

## CALL FOR PROPOSALS

### Hopkins Pathways to PhD Programs Initiative

Innovation funding grants for summer and post-baccalaureate programs in non-STEM fields for students traditionally underrepresented in the academy

Proposals Due: May 31, 2022

#### I. Background

Johns Hopkins University was founded as the nation's first research university. It continues to be the home for several thousand doctoral students, across more than 60 fields of study, pursuing an independent, scholarly PhD degree. In its ongoing commitment to excellence, JHU seeks to ensure that it is attracting the most talented and best prepared students to all of its PhD programs. One strategy for doing so is to create "pathways programs". Pathways programs can identify highly curious, creative, and motivated students, can excite them to continue their education at the graduate level, can connect them with JHU faculty in fields of interest, and can contribute to their readiness for the graduate student application process and graduate level research and scholarship. **While slots in pathways programs in STEM fields at Johns Hopkins are included as part of the [Vivien Thomas Scholars Initiative](#), there has not previously been centralized support for programs providing pathways to non-STEM PhD fields. The Hopkins Pathways to PhD Programs initiative is designed to address that gap.**



THIS INITIATIVE CREATES  
INNOVATIVE, WELL-  
MENTORED, SUSTAINABLE  
PATHWAYS PROGRAMS IN  
NON-STEM FIELDS TO  
CONTRIBUTE TO THE  
EXCELLENCE AND DIVERSITY  
OF JHU PhD PROGRAMS  
ACROSS THE UNIVERSITY

#### II. What are pathways programs?

Pathways programs are a best practice strategy to identify, excite, and provide relevant professional experiences for talented students traditionally underrepresented in graduate education<sup>1</sup>. This model builds on the highly successful experience of programs like the [Leadership Alliance](#)-JHU summer programs, the [JHU Summer Humanities Collaboratory](#), and several other summer programs that

attract college students to JHU for summer research experiences in humanities, social sciences, bioethics, public health, and in STEM fields.

One aim of these programs is to increase the likelihood that a highly accomplished

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<sup>1</sup> We view "underrepresented" expansively and mean for it to include individuals from backgrounds that are less likely to be enrolled in advanced graduate studies in a given academic field. We draw on the [National Institutes of Health definitions of underrepresented](#) for the purposes of this initiative, which includes: (1) individuals from underrepresented racial and ethnic groups, (2) individuals with disabilities; (3) individuals from disadvantaged backgrounds; (4) individuals from low socioeconomic status backgrounds; and/or (5) women with any of the backgrounds included in 1 through 4 if they are underrepresented in a given field of study.

student chooses Johns Hopkins rather than another elite institution; but the primary goal of pathways programs is to *increase the overall pool* of competitive students, nationally, in a field or discipline. Literature suggests that summer research opportunities and 1-2 year post-baccalaureate (“post-bac”) programs allow college students or recent college graduates with the extraordinary aptitude and drive we expect in our PhD students to gain deeper exposure to a given field of study; to expand and deepen their research experiences and preparation; to participate in sessions related to professional development and demystifying graduate school; and to develop mentoring and academic networks.

Summer and post-bac programs also allow high powered JHU faculty in relevant fields to take notice of talented students whose portfolios may otherwise garner less attention in high volume competitive PhD admissions, perhaps because students attended non-elite colleges, had fewer research experiences, or had transcripts with an early “blemish”.

