JOHNS HOPKINS
ALLIANCE *for a* HEALTHIER WORLD

HEALTHIER WORLD CHALLENGE PLANNING GRANT
REQUEST FOR APPLICATIONS

Planning Grant Award Amount	Up to 5 grants of $25,000 per award Additional grants for lower amounts (e.g. $10-15,000 per grant) depending on available funds
Information session for potential applicants (optional):	[To be scheduled – see www.ahealthierworld.jhu.edu for updates]
Submission deadline for Planning Grants	Cycle 1: July 15, 2017 Cycle 2: October 15, 2017
Anticipated award announcement for Planning Grants	Cycle 1: August 1, 2017 Cycle 2: October 31, 2017
Anticipated proposal submission deadline for subsequent Implementation Grant	January 31, 2018

Table of Contents

Background

The vision of the Alliance for a Healthier World (AHW) is **"To bring together faculty and students from across Johns Hopkins University, along with our partners around the world, to unleash the full range of scientific, analytic, and creative capabilities to promote global health equity."**

The new United Nations Sustainable Development Goals (SDGs) argue for integrative policies and strategies to eliminate poverty, steward our environment, and live healthy and fulfilling lives (http://www.un.org/sustainabledevelopment/sustainable-development-goals/). The SDGs highlight the close ties between 17 focus areas including health and poverty, inequality, food security, gender discrimination, education, water & sanitation, decent work & economic growth, affordable and clean energy, sustainable cities, climate action, peace, justice and strong institutions, among other factors. The SDGs have opened a window requiring new and multiple disciplinary models, with closer ties between science, policy, and practice to focus on issues that require convergence – a challenge we are embracing in the AHW.

> *The Alliance for a Healthier World is one of the Signature Initiatives established by Johns Hopkins University to stimulate and strengthen university-wide collaboration. Previously known as the Global Health Signature Initiative, this initiative joins other teams working on individualized health care, the science of learning and the future of cities to contribute innovative, interdisciplinary solutions for critical alobal issues.*

Johns Hopkins University has pioneered the field of global health research and education as a multiple disciplinary[1] effort to address health problems of disadvantaged populations. We have discovered, tested, and supported a wide range of interventions – low-cost, highly effective solutions such as vaccines, diagnostics, antibiotics, vitamins, family planning, safe deliveries, safe water supplies, etc. We have also developed deep insights about the different dimensions of disadvantage in populations around the world, and on the social, political, economic, and physical and biological constraints and opportunities for good health. But JHU, like others working in global health, have been limited in our ability to address the most complex and intractable social problems linked to health inequities, particularly those occurring in the most difficult institutional and resource-constrained contexts, and where involvement of numerous inter-dependent sectors and stakeholders is needed.

---

[1] We use the term "multiple disciplinary" to refer to involvement of multiple disciplines. "Multidisciplinary" approaches draw on different disciplines that stay within their boundaries; "interdisciplinary" approaches involve analysis and synthesis between disciplines into a coherent whole; "transdisciplinary" approaches integrate natural, social, and clinical sciences with the humanities to transcend their traditional disciplinary boundaries. The terms are additive, interactive, and holistic, respectively. See Choi BCK & Pak AWP. (2006). Clin Invest Med 29(6):351-364.

To create health solutions that tackle these factors requires a diverse yet unified approach. It needs intentional effort to engage and unite our best minds not only in medicine, nursing, and public health, but also international relations, engineering, education, business, the creative arts, social sciences, and bioethics.

To fill this gap in the global health arena, we have launched a bold, multiple disciplinary research and innovation ecosystem to tackle unresolved global health challenges. *Learn more about contributions from all JHU divisions, on the* AHW website *(https://www.ahealthierworld.jhu.edu/).*

Why focus on healthy equity?

Health equity is an ambitious goal for global health. Growing inequities in health, both between and within countries, threaten the development gains made over the past decades, and will make it difficult to meet the SDG targets. Health equity is an ambitious goal for global health.

