I. Key Dates
RFA Announcement: April 2, 2015
Applications Due*: May 14, 2015 at 5:00pm
Funding Decisions Announced: Late July, 2015
Anticipated Funding Start Date: September 1, 2015

* All applications must be submitted online at the following URL: https://apply.catalyst.harvard.edu/

II. Award Amount
Applicants may request awards up to $75,000 (direct costs only) per year for a one-year period. The total budget amount should be commensurate with the scope of work. Budgets spanning the entire funding range are encouraged. A total of three to six awards will be made.

III. Overview and Goals
The Harvard Catalyst Health Disparities Research Program increases the prominence and impact of research on health disparities at Harvard. The program promotes health equity by facilitating new collaborative research, education, and training opportunities in the biomedical, clinical, health policy, and social sciences to address racial, ethnic, socioeconomic, gender, sexual orientation, and other disparities in health and healthcare. With this announcement, the Health Disparities Research Program is inviting applications for pilot grants to support novel research partnerships with the potential to generate new evidence, methodologies, or tools that will contribute to translational research fostering deeper understanding of the roles of psychosocial stress response in human health and health disparity.

This pilot grant opportunity seeks to engage a broad range of basic, clinical, public health, and other investigators from across the Harvard community, and will provide seed money for cutting-edge interdisciplinary translational research to enhance understanding of fundamental biological mechanisms involved in disease conditions that disproportionately affect health disparity populations and to develop therapies or interventions that can directly or demonstrably contribute to the reduction or elimination of health disparities. This pilot grant opportunity will provide seed funding for collaborative pilot grants. Through this mechanism, we are seeking to create teams of investigators that ultimately will be self-sustaining, thus laying the groundwork for an even broader and more robust community of stress and health disparities investigators than exist at present.
Grants will begin approximately in September 2015 and should be completed within one year. Grantees will be required to attend two grantee meetings as a condition of award – an initial meeting in January of 2016, (four months after the start date), and then a second meeting in August 2016, (12 months after the start date) – where grantees will share findings and discuss implications of their work. It is expected that the funded projects will lead to additional funding from other sources, including both federal and non-federal funders, which will extend results of the pilot project and will broaden the goals, scope, and scale of the investigator’s research program. We anticipate that Harvard Catalyst Stress and Health Disparities investigators may be eligible to participate in the Reactor Program, which is designed to provide additional assistance and resources to promising research projects (http://catalyst.harvard.edu/programs/reactor).

In section IV below, specific research priority areas are listed which represent topics covered during the Stress and Health Disparities Symposium held on October 17 and 18, 2013. Sponsored by Harvard Catalyst’s Health Disparities Research Program, the symposium “Stress and Health Disparities: Merging Laboratory, Clinical, and Population Scientific Approaches” brought together leading laboratory and clinical scientists from around the world to dialog with the epidemiological community about how to advance current research approaches towards improved understanding of psychological stress and health outcomes on a population level.

The two priority areas for this pilot funding opportunity are as follows: (1) Stress Biology and Disease Pathways; and (2) Measuring Stressors, Stress Response, and Resiliency. Applications in these areas are required. This RFA is not designed to provide core funding for existing basic science or clinical/behavioral/policy interventions, and such studies will be considered non-responsive to this RFA. Health Disparities Research Program Leaders encourage research teams to discuss their proposal with program staff prior to submission. To arrange a time to speak, please email Kathryn Smith, Program Manager, at kathryn_smith@hms.harvard.edu.

IV. Research Priority Areas
Psychological stress is a powerful modulator of human physiology and behavior. Epidemiologic evidence suggests a considerable influence of stress on major health outcomes, including risks for adverse pregnancy outcomes, cardiovascular disease, and cancer progression. Excessive workload, discrimination, threats of or actual exposure to violence, low income, serious illness or death of family members, and limitations in personal freedom are all sources of psychological stress that affect mental wellbeing to varying extent across socioeconomic groups, races, gender, cultures and geographic areas. The degree to which such stressful exposures contribute to health inequalities, particularly disparities in mortality rates remains to be elucidated.

