed interns at companies such as AstraZeneca, Genentech, MedImmune, Boston Scientific, IBM, Tesla, Booz Allen Hamilton, Sage Growth Partners, and Back Bay Life Science Advisors and established connections with more than 40 companies and organizations in its first three years.<sup>5</sup> In the first year of BME EDGE, six out of nine students were placed in internships that were fully funded by the employer, while the remaining three deferred their applications for later consideration. In the second year of the program, 10 out of 10 students received a competitive internship offer, with nine of them choosing to accept. In the third year (as of January 2016), nine students have applied to the EDGE internship program, and student placement is underway. Thus far, three BME EDGE interns have been offered (and one has accepted) positions at their respective internship companies after graduation.

In addition to the internship program, BME EDGE sponsored speakers series events, inviting alumni from industry and academia to present, with an average attendance of 25-50 attendees. BME EDGE also offered professional development

---

<sup>5</sup> While many companies already had established *undergraduate* internship opportunities, the idea of a doctoral level internship was generally regarded as a novel position and therefore required significant legwork and time to set up at each organization. As the BME EDGE program becomes more established and as companies work through their internal constraints, it is expected that many more companies will sign up for the internship component.

workshops open to the whole University on topics such as resumes and CVs, networking, interviewing, and career options for PhDs, which typically brought in 45-60 attendees. BME EDGE also sponsored well-attended events during JHU Entrepreneurship Week and through the Career Information Fair, in partnership with JHMI PDO.

Under another PII grant, *Professional Development for PhD Students and Post-Doctoral Fellows*, the Center for Leadership Education (CLE) developed and taught a series of seven-week modules to foster non-academic skills, such as entrepreneurship, communication, and project management, among doctoral and postdoctoral scholars throughout the University.

In two years, the CLE has taught 30 modules representing 16 different titles to approximately 280 graduate students and postdoctoral fellows from across the Divisions, including BSPH, KSAS, SAIS, SOE, SOM, and the Peabody Conservatory. The topics for the modules have ranged from improving presentation skills to learning how best to develop and commercialize ideas. Going forward, the CLE plans to expand the repertoire of course offerings, increase the number of modules offered per semester, move some modules partially or fully online to allow for greater flexibility for participants, create networking events for students, and sponsor a Certificate of Advanced Study for students who successfully complete a specified number of modules.

Student response to the modules has been positive, with approximately one-third of the participants who take one module returning for another. Faculty have also been enthusiastic about the modules, which are now required coursework for three programs within the School of Engineering, and several other departments are looking into using the modules in their curricula.

#### **IV. Fostering Innovation and Flexibility in Graduate Education**

While internships and seminars can train doctoral students for external nonacademic prospects, stimulating student innovation can also spark an entrepreneurial drive that builds opportunities from within the University. With that aim in mind, Medical and Educational Perspectives (MEP) (a non-profit organization led by JHU medical and graduate students) developed an entrepreneurial training program called the *PhD Translational Excellerator*, specifically aimed at doctoral students looking to develop and commercialize medical innovations. The Excellerator program sought to guide students through the process of taking a product or idea from the page to the commercial world, exposing interdisciplinary teams to entrepreneurial culture and networking opportunities, without having to take time away from their studies or research.

To further that goal, the Excellerator program hosted a series of competitions to recruit students from across the divisions who had devised medical ideas or products that they were interested in commercializing. Once the students were selected, the

Excellerator administrators assembled an interdisciplinary team of fellow students (e.g., MD, PhD, SPH) for each project to provide evaluation and support. Over a summer elective course, the student teams visited between 10 and 20 hospitals to get stakeholder analysis of the product or idea and to receive user feedback. In a subsequent fall elective course, students were taught entrepreneurial basics, such as pitching the product to investors and performing market research. At the end of the fall course, the student teams pitched their idea to a panel of judges that include, as noted in the project's final report, "CEOs, professors, best-selling authors, IP lawyers, funding program managers, and potential investors." For those looking to break into international markets, teams have an additional opportunity to visit commercial and government entities in India, enabling them to gauge global interest and understand entrepreneurial culture abroad.<sup>6</sup>

Notable successes have already come out of the program, and many of the teams have continued to work together after their time in the Excellerator program. One team in particular, PathoVax, has already translated their Excellerator experience into concrete results, filing for a patent, signing an options agreement with JHU, and winning first place in several competitions, including the JHU Entrepreneurship Week competition, the Johns Hopkins Graduate Consulting Club competition, and the Johns Hopkins Business Plan Competition. The PathoVax student team has decided to stay together after graduation and launch a start-up to bring their product to market. To date, 26 teams have gone through the Excellerator program, and more than 50 teams have submitted proposals to the annual spring competitions.

In a similar attempt to increase entrepreneurial innovations at JHU, the *Learning through Osmosis* project sought to expand the use of Osmosis, a web- and mobile-learning platform originally invented at the School of Medicine, to doctoral study in the biomedical sciences. An entrepreneurial success story, the original medical school-based Osmosis system is now available globally to help medical students learn and retain information, building upon the principles of "adaptive spacing, the testing effect, and collaborative testing through peer-to-peer education." In essence, the Osmosis platform integrates course calendars and student notes and customizes study questions and flash cards to help reinforce class lessons.