Health equity is about the fair achievement and capability for good health, and not simply the equal distribution of health care. Health equity is a multidimensional concept that is a central concern of social equity and justice – it cannot be viewed in isolation.[2,3] Inequities in the social determinants of health – including socioeconomic status, education, the physical environment, employment, and social support networks – have wide-ranging effects on people's health and survival.[4] *Learn more about health equity on the* AHW website *(https://www.ahealthierworld.jhu.edu/).*

Achieving health equity requires not only health professionals, but also specialists from a wide range of other disciplines to analyze the patterns and propose and test innovative solutions. It also requires active participation and leadership from governments, business, and civil society, and particularly those who are most disadvantaged.

Our Approach to Advancing Health Equity

The Alliance for a Healthier World supports dynamic collaboration among multiple disciplinary teams of faculty, students, partners and local communities by providing a range of opportunities to stimulate, foster and build skills for working together more effectively.

Opportunities include:

---

[2] Sen A (2002). Why Health Equity? *Health Econ*. 11: 659–666. Available at: http://onlinelibrary.wiley.com/doi/10.1002/hec.762/pdf

[3] "Justice" involves the principles which guide us in determining what is right and wrong, sometimes stated as "giving each what he or she is due." Definitions of social justice are widely debated, but have in common a concern for human rights and equality in the everyday lives of people across society.

[4] Marmot M. et al. (2008). Closing the Gap in a Generation: Health Equity through Action on the Social Determinants of Health. Lancet 372(9650):1661–1669

- **Grants Program** (research grants to catalyze new knowledge and innovative solutions)
- **Healthier World Scholars** (incubator program for students)
- **Collaborative Activities & Services** (events, online platforms, learning resource library)
- **Strategic communications** (research translation to engage beyond JHU)

Areas for Research and Innovation

The AHW has identified four thematic areas where integrated approaches are particularly needed to promote health equity by addressing difficult and inter-dependent social problems (summaries of each theme are described in Annex 1):

1. **Food and nutrition security**
2. **Healthy environments**
3. **Gender equity and justice**
4. **Transformative technologies and institutions (TTI)**

In addition, faculty may identify other ways to address health equities that do not fall within these categories. Such approaches are also eligible for Challenge Grants.

Purpose and Funding Description

The Healthier World Challenge Grants are intended to foster the creation of research and practice collaborations involving faculty and students from across university Divisions (Schools), along with external partners, to address complex social and technical challenges that affect health equity. Applicants are encouraged to consider one or more of the themes as an area to focus work on a complex problem requiring a multiple disciplinary approach that would promote health equity or a related issue of social equity and justice. For example, developing a culturally-acceptable improved cook stove can reduce indoor air pollution and save household costs on energy. In the context of a humanitarian crisis, it can reduce the amount of time women or children need to search for wood outside a safe zone, and thereby reduce exposure to violence. Such an approach would bring together social scientists, engineers, public health professionals and community organizations.

The purpose of the **Planning Grant** is to provide an opportunity for multiple disciplinary teams from Johns Hopkins to get together to formulate a plan that would identify a health equity or social challenge and a collaborative problem-solving approach in the form of an application for an **Implementation Grant**.

Planning Grants are available for up to $25,000 for use within 4 months (up to 10 awards will be given at this level, 5 per cycle). Most planning grants will not require as much money, and may be around $10,000, largely depending on how many people would travel to meet together. We anticipate awarding an additional grants for lower requested amounts (e.g. $10-15,000) each cycle, depending on the number of applications and availability of funds. Once awarded, planning grant recipients are expected to use the grant to convene their team and initial external partners, and to prepare a proposal for an **Implementation Grant**.

The **Implementation Grants** are available for up to $250,000 (five awardees), and can last up to 3 years, though most grants will be for less money (e.g. $100,000), and provided on an annual basis (the numbers will depend on the availability of funds). The **Implementation Grant** funds can be used for purposes of convening stakeholders, conducting research, and/or developing and evaluating interventions. AHW will provide assistance to help grantees to raise additional funding, though **Implementation** grantees will be expected to define and pursue a sustainability strategy for their project. Teams are eligible to apply for an Implementation Grant without previously applying for a planning grant; receipt of a planning grant does not guarantee a team will receive an implementation grant.

Whereas the four themes have been identified as priority areas, the AHW recognizes that there are many complex problems that lie outside these thematic areas. We invite **all** submissions that engage multiple disciplinary approaches to pursue health equity.