An important limitation of existing population-based studies has been the absence of valid, non-invasive, and low-cost biomarkers of acute and chronic stress exposure and response. Emerging evidence from animal models and clinical studies points towards a multitude of genomic, proteomic, and metabolomic candidates that may elucidate how stress contributes to disease and premature mortality. How can these emergent markers be incorporated into clinical and epidemiological studies designed to understand the potential causal role and population burden of stress in health disparities?

For the purposes of this RFA, the term psychosocial stress is being used to refer to acute or chronic events of psychological or social origin which challenge the homeostatic state of biological systems, including the neuroendocrine and sympathoadrenal stress response systems, via corticolimbic pathways. Psychosocial stressors include, but are not limited to, exposure to adverse environments and life experiences such as natural disasters (e.g., earthquakes and hurricanes), crowding or isolation, relative position in a social hierarchy, stigma and discrimination, catastrophic/traumatic events (e.g., war, terrorism), loss of job, disease, family violence, deprivation, child abuse, adverse social environments or situations (e.g., being a chronic caregiver to an ailing family member), or detrimental parental behaviors. Psychosocial stress stands in contrast to systemic stress which
results from physical challenges to the body, such as exercise or injury/inflammation that input into the stress response system. Some stressors can be both psychosocial and systemic. Stress exposure is defined as the experience of being exposed to an external psychosocial stressor; exposure might occur during any stage of development. Research focused solely on stressors of a non-psychosocial nature (including but not limited to oxidative and physical stressors) is not the focus of this opportunity and applications examining non-psychosocial stress will be considered non-responsive. Below are the two research priority areas for this RFA:

1) Stress Biology and Disease Pathways
Multiple and potentially bidirectional pathways underlying the behavioral, environmental, and psychosocial link(s) between psychosocial stressors and behaviors may ultimately impact biological function, health, disease, and health disparities at the population level. For example, a host of evidence has convincingly shown that bi-directional alterations in neural networks and peripheral systems can occur in response to psychosocial stressors. Sustained psychosocial stress over days/weeks reduces neurons in the hippocampus and affects neurogenesis. Research in rodents has shown that lack of maternal care affects epigenetic regulation resulting in faulty glucocorticoid receptor expression. Both chronic and acute psychosocial stressors in humans can increase sympathetic activity, impair vagal tone, alter HPA reactivity, lead to endothelial dysfunction, and increase proinflammatory processes. Applicants are encouraged to use innovative and integrative designs to elucidate how psychological, social, and psychosocial environmental factors impact the processes by which psychosocial stressors contribute to disease and health disparities. Applications examining moderating factors such as individual demographics (age, gender/sex, ethnicity) and psychological (vulnerabilities, resilience) differences, risk factors, timing of exposure to stressors, and environments are desirable. This research will provide a deeper understanding of the psychological, environmental, and social processes that ultimately connect psychosocial stress and behaviors with physiological processes, health, disease, and population health disparities.

2) Measuring Stressors, Stress Response, and Resiliency
To date, measurement of exposure to psychosocial stressors relies on self-report or multi-informant data via inventories of daily hassles, occurrence and impact of stressful life events, and their impact on functioning. Other measures of psychosocial stress involve laboratory-based assays and behavioral indicators. Measurement may employ technological devices. Some measures of exposure have involved the use of daily diaries and handheld devices to record frequency and intensity of specific stressful experiences. While informative, extant measures of exposure to psychosocial stress can represent barriers to application in large-scale population studies detecting gene-by-environment interactive effects. First, they generally detect static single agent exposures, thereby offering minimal information about changes in exposure and responses over time. Second, self-report is prone to recall and social desirability biases that can yield inaccurate data. Third, many of the biological and behavioral indicators of stress exposure or stress response are non-specific. Fourth, while previous research has demonstrated associations between exposure to stressors and health outcomes, the lack of temporal sequencing of behavioral, cognitive, and physiological mechanisms of these associations remain unclear. Thus, for research that investigates the contribution of multiple environmental exposures impacting health and disease in conjunction with genetic and biologic factors, more precise and quantifiable measurement of individualized exposures to stressors, stress response, and resilience/protective factors is paramount.