Published literature related to pathways programs comes predominantly from the laboratory sciences, where most such programs historically have been funded. Multiple studies have confirmed STEM pathways programs’ track record in changing the trajectory for many college students from underrepresented backgrounds. **The Hopkins Pathways to PhD initiative will create several pathways programs at JHU in non-STEM fields with the goal of achieving similar outcomes.**

Research from STEM fields provides an important parallel. A review of a large NIH initiative to enhance diversity in biomedical data science found that lack of preparation was a key barrier to further academic advancement,<sup>i</sup> with many interested students never having had sustained, hands-on experience in their field of interest<sup>ii</sup>. Yet, over a 20 year period, among students who completed a summer diversity research experience, 52% went on to graduate careers, compared to 9% of demographically similar STEM college graduates who did not participate.<sup>iii</sup> An NIH-funded STEM undergraduate program reported 70% of alumni going to graduate school, with 29% attaining a PhD, a rate described to be “almost twice that seen for undergraduates supported by NIGMS supplements to enhance diversity, and four times higher than that modeled for biology baccalaureates in general.”<sup>iv</sup> Programs also are reported to solidify students’ graduate school plans<sup>v</sup> and build confidence in research.<sup>vi</sup> Among over 1,000 students who completed federally funded post-bac “PREP” programs nationally, 65% matriculated into PhD programs with associated increases in graduate program diversity.<sup>vii</sup>

Our own JHU data—also predominantly from STEM fields-- are significant: 59% of participating students have now completed graduate degrees, and 97% of post-bac students have matriculated into PhD or MD/PHD programs. The Vivien Thomas Scholars Initiative builds on these successes by now providing additional JHU pathways slots for students interested in STEM fields. **This Hopkins Pathways to PhD initiative creates opportunities to build on these successes and to establish innovative, well-mentored, and sustainable pathways programs *in non-STEM fields* to contribute to the excellence and the diversity of JHU PhD programs.**

### **III. The Opportunity: Creating Pathways Programs at JHU in non-STEM fields**

To further the identification, excitement, network building, and experience of students

from backgrounds underrepresented in non-STEM graduate academic programs, Johns Hopkins University is making funds available, on a competitive basis, to create attractive, impactful, engaging, and sustainable summer and post-bac programs in non-STEM academic fields.

- Funding may be used to support summer programs, post-bac programs, or programs that provide a combination of these types of training.
  - Post-bac programs may be coupled with the awarding of a master's degree in a relevant field, or they may be standalone training and/or research experiences.
  - Programs should be designed to expose, prepare, engage, and excite students toward consideration of the PhD degree as a foundational orientation of the pathways program.
  - We expect that programs generally will be designed to prepare students for a "family" of related PhD programs, but with justification may be related to a single PhD program area.
  - Non-STEM is defined here as any PhD program area that is *not included* under the [Vivien Thomas Scholars Initiative](#).
- ***All proposals must discuss how their proposed program provides or addresses each of the following:***
    - **Target population and Selection Criteria:** Applications must include a description of their target audience for this program as well as the process by which students will be selected.
    - **Scholarly and/or research experiences in the relevant field(s):** Students must participate in supervised research, field work, or scholarship relevant to the academic field(s) during the program, culminating in some form of mentored capstone, presentation, or written product based on their research and/or work during the program. Scholarly experiences should ensure feedback to students throughout.
    - **Academic or skill building activities:** This may include courses, seminars, workshops, lectures, or supplemental instruction and/or mentored independent work intended to build specified areas of knowledge and/or a specified set of skills appropriate for the relevant field(s).
    - **Mentoring of students:** Programs must have a mentoring plan. This may involve having a primary mentor assigned for each student and/or a group mentoring approach. Programs must designate who the mentor or mentors are, their role or title, and the frequency of meetings likely to occur. Experience of mentors working with undergraduate students and on initiatives related to diversity, equity, and inclusion is helpful. Co-mentoring teams, including with existing graduate students or postdoctoral trainees, are welcome.