Preparation Process

Creating opportunities for idea generation and team development

The Alliance for a Healthier World will try to stimulate dynamic collaboration among multiple disciplinary teams by providing a range of opportunities to stimulate and foster collaboration. The **Planning Grants** provide one opportunity for teams to form and work towards identifying a social challenge and problem-solving approach. The AHW will host a number of sessions to bring together faculty and students from across campuses to identify problems of interest. We will also offer online resources to share ideas and information. These opportunities include:
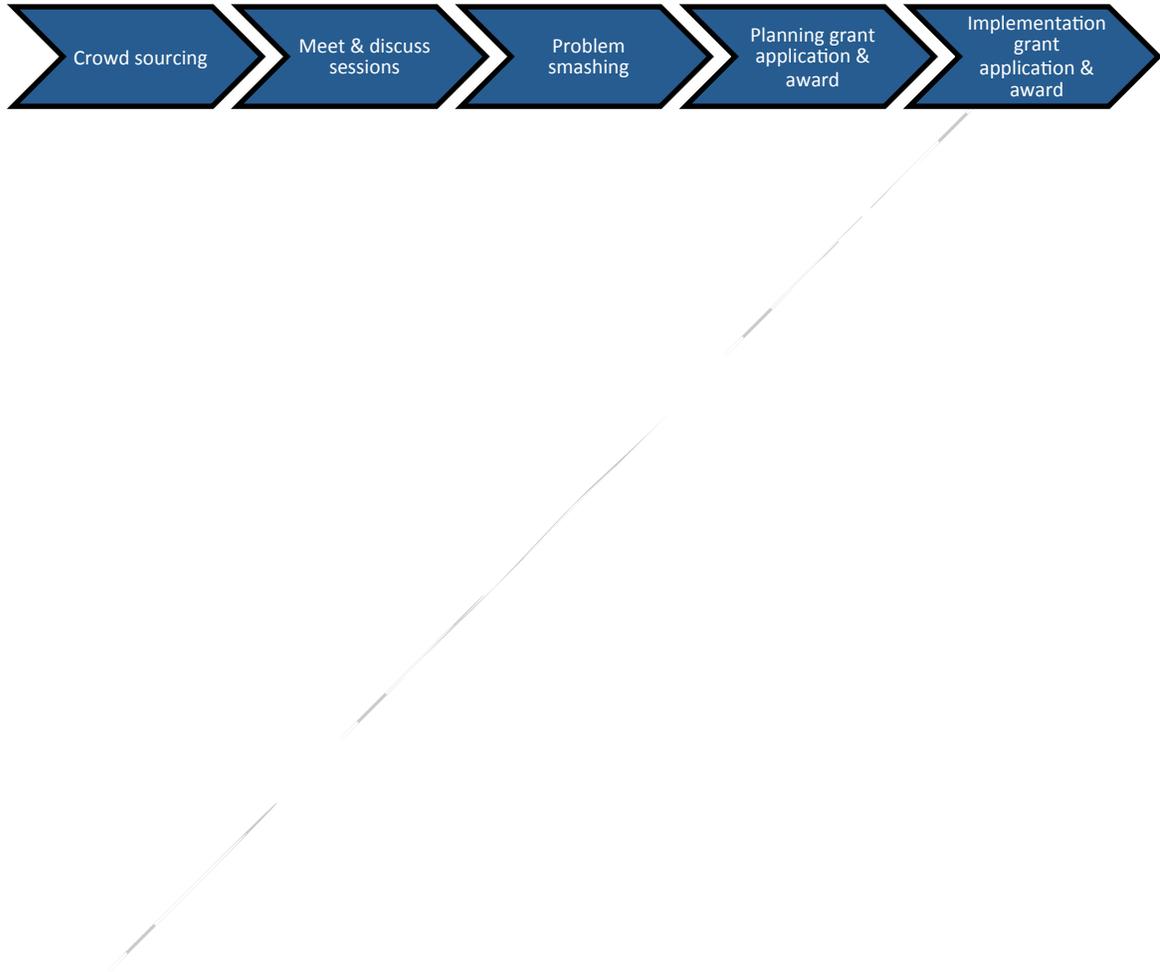
Crowd sourcing platform – Potential applicants are encouraged to participate in crowd sourcing of ideas through AHW's online platform. The platform allows the University community to share challenges in global health, where interventions might make a significant health equity difference. Those posting these challenges might be grappling with them in their work and hope that others might take these up; searching for potential partners to tackle an interdisciplinary problem; or just actively soliciting ideas to improve upon their approach. Along these lines, individuals or teams may post problem statements, issues, brief concept notes or other contributions for the University community to respond to and/or contact each other directly. Crowd sourcing is designed to introduce potential applicants to new ideas, stimulate conversations and bring together collaborative teams based on similar interests or different **skill** sets to address a common challenge. The crowd sourcing platform is under development; please check the "News & Updates" section of our website for updates.