Proposals that focus on the development, improvement and/or adaptation, and validation of measurement technologies and tools that detect personal exposure to psychosocial stress with a potential for future deployment in clinical and population-based studies are encouraged.
Examples include, but are not limited to the following: (1) methods that integrate emerging information technology to enable near real-time telemetry of stress exposure information; (2) methods that couple physiological, self-reported, and behavioral indicators of exposure and/or response; (3) methodological approaches that integrate macro-level (e.g., neighborhood characteristics) with individual-level data (e.g., family environment); (4) standardization or adaptation of exposure methods across human studies and animal models; (5) clinical and translational research on prospective stress, stress response biomarkers for disease diagnostics, and prognosis in health disparity populations; (6) development and/or validation of novel technologies, diagnostic imaging, and other diagnostic procedures in health disparity populations.

V. Eligibility
Inter-disciplinary and inter-institutional collaborations are encouraged. This RFA encourages applications from junior or mid-level investigators. For junior investigators, appropriate supervision and mentoring must be provided. The proposed project must be collaborative – single-investigator projects are not responsive to the RFA. At least one co-investigator is required and there is no limit to the number of co-investigators that may be listed. While researchers may submit only one application as principal investigator, they may be listed as a co-investigator on multiple applications.

Principal Investigator Eligibility
Any faculty member who holds a Harvard University appointment as assistant professor, associate professor, or professor, irrespective of type of degree or institutional affiliation is eligible to be the principal investigator. Investigators who hold appointments such as lecturer, instructor, or research scientist/associate are eligible to apply as principal investigator if approved by and with the support of their department chair. Investigators at these ranks must provide a letter from their department/division chief, as appropriate, verifying their appointment title and status at Harvard and departmental/divisional support of the application.

Co-Investigator Eligibility
A co-investigator is a substantial contributor who helps conceive of the experimental idea, contributes to the intellectual development of the project, and/or designs the study or part thereof (scientific or technical details), and will be involved in the study throughout the funding year. Co-investigators can be from any institution, however if you are a working with a co-investigator from an outside institution, please provide justification of how the external expertise adds to the project. While trainees (e.g. students, clinical trainees, post-doctoral fellows, clinical fellows) cannot serve as the principal investigator on an application, they may serve as co-investigators if they make a substantial contribution to the project.

For questions regarding eligibility, see contact information below (section IX).

VI. Allowable and Unallowable Costs
- Requests may not exceed $75,000 (direct costs only). The award amount will be determined at the time of award after budgets have been reviewed in order to better determine if there are additional Harvard Catalyst resources that can be leveraged.
- Faculty salary support: Applicants may request faculty salary support for up to 5% effort in compliance with the NIH salary cap. In unusual circumstances, exceptions to this 5% limit may be granted by Harvard Catalyst if well justified. While there is a 5% cap on the amount of effort supported by the funds under this pilot award, there is no minimum or maximum for effort committed to the proposed projects beyond any minimums and maximums which may be imposed by the effort policies of an applicant’s school/institution. Committed effort in excess of that supported through this award and any salary costs that exceed the NIH salary cap must be cost-shared.
• Other personnel support: Salary and fringe benefits are allowed for other participatory personnel such as research fellows, research assistants, clinical coordinators, research nurses, etc. However, salary support for ancillary personnel, such as mentors, administrative, or grant management staff is not allowed.
• Non-personnel research expenses: All expenses must be directly related to the proposed research and part of the approved budget categories. Some allowable expenses are supplies, equipment (under limited circumstances; must be specifically requested and justified in the proposal), travel to research meetings, study subject stipends, study subject transportation costs, and statistical and computational services including personnel and computer time.
• Unallowable costs: General office supplies and equipment, computers and laptops (unless specifically requested and justified), membership dues and fees, subscription costs, mailing costs, rent, and other costs generally identified as facilities and administrative are not allowed.
• Facilities and administrative costs: Facilities and administrative costs, also known as indirect costs, are not allowed.
• Subcontracts: Subcontracts to other sites are not permitted. A separate budget page must be submitted from all sites that are to receive grant funds. Subsequently, Harvard Catalyst will directly award funds to all sites.