In order to translate Osmosis to the biomedical sciences, the grant PIs added a machine learning recommendation system and increased questions specific to the biosciences in the areas of anatomy, biochemistry, genetics, and neuroscience. The project faced challenges (such as the departure, for faculty positions, of all but two of the team members) that kept it from fully realizing all of its goals, but it successfully extended Osmosis to doctoral students taking classes at the School of Medicine and was able to provide complimentary access to the Osmosis platform to all biomedical graduate students at JHU now and in the future. For the biomedical graduate students taking classes at the School of Medicine, the average student spent approximately 39.5 hours on

---

<sup>6</sup> Throughout the program, the Excellerator team has been mindful of the legitimate demands on doctoral student time, and all of the competitions, courses, and events were designed to minimize intrusion on students' laboratory schedules.

the Osmosis platform answering 931 questions, with more than 7,500 questions and flashcards crowd-sourced from these students. Owing in part to support under this grant, the PIs have published four papers on Osmosis in multiple peer-reviewed journals, including the *Annals of Internal Medicine* where support from the PII was acknowledged.<sup>7</sup>

Seeking to increase the relevance of doctoral student training to real time public health policy needs, another PII grant, the ***Public Health Policy Practicum***, undertook to develop a field-based complement to the PhD program that would partner PhD students with stakeholders in the public health policy process. By engaging students in field-based learning early in their doctoral programs, the practicum would serve to bridge the gap between academic and policy approaches to public health problems.

In response to the criticism that public health professionals often lack the skills to effectively respond to the needs of policymakers, the Public Health Policy Practicum made three additions to the curriculum and first-year core course offering for the doctoral program in the Department of Health Policy and Management at BSPH. The additions were designed to emphasize the importance of public health research to policymaking, show students how to effectively translate their knowledge for policymakers, and provide students with an opportunity to practice the skills necessary to bring policymakers and academics closer together on important public health issues. The Department also developed a service-learning component for one of its first-year courses that matched students to organizations with specific policy needs. The curricular changes were well received by students, and the service-learning component was particularly well reviewed by both students and partner organizations. In fact, last year one of the service-learning projects was recognized with an award granted by the MPH students.

In addition to the curricular changes, the Department of Health Policy and Management developed a Policy Scholars program available to second-year policy students. In the first year of the program, the department named three Policy Scholars, helping those students secure field placements with organizations and government agencies in the area of public health policymaking—the Baltimore City Mayor’s Office, the Baltimore City Health Department, and Advocates for Children and Youth. One of the Policy Scholars also served as a teaching assistant in the newly added Formulating Policy course.

Bridging different worlds to solve global public health problems was also at the core of the PII grant ***Sustainability & Health Interdisciplinary Doctoral Training Program***, which sought to build a new interdisciplinary model for working on issues in the areas of sustainability and health. As environmental and health issues become more complex and intertwined, doctoral students will need to be prepared to find solutions by reaching across the traditional barriers of established disciplines and conducting research with diverse collaborators. Students will also need to prepare for an increasingly interdisciplinary funding climate and job market.

---

<sup>7</sup> The PIs ask that their report not be published by the Provost’s Office.



The key outcome of the grant was a new doctoral course, “Interdisciplinary Research Practice in Sustainability & Health,” which focused on training students to carry out interdisciplinary research at the intersection of public health, environmental science, engineering, and the social, management, and policy sciences.<sup>8</sup> The course was built around weekly seminars with guest faculty presenting overviews of multiple, interrelated disciplines in the areas of sustainability and health. The students then engaged with case studies, which helped them examine methodologies employed in various disciplines and learn how to marshal them to address complex sustainability and health challenges. A final capstone project required students to work in interdisciplinary research groups to use the knowledge and interdisciplinary research skills gained from the course to address an important sustainability and health problem.

The Interdisciplinary Research Practice course was open to PhD students from across the divisions, and nine students from four different departments enrolled in the pilot course. Participating students were generally satisfied with the course

## V. Conclusions

The eight projects funded under the PhD Innovation Initiative represent an important advance in JHU’s commitment to best prepare its graduate students and postdoctoral scholars for a wide range of academic and nonacademic careers, while continuing to foster the high-caliber research climate that is a hallmark of JHU graduate and postdoctoral education. Through the PII, these grants variously sought to: 1) prepare students to become successful academics by honing their pedagogical skills; 2) provide the networks and resources necessary to propel students to success outside of academia; and 3) internally harnessing students’ creativity to promote invention and an entrepreneurial culture while modifying graduate education so that curricula across the disciplines are best set up for today’s interdisciplinary and applied job market.