Meet & discuss sessions – A number of meet & discuss sessions will be held at various JHU campuses during the fall term. These will be designed to invite faculty and students from across the University, to meet and share ideas about health equity and social justice perspectives. The sessions are intended to build relationships between people who otherwise would not meet, spark ideas for collaboration, and create common language for multiple disciplinary work. A set of **Frequently Asked Questions** are available through the AHW website.

Problem smashing sessions – Throughout the planning and implementation grant process, AHW will host several problem-smashing sessions. Problem-smashing sessions are meant to recruit different perspectives, often orthogonal, to tackle a common challenge. The discussions at a problem-smashing session will involve careful preparatory groundwork, strategic selection of stakeholders and academic participants, and a healthy collision of ideas, hopefully brought together uniquely to address the problem. Some problem-smashing sessions will be organized around a single substantive challenge, and others might find a unifying theme around a common approach, like citizen science, but share lessons from tackling different problems that might be addressed by that approach. These sessions not only support the development of ideas, but also connect potential applicants to resources available within the various schools of the University. Problem smashing sessions are also an

opportunity for individuals to find teams to collaborate with or for developed teams to recruit needed skills and resources into their projects. Sessions will consist of structured and unstructured activities to expose potential applicants to resources (labs, equipment, and technical expertise) that are available to them across the schools of the University; in addition to offering brainstorming and focusing activities to assist potential applicants in answering critical questions to the design of their proposal.

Figure 1. Overview of AHW Grant Opportunities

| Crowd sourcing | Meet & discuss sessions | Problem smashing | Planning grant application & award | Implementation grant application & award |

Planning Grant Eligibility Criteria

Project eligibility criteria include the following:

1. The Principal Investigator (PI) must be a full-time JHU faculty member who is eligible to serve as a PI for grants in their Division or School. Applications should involve jointly developed multiple disciplinary approaches, with faculty or staff from different schools or disciplines across the University. Each team should have representation from at least one of the health sciences schools or entities, and at least one from the other Divisions and Schools. More diverse collaborations and applications from junior faculty/staff are encouraged. PIs will be requested to submit a letter of support from their relevant Dean or Department Chair.

Health Sciences Schools & Entities	Other Divisions
▪ School of Medicine ▪ School of Nursing ▪ Bloomberg School of Public Health ▪ Berman Institute of Bioethics ▪ Jhpiego	▪ Applied Physics Laboratory (APL) ▪ Carey Business School ▪ Krieger School of Arts and Sciences (KSAS) ▪ Paul H. Nitze School of Advanced International Studies (SAIS) ▪ Peabody Institute of Music ▪ School of Education ▪ Whiting School of Engineering (WSE)

2. Applications should be able to demonstrate potential impact and/or innovation.
3. Applicant teams must include a minimum of two enrolled students and demonstrate how they will play an active role in the project.
4. Applications should involve one or more partners outside of JHU. Partners may include government agencies, community-based or non-profit organizations, private-sector corporations, or community leaders or advocates, or other academics that are active in the area of interest.
5. Applicants *may* focus their proposal on a single country or multiple countries. Innovative applicants focusing on marginalized population will typically be in a low and middle income country, but may include the United States or American Indian (First Nations) communities.

Planning Grant Proposal Requirements

Use of Award Funds

Only one application may be submitted per lead applicant. **Planning Grant funds** are to cover direct project costs only (e.g., travel, printing materials, review existing research and literature) budgeted for up to a 4- month period. PLEASE NOTE: Planning grant funds in general are not to be used to support the salary of full-time faculty. Funds can be used to support student or consultant (or partner) salaries.