VII. Application Submission Information
The online application form in Apply Hub requires login via Harvard Medical School eCommons username and password, or via Harvard University ID (HUID) number and PIN (http://catalyst.harvard.edu/services/loginfaq.html). If you have forgotten either of these, click on the “Forgot your PIN / Password?” on the Apply Hub login page. If you do not have either of these, please contact Amy Webber at grants@catalyst.harvard.edu for assistance.

If you have not used Apply Hub before, you will be asked to register on a “My Account” page with your name and your email address.

The online application itself is a two-part form and can be accessed at: https://apply.catalyst.harvard.edu/. Please provide the following information on the form:

Part 1 – The Application Form and Supporting Documentation
• Full name of the submitter
• Email address of the submitter
• Investigator Information
  o Full name of investigator (edit if not the same as submitter)
  o Email address of the investigator (edit if not the same as submitter)
  o PI NIH eRA Commons username
  o Degree(s), faculty rank/position, institution, department, division (optional), and phone number
  o Gender, ethnicity, race (all optional)
  o Sponsored Program Administrator’s email address
  o Optional administrative contact name, phone number, and email address
• Team information
  o Co-Investigator(s) (Co-I): A Co-I is required, and there is no limit to the number of Co-Is that may be listed on an application.
    ▪ Full name of Co-I
    ▪ Email address of Co-I
- Degree(s), faculty rank/position, institution, department, division (optional), and phone number
- Gender, ethnicity, race (all optional)

- **Administrative Questions**
  - Does your study require IRB approval? If yes, do you have it?
  - Does your study require IACUC approval? If yes, do you have it?
  - Have you ever applied for funding or published with any of co-investigators? If yes, please describe.
  - Which research priority area does this application relate to? (see section IV)
  - Does your research relate to child health?
  - Does the proposed project contribute to the development, implementation or evaluation of evidence-based policy affecting the health of communities and populations?

- **Supporting Documentation**
  - **Administrative Documents (to be uploaded as one PDF)**
    - For each institution that will receive funds, the following forms must be completed:
      - PHS 398 Face Page, to be signed by institutional official. One Face Page per site requesting funds. Please remember that each site requesting funds will receive a separate award agreement to provide the funding; pass-through subawards are not allowed.
      - PHS 398 Form Page 4: Detailed budget for one year. Refer to section VI for allowable and unallowable costs. If more than one site will share the budget, the combined total should not exceed $75,000 (direct costs only) and each site is required to submit a separate budget page.
      - Narrative Budget Justification from each site requesting funds.
      - Statement of Work: A brief statement describing the work to be performed at each institution.
    - If IRB and/or IACUC approval is required and has not been obtained, please indicate the status of, and the plans for, obtaining approval. Funds will not be released without the documentation that the necessary approvals have been obtained. The strength of the plan for obtaining the necessary approvals will be assessed as part of the review process.
  - Biographical Sketches for the principal investigator, co-investigators and significant collaborators. An eRA Commons ID is requested for all co-investigators.
  - Letter from the principal investigator’s department/division verifying appointment title if investigator’s appointment is other than assistant professor, associate professor, or professor (see section V – Principal Investigator Eligibility).

- **Abstract**: Include your abstract in lay language.