The nature of the project limited funding to two years – now that these projects have concluded, the University is faced with the need to decide whether any of the existing projects should be continued with additional central or divisional resources. Below, we provide a summary of future plans for the eight projects and recommendations regarding additional funding:

***PFFTA:*** The PhD and Postdoctoral Fellow Career and Professional Development Working Group Report and Proposal has recommended that the University work to secure permanent funding for PFFTA in order to institutionalize it throughout the divisions and build upon its success. Enrollment in PFFTA is expected to increase in the coming years, as the program is now being used to train doctoral and postdoctoral scholars who are awarded teaching fellowships in multiple divisions.

---

<sup>8</sup> The original aim under the grant was to create an interdisciplinary PhD concentration/certificate program focused on critical environmental issues in the health sciences and while that project is still ongoing, the primary focus of the grant was building the core interdisciplinary course and piloting it with a group of doctoral students.

***BCI/BME EDGE:*** In light of their obvious synergies, the BCI and BME EDGE have begun to work together and collaborate on certain aspects, including preparing interns for industry via a class focused on professional development skills and an intellectual property seminar. Although a recently submitted joint NSF grant application was not funded, the two groups are open to continuing to seek additional joint funding opportunities and may further integrate operations in the future. Moreover, the BCI and BME EDGE have been so well received by both faculty and administrators in the School of Medicine that the internship offerings are being adapted to fit the requirements of other schools at JHU. Finally, BME EDGE was recently asked to provide a letter of support for a NSF Research Traineeship proposal that would bridge BME and neuroscience and open internship opportunities to neuroscience students, emphasizing the demand for such a program and demonstrating that BME EDGE is continuing to grow in its ability to enable graduate students to pursue non-academic career paths.

***CLE Professional Development:*** The Professional Development program of seven-week modules offered by the Center for Leadership Education (CLE) is being funded by the Dean of Engineering and from the CLE Carey Endowment and has applied for funding from the National Science Foundation. The CLE anticipates that the modules will be funded primarily internally in the near future using some of its Carey Endowment and up to \$50,000 from the Dean of Engineering. CLE will also seek funding external to WSE by participating in grant proposals (NSF, NIH, etc.) and by asking the Deans of the other participating schools to share the cost of the program.

***PhD Translational Excellerator:*** The early successes of the Excellerator have led to a surge of student interest. As a result, the competitions and the supported courses continue to expand, with the second fall course two to three times the size of the original class. The number of industry contacts and mentors has continued to grow as well, and mentor-mentee relationships are increasingly carrying over after Excellerator sessions conclude. MEP has invested time and resources into locating funding sources to sustain the program, while at the same time expanding its mission. A new MEP initiative, for instance, encourages JHU students to work with Maryland-based community leaders and residents to work together on identifying and solving clinical challenges.<sup>9</sup>

***Learning Through Osmosis:*** Osmosis is now a full-fledged commercial venture, and through the PII complimentary access to the platform will continue to be offered to JHU biomedical graduate students.

***Public Health Policy Practicum:*** The Department has further plans to enlist the Policy Scholars to assist in developing a new course on Public Health and Public Policy aimed at legislative staff.

***Sustainability & Health Interdisciplinary Doctoral Training Program:*** With a few tweaks, the organizers are planning to offer it again in the future; they further plan to

---

<sup>9</sup> MEP has asked that the Provost's Office keep their report confidential out of concern for the sensitive nature of IP filings and commercial negotiations.

continue to develop a module-based interdisciplinary certificate program in Sustainability and Health.

Johns Hopkins, as a leader in doctoral and postdoctoral education, is well placed to enhance the graduate school experience and position graduate students and postdoctoral fellows for success beyond the University. With modest further investment, the innovations of the PII can be sustained and increased – building exemplary scholars and paving exciting new paths to success.

PhD Innovation Initiative Projects and Principal Investigators

---

Project Title	PIs/Departments/Divisions
Biomedical Careers Initiative (BCI)	Espenshade & Gogos Center for Innovation in Biomedical Graduate Education, School of Medicine
BME EDGE: Extramural Development in Graduate Education	McVeigh & Yazdi Department of Biomedical Engineering, School of Medicine
Learning through Osmosis: A Collaborative Platform for Biomedical Education	Gaglani, Haynes, DeLeon, Goldberg, Lorsch & Mitchell School of Medicine
PhD Translational Excellerator	Kut, Denduluri, Chow, Hickey & Thakor Department of Biomedical Engineering and Medical and Educational Perspectives (MEP) Program, School of Medicine
Preparing Future Faculty Teaching Academy (PFFTA)	Dalrymple, Clark, Shingles, Wagner & Jeffries Center for Educational Resources
Professional Development for PhD Students and Post-Doctoral Fellows	Rice, Reiser, Smedick, Weihs & Creamer Center for Leadership Education (CLE), Whiting School of Engineering
Public Health Policy Practicum: Connecting Scholarship and Policy Through Doctoral Education	Frattaroli & Pollack Department of Health Policy and Management, Bloomberg School of Public Health
Sustainability & Health Interdisciplinary Doctoral Training Program	Haine, Hobbs, Parker & Monopolis Earth and Planetary Sciences and Global Environmental Change and Sustainability Program, Krieger School of Arts & Sciences; Geography and Environmental Engineering, Whiting School of Engineering