Funds cannot be used for lobbying activities or retrospective payments (e.g., travel or other costs that were incurred prior to the signed/agreed start date for a planning grant).

The proposal review committee may seek budget adjustments before making final decisions.

Expected Outputs

At the end of the planning grant period, grant recipients are expected to submit to the AHW either a copy of their proposal resulting from activities supported by the Planning Grant that will be submitted for a subsequent Implementation Grant (Scenario A) **OR** a copy of their proposal resulting from activities supported by the Planning Grant that will be submitted to an external funder (Scenario B) **OR** a brief report describing "lessons learned" if not submitting for additional funding (Scenario C). Recipients are also expected to produce a brief report summarizing their collaboration activities and complete a short survey to provide information for future cycles. See Table 1 for more information

Table 1 – Expected Outputs for Healthier World Challenge Planning Grant by Scenario

	Scenario A	Scenario B	Scenario C
Status at end of Planning Grant	Will prepare a proposal to submit to the **Healthier World Challenge Implementation Grant**	Will prepare a proposal to submit to an **external funder**	Will **not** prepare a proposal to submit for additional funding
Expected Outputs	1) Copy of proposal 2) Report of collaboration activities 3) Completion of survey	1) Copy of proposal 2) Report of collaboration activities 3) Completion of survey	1) "Lessons learned" reflection 2) Report of collaboration activities 3) Completion of survey

How to Apply

Please email completed applications as a single PDF to ahealthierworld@jhu.edu no later than 5:00 p.m. EST on **July 15, 2017 (cycle 1) or October 15, 2017 (cycle 2)**. Please note naming convention and formatting requirements described below.

Full proposals should be submitted as one PDF file in the following order:

1. Cover page
2. Abstract
3. Project narrative
4. APPENDIX A: Budget and narrative
5. APPENDIX B: Letter of support from Dean or Department Chair
6. APPENDIX C: Biosketches of key personnel
7. APPENDIX D: References

Format

The planning grant proposal must be type written, using 12pt Calibri, Arial, or Times Roman font, 1-inch margins on all four sides, and single- or double-spaced narrative. Applications must be submitted as a single PDF document saved with the following naming convention: 2017 – Healthier World Challenge PLANNING Grant – [lead applicant first name_last name].

Applications should be succinct, avoid jargon, spell out acronyms when used for the first time, and must include the following sections within the defined page limits (note: page limits include figures and tables; references should be included in Appendix C):

COVER PAGE (1 page)

- Title of the proposal
- Principal investigator, co-investigator (s) and collaborators. Must indicate: lead faculty, students, and partner(s) in low- or middle-income setting.
- Contact information for the applicant team members – phone and email

ABSTRACT (1 page)

- A Summary of the project involving no more than 200 words
- Identification of the primary Thematic Area (or "Other" if none apply)

PROJECT NARRATIVE (3 pages)

All proposals must clearly include the following (use clear, recognizable section headers):

1. Problem statement: The problem statement should succinctly describe the nature of the health equity or social challenge to be addressed, the setting of the proposed work, and the proposed approach to intervening or otherwise addressing the challenge, while demonstrating current knowledge about the issues. Applications should demonstrate how their proposal will address issues of health equity and/or social justice.
2. Potential for innovation and impact: Describe the project's potential for innovation and impact. If the project is untested, applicant teams should describe the envisioned impact. If the project is further in development, applicant teams should provide evidence from pilot studies or trials.
3. Multiple disciplinary approach: Describe how multiple disciplines will be involved in the project, or the process used to determine how this would be accomplished. Consider explaining how the project will take team members out of the "comfort zone" of their expertise. Identify how the problem relates to one or more of AHW's thematic areas, and how it could contribute to health equity and/or social justice. Applications should indicate why a multiple disciplinary approach will be relevant for the proposed problem they will address.
4. Description of collaboration approach: Describe how JHU team will work together during the **Planning Grant**, the potential roles for team members in the **Implementation Grant** (if submitting for an Implementation Grant), and how disadvantaged populations and local partners will be involved in an Implementation Grant.

A budget, letter of support, biosketches, and references should be submitted in the following appendices:

APPENDIX A: BUDGET TEMPLATE

Please use the budget template below. Note that indirect costs are NOT charged for this grant.