- **Scientific Proposal (to be uploaded as a separate PDF)**: This is limited to five pages, not including references. Use Arial, black font color, and a font size of 11 points only. Applications should be single-spaced, with 0.5 inch margins. All figures and tables must be included in the body of the application, and count toward page limits. Appendix material will not be accepted.
  - Project Title and abstract in lay language (250 words maximum [use abstract entered in form]).
b. Introduction (1 page). Describe the scientific background for your grant application. Critically evaluate existing knowledge and explain how your proposal relates to gaps in existing knowledge. Specifically address how your project connects to the themes of this RFA. Explain how your project has the potential to foster deeper understanding of the roles of psychosocial stress response in human health and health disparity.

c. Project Details (2 ½ - 3 ½ pages). Describe the specific aim(s) that will be completed in the funding period. For each aim, provide the study details, and delineate an approximate timeline for the activities related to that aim, including realistic milestones with which to judge progress of the project. Describe a means with which the data and conclusions of the project can be evaluated. Preliminary data are not required but can be included if they speak to the feasibility. Please explain how each member of the team will contribute to the design and execution of the proposed study.

d. Future Plans (1/2 to 1 page). Describe how you propose to extend and fund your project past the year of support. Provide an overview of the future research plan and types of funding for which you intend to apply.

e. References (limit to 1 additional page).

Part 2 – Confirmation
There will be a confirmation page displaying all information entered. You will then be able to submit the application. All application materials can be reopened and resubmitted before the deadline.

Paper copies of the application or any other accompanying documentation will not be accepted. All application materials must be submitted no later than 5:00pm on May 14, 2015.

Successful submissions will result in an automated email response sent to the submitter of the application. This email acknowledgement will contain an application ID number that should be used in all future correspondence regarding the application. It will also include a URL that allows you to access the application within Apply Hub.

VIII. Review Processes and Criteria
Completed applications submitted by 5:00pm on May 14, 2015 will undergo an administrative review. Those deemed responsive to this RFA will be put forward for review by a Scientific Review Committee that will provide merit scores for each application. Feedback will not be provided to applicants.

Reviewers will evaluate the proposals on the following scientific considerations:

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<td>Does the proposed project address one of the two focus areas? Projects which do</td>
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<td>not address one of these two focus areas will be deemed unresponsive and will</td>
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<td>not be reviewed.</td>
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<td>Significance of the proposed research: How will the results foster deeper</td>
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<td>understanding of the roles of psychosocial stress response in human health and</td>
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<td>health disparity?</td>
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<td>Potential for innovation: Does the proposal utilize a novel approach or</td>
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<td>methodologies, or does it identify a new area of investigation in stress and</td>
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<td>health disparities?</td>
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<td>Does the applicant have a record of achievement and show promise?</td>
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Feasibility: What is the likelihood that the project will be completed given the allotted time and budget? This includes demonstration of appropriate supervision and mentorship for applications from junior investigators, and assessment of project scope compared to budget request.

What is the likelihood that successful completion of the project will lead to additional funding from other sources that will broaden the goals, scope, scale, and results?

What is the importance of this funding to an applicant’s career advancement?

Additional review criteria which will be considered in funding decisions separately from scientific merit:

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<th>Additional Review Criteria</th>
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<td>Collaboration: Is the project cross-disciplinary and inter-institutional? In particular, new collaborations will be given strong consideration.</td>
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<td>Potential for mentorship: Does the proposed project provide opportunities for junior investigators to develop new mentorship relationships with senior investigators? Applications that do so are encouraged and will be given strong consideration.</td>
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IX. Contact Information

Direct inquiries related to the application process, eligibility, and/or scientific research areas to Amy Webber, Pilot Grants Administrator, Harvard Catalyst (617-384-8976; grants@catalyst.harvard.edu).

Direct inquiries related to financial or grants management areas to Jacqueline Mordi, Senior Grants Manager, Harvard Catalyst (617-432-7594; jacqueline_mordi@hms.harvard.edu).