- **Interaction with faculty in the field(s):** Programs must build in opportunities for pathways students to interact with faculty from the relevant PhD program(s), including those on PhD admissions committees. This may be through seminars, supervision of research, course work, individual or small group mentoring sessions, presentations of work in progress, presentations of faculty work, or more informal coffees or the equivalent. The goal is to provide opportunities for program students to get to know faculty and for faculty to get to know students.
- **Some social and/or community building activities.** Per below, JHU will provide staffing centrally to organize social activities and professional development seminars. However, it will be helpful for programs themselves to have some amount of community building in their programs. This may be among program students only or between program students and other students (e.g., existing graduate students) in the relevant field. This ideally will include activities and experiences designed to engender a sense of belonging and positive community experiences while at JHU. Some interaction with existing PhD students is encouraged.
- **Demystifying graduate school programming:** Again, overall programming to demystify graduate school and the application process will be provided centrally. Partnering or building on this at the local level, discussing what a PhD looks like in the local, relevant field(s) and walking through how admissions works will be helpful for individual programs to include.
- **Outreach and Marketing of the program:** While JHU will engage in some limited amount of outreach for the overall list of pathways programs offered across the university, programs are expected to engage in their own outreach within their fields or disciplines to alert prospective applicants to this opportunity. Applications must explain their field-specific outreach plans.
- **Timelines:** Programs should include a timeline related to program planning and start up, outreach, admissions, and the delivery of programming. It is expected that summer programming will begin in 2023 and that postbac programming will start no later than summer or fall of 2023.
- **A sustainability plan:** The purpose of these funds from the President and Provost is to demonstrate the feasibility, placement success, and excitement of JHU schools, programs, or disciplinary subgroups in offering pathways to PhD programming in a select number of non-STEM areas. It is the expectation of this initiative that if programs are successful in attracting students, having students go on to graduate school, and in exciting their own JHU faculty to support pathways to PhD programming, they will also identify through their schools, departments, or external sources continued support for the programming. Program applications must include a letter from their dean speaking to the commitment to sustainability.

*JHU will provide support to programs and pathways students centrally as follows:*

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- **Outreach and marketing:** JHU will engage centrally in some amount of outreach

including to a broad set of institutional peers about all of its summer and post-baccalaureate pathways programs. Programs are expected, however, to do field-specific outreach within their own networks to promote awareness of their pathways programs.

- **Weekly summer or monthly post-bac programming will be provided centrally.** This will include professional development, general tips about what a PhD involves and applying to graduate school, sessions on imposter syndrome and the culture of academia, and social activities. Programs are expected to allow trainees release time to participate in these activities.
- **Evaluation:** JHU will conduct an evaluation of students' experiences and next steps. Programs are expected to collaborate on and facilitate this evaluation.

#### Program Length:

Summer research experiences at JHU and at peer institutions have traditionally been of 6-10 weeks in length. While we expect most pathways programs to continue to be of that length, any length will be considered if it can be adequately justified in achieving the key objectives of the summer pathways program.

Post-bac programs may range from 1-2 academic years in length. Whatever length is chosen must be justified as able to achieve the key objectives of the pathways program.

#### Duration of Funding:

Funding is available for 3-5 years of programming, depending on programs' budgets. We recognize that, as programs gain additional experience, they may want to fine tune their outreach plans, mentoring strategies or training approaches. The initiative also expects schools to develop sustainability plans for programs by the end of the funding period, either through external funds, deans' office funds, departmental funds, or a combination thereof.

#### Budget:

The President and Provost are allocating \$5 million toward this effort. The expectation is that 3-5 programs will be funded across the university. Each program will be awarded a total budget of \$400,000-\$1.2 million *for all years combined (the total for the 3-5-year budget period)*. Budgets must include the following:

- **Stipend:** Students should be provided with a standard stipend of \$575 per week for summer students. Post-bac students should be paid [the minimum NIH stipend for post-bac students](#) (currently \$32,950/year). Students participating in programs must have health insurance. Health insurance should be provided if students do not otherwise have health insurance.

- **Housing:** For summer students, the budget must include provision of housing, and program planners should identify JHU or other summer student housing that will be provided for pathways summer students. For post-bac students, the assumption is that their stipend will cover the cost of housing.
- **Travel:** Budgets should include travel costs to get to and from JHU from the student's home location.
- **Other costs:** Programs may include other expenses as needed and relevant to their program, such as a small travel budget for students to professional conferences, materials fees, faculty or mentor support, staff support, or other items that programs believe can be justified to support the objectives of the pathways program.