Alliance for a Healthier World PLANNING GRANT Budget

Category	Description	Total cost
Salaries		
	Students –	
	Other -	
Employee related expenses		
Travel – airfare		
Travel – accommodations		
Travel – transportation		
Meals		
Facilities/rent		
Participant support		
Professional services – consultants		
Supplies & equipment		
Other direct costs		

APPENDIX B: LETTER OF SUPPORT

Please attach a **signed** letter of support from the Dean or Department Chair from the Principal Investigator's Division. The letter needs to indicate that the Principal Investigator must be affiliated with Johns Hopkins University for the term of funding requested.

APPENDIX C: BIO SKETCHES

Please attach biosketches (up to 4 pages) for the Principal Investigator and main Co-Investigators

APPENDIX D: REFERENCES

Please include citations using a generally accepted citation format (APA, MLA etc.).

Application Review Process

All applications will be reviewed by a review committee who represent various academic divisions of Johns Hopkins, with faculty who have expertise in the thematic areas. Each application will be reviewed independently by a minimum of two reviewers and awarded points per the criteria below. Points will be added together and the top 15 scoring proposals will be submitted to the entire committee for a qualitative review and award decision. Applications will be evaluated on the following criteria:

1. **Clarity of problem statement** (20 points): The extent to which the proposed project describes a complex social challenge and how it will be addressed.
2. **Potential for impact and innovation** (30 points): What is the potential impact of the project with respect to health equity and/or social justice? What is the potential innovation or contribution to knowledge of the project?
3. **Explanation of multiple disciplinary approach and collaboration** (50 points): The extent to which the proposal describes a need for a multiple disciplinary approach, and the coherence of the proposed multiple disciplinary approach. How well described is the collaboration approach between JHU team members, external partners, and disadvantaged populations?

Incomplete proposals will not be reviewed for consideration.

ANNEX 1: Overview of Thematic Areas

The Alliance for a Healthier World is initially organized around four thematic areas: Food and Nutrition Security; Healthy Environments; Gender Equity and Justice, and Transformative Technologies and Institutions. Each thematic area addresses underlying and systemic drivers that create a large burden of health inequity around the world. They are also connected to each other; the AHW will support work both within and especially across thematic areas. The thematic areas address rapidly changing concerns that have consequences for all, while affecting the most disadvantaged populations. They are areas that are amenable to engaging across the University in a coherent way, rather than being the purview of a single discipline or school. The key issues in the four thematic areas are summarized below.

1. Food and Nutrition Security

We are witnessing multiple burdens of malnutrition, with some countries, communities and households suffering from combinations of undernutrition, overweight and obesity, and micronutrient deficiencies. Grappling with these multiple burdens of malnutrition are deeply tied to political, social and economic factors. There are currently 784 million people who are undernourished, 159 million children under five who are chronically undernourished or stunted, 50 million children under five who are acutely malnourished or wasted, and 2 billion and 1.2 billion people who are estimated to be iron and zinc deficient respectively (FAO 2015; UNICEF/WHO 2015; Black et al 2013). Although child mortality and undernutrition is slowly declining, it is unclear if these trends will remain with significant external drivers that will challenge us – climate change, population pressure, persistent social inequalities, and geopolitical conflict. Current estimates on climate change, for example, are expected to have dramatic impacts on crop yields, notably in South America, Africa, and South Asia, while also leading to greater food price volatility that are likely to have their greatest impact on the poor (Havlik et al 2015).

Over one billion people live in extreme poverty, earning less than $1.25 a day (Chen and Ravallion, 2008), while more than two-thirds of these extremely poor people go hungry (FAO, 2012). In the past, poverty was associated with severe forms of acute undernutrition, particularly in children, that were frequently seen in times of famine and hunger. Today, we know that poverty affects nutrition throughout the whole life-span and has a broad spectrum of manifestations, such as increased propensity to many diseases, both infectious and non-communicable, reduced physical work capacity, a lower learning and intellectual capacity, increased exposure and vulnerability to lifestyle-related and environmental risks, reduced participation in social decisions, and negligible capacity of resolution in the face of environmental challenges (Peña and Bacallao, 2002). This lack of food and poor nutrition impacts a person's ability to earn a living, creating a vicious cycle of poverty and malnutrition. Individuals lose 10% of their potential lifetime earnings, and countries lose 2-3% of their GDP due to undernutrition (World Bank, 2006).

All forms of malnutrition are the result of interactions between poor diets, unhealthy food systems and inadequate health services. Food systems govern the types of food produced and their journey from farm to fork. As populations urbanize, incomes increase and the food industry concentrates and globalizes, the food system struggles to produce healthy food for everyone. The failure to identify and implement actions to make food systems healthier is costly. The human health consequences of malnutrition is detrimental: 45 percent of all under five mortality results from malnutrition and the multiple burdens of malnutrition represent tone of the biggest drivers of global burden of disease, with low-quality diets being the number one risk factor for global disease burdens. Despite the centrality of food quantity and quality as determinants of nutrition adequacy and the fundamental importance of food systems in determining which foods are available, affordable and acceptable, the multiple opportunities to intervene in food systems to promote nutrition are not well known, understood or addressed. This is because both food systems and malnutrition burdens are complex and context-specific, making it difficult to identify the links between them and the actions needed to leverage those links (High Level Panel of Experts on Food Security and Nutrition 2016).

2. Healthy Environments

Two major underlying sets of problems that challenge us in our efforts to preserve healthy environments, maintain the ecosystem services associated with them, and limit inequities associated with unhealthier environmental conditions among poor and marginalized populations. One set of problems is typified by greenhouse gas accumulation in the atmosphere. It is a problem at the global level: both the causes and the effects are global. The second set of problems relates to inequity: High-income countries make a much larger contribution to the problem, both historically and currently. At the same time, low-income countries and poor people within countries are more likely to suffer the consequence. The poor are more likely to live in more precarious environments (semi-arid areas, low-lying islands etc.). They are also less resilient to the anticipated climate changes due to limited technical capacity in local institutions and organizations, and fewer resources to devote to local adaptation.

Preserving healthy environments must encompass efforts to protect land, air, water and biodiversity that depends on different ecosystems. A major threat to healthy environments is the global demand for extraction of resources (mining, and industrial production, local population pressures with resultant demands on land, water and other resources. The 2005 Millennium Ecosystem Assessment found that 60% of the world's ecosystem resources were degraded or used in unsustainable ways (Hassan et al 2005). Local and regional environment degradation may take many forms: chemical and microbiological contamination of water, particulates in the air from forest fires, coal-burning power plants, factories, erosion and contamination of soil, depletion of aquifers, loss of forests and wetlands and many others. Each of these can have effects on agricultural production and nutrition, and also directly on the occurrence of infectious and/or non-communicable diseases.

Without investments in protecting environments and ecosystems, and addressing exposure to environmental threats, there will be an increasing likelihood of nonlinear changes. These are accelerating, or abrupt changes, such as disease emergence, abrupt alterations in water quality, creation of dead zones in coastal waters (reduced level of oxygen causing species to be unable to survive), collapse of fisheries, and shifts in regional climates. Dry land ecosystems, which are characterized by their lack of water, are where human population is growing most rapidly, but poverty is highest.

3. Gender Equity and Justice

Gender includes the "social roles, social status, culturally established patterns, stereotypes, behaviors and attributes thought to be appropriate and expected for the genders, men and women" (Jewkes, Flood, & Lang, 2015). Gender-based power disparities and limited access to justice are primary drivers of health inequity around the world. Women's equality shapes health, particularly reproductive health and infant and child health outcomes. (Varkey, Mbbs, Kureshi, & Lesnick, 2010). Bolstering education, economic and decision-making power can enable a cascade impact on health and well-being through access to care, and ability to implement health promotion.