***Program administrative structure must include:***

An oversight committee: Programs should have an oversight committee of at least three individuals. The oversight committee is responsible for designing the overall program, designing outreach and recruitment strategies, designing admissions strategies, checking in periodically for troubleshooting of program components, and checking in about how individual students are doing once enrolled. The oversight committee should meet regularly and should be planning for sustainability of the program from the beginning.

#### **IV. Eligibility**

- Proposals may be submitted by individual faculty, teams of faculty, or faculty with staff and/or students on their teams.
- While it is expected that Pathways programs will generally be associated with a small cluster of PhD programs, Pathways programs may be associated with a single PhD program with sufficient justification. Programs may cut across JHU schools for students in fields that transcend divisions.
- PhD programs to be associated with this application are JHU PhD programs NOT included under the [Vivien Thomas Scholars Initiative](#).
- Proposed initiatives may include significant involvement of JHU offices whose expertise is relevant to this award. Those offices, however, must write a letter of support indicating that they have the capacity to take on any additional responsibilities associated with the proposed program.
- The PI of record must be a JHU full-time faculty member.

#### **V. Timeline**

- March 14, 2022: Call for Proposals released
- April 5, 2022 at 12:00PM EST: Zoom Q&A with Provost's office about this Call for Proposals
- May 31, 2022: Proposals due

- June 30, 2022: Funding decisions announced

**Review Criteria:**

- a. Overall program design: are appropriate components included and is a convincing case made that these are the right components for a pathways program in the relevant field(s), including for sound scholarly development in the field(s)?
- b. Experience of program leadership or staff in programming and mentoring, including with underrepresented students
- c. Is outreach, recruitment, and admissions plan appropriate and convincing?
- d. Appropriateness of Mentoring plans
- e. Appropriate oversight plan, including description of oversight committee
- f. Inclusion of or exposure to PhD program faculty and faculty on admissions committees of relevant PhD fields
- g. Networking with and exposure to existing PhD students and JHU PhD program expectations.
- h. Is budget reasonable for stated goals?
- i. Were measurable objectives included and are these compelling?
- j. School or departmental commitment in terms of in-kind support
- k. School or departmental commitment in terms of sustainability for future years?
- l. Overall score

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<sup>i</sup> Canner, J. E., McEligot, A. J., Pérez, M. E., Qian, L., & Zhang, X. (2017). Enhancing diversity in biomedical data science. *Ethnicity & disease*, 27(2), 107.

<sup>ii</sup> Marie-Elena Reyes. (2011). Unique Challenges for Women Of Color in STEM Transferring from Community Colleges to University. *Harvard Educational Review*. DOI: [10.17763/haer.81.2.324m5t1535026g76](https://doi.org/10.17763/haer.81.2.324m5t1535026g76)

<sup>iii</sup> Foertsch, J. (2019). Impacts of Undergraduate Research Programs Focused on Underrepresented Minorities: Twenty Years of Gradual Progress and Practices That Contributed to It. *Scholarship and Practice of Undergraduate Research*, 3(2), 31-37

<sup>iv</sup> <https://www.nigms.nih.gov/News/reports/Documents/MARC-paper031416.pdf>

<sup>v</sup> [file:///C:/Users/nkass1/Downloads/ASEE\\_2015\\_-\\_Examining\\_Student\\_Outcomes\\_from\\_a\\_Chemical\\_Engineering\\_REU.pdf](file:///C:/Users/nkass1/Downloads/ASEE_2015_-_Examining_Student_Outcomes_from_a_Chemical_Engineering_REU.pdf)

<sup>vi</sup> [file:///C:/Users/nkass1/Downloads/ASEE\\_proceedings\\_REU\\_program\\_final.pdf](file:///C:/Users/nkass1/Downloads/ASEE_proceedings_REU_program_final.pdf)

re<sup>vii</sup> Foertsch 2019