Gender-based violence (GBV) is a powerful example of how gender influences health and equity. Intimate partner violence and non-partner sexual violence are the most common forms of gender based violence experienced by women and girls regardless of country. The global acceptance of violence in the home and in public reflects restrictive gender and social norms, and is thus a critical metric of women's equity. Globally, an estimated 1 in 3 women experience violence by a husband/intimate partner in their lifetime, while men are more likely to be assaulted by a stranger or acquaintance than a wife or intimate partner (WHO, 2005). The multiple consequences of violence are both immediate and long lasting with negative health (e.g. injuries, sexually transmitted infections, depression, chronic pain), economic (e.g. loss of employment, insecure housing) and social (e.g. isolation, stigma) consequences for the woman, her children, family and community (Campbell, 2002). Gender-based violence is not limited to women; and includes violence perpetrated based on sex, gender identity, or perceived adherence to socially defined gender norms; thus victims include populations who are high risk, marginalized, or criminalized, such as men who have sex with men (MSM), transgender population and sex workers (USAID and Department of State, 2012). Lifting the stigma that stems from lack of adherence to socially-defined gender norms may also support gender equity, health, and justice. Social identities and related systems of power, oppression and discrimination can intersect; gender identity and other biological, social and cultural characteristics, such as sex, age, race, ethnicity, migration, caste or economic status interact on multiple levels (individual, family, community, institutions, and society) to constrain gender and health equity.

The intersectionality of oppression, power and discrimination and the negative impact on gender and health equity is uniquely evident in humanitarian settings. The displaced population globally continues to grow in parallel with the size of the population displaced by conflict, which is presently estimated at 59.5 million forcibly displaced worldwide (United Nations High Commissioner for Refugees (UNHCR, 2015). Women and girls are especially vulnerable to gender-based violence. They are forced to leave their homes to seek shelter from conflict or crisis in camps or informal settlements, often isolated from family and living with little resources to provide for safety.

4. Transformative Technologies and Institutions (TTI)

Technologies and institutions have the potential to transform the health of populations and to narrow the disparities between those who have and those who do not have access to such health care. By transformative, we refer to changes in one or more dimensions of health equity--measured in milestones of lives saved, disability averted or improved quality of life. In some cases, the transformation is in how we detect or even prevent disease, and in other cases, in how we treat or cure the disease. The work of TTI bridges to each of the other thematic areas. A female condom can give women greater control over their reproductive decisions—an issue of gender equity. Ready-to-use therapeutic foods not only can effectively treat severely malnourished children, but also shifted such care from hospital to community-based settings, thereby enabling many more children to be treated as outpatients. Better designed cookstoves can not only reduce indoor air pollution, but also save households on energy costs. In each case, whether technology succeeds or fails depends on the institutional context.

In moving from bench to bedside, for example, technologies face barriers to therapeutic, financial or structural access. *Therapeutic access* focuses on whether research institutions and industry undertake or prioritize the research and development (R&D) to address public health challenges. Do research priorities align with public health priorities, or not? Their misalignment results in neglected diseases. *Financial access* relates to the affordability of the product by those in need when it enters the marketplace. This can be influenced by how knowledge is owned and shared as well as how public sector funding requires fair returns. And *structural access* considers how the delivery system brings a technology to those whom it may benefit--last-mile challenges. Availability of the products might be limited by stockouts; access, by limits to local infrastructure from the lack of laboratory facilities to shortages of human resources; and quality, by substandard or counterfeit drugs or thermal instability of the product. These three hurdles roughly correspond to different parts of the value chain, and institutions can help lower or raise the height of these hurdles. For the benefits of a technology to be realized, all three hurdles need to be surmounted.

Institutions can shape access to technologies that advance health equity. But technologies can also shape institutions that do the same. New diagnostic tools – simple enough to be placed into the hands of ordinary citizens – could give us a readout on whether the run-off from a

factory farm carries drug-resistant pathogens or whether the grocery shelves have retail meat contaminated by these bacteria. Collecting the results from such diagnostic technologies can empower consumers with tools to monitor and hold accountable those in the food supply chain for safety of their products. We see significant potential in such citizen science efforts.

Giving shape to such strategic interventions, the AHW will enhance the impact and reach of University-based research, policy work and education. By focusing on opportunities where there is transformative potential, the AHW can help identify priorities for research, position existing research for more rapid translation, or show how solutions might cross-apply from one context to another. By serving as a convener, the AHW could recruit multi-disciplinary talents to a research project, set the stage for meaningful dialogue among stakeholders that is critical to overcoming an access barrier, or incubate new partnerships or business models. By training the next generation of researchers and policymakers, the AHW can share a vision of systems thinking across disciplines, inspire social entrepreneurs and researchers alike to tackle big societal problems, and create platforms for engaging larger communities of practice in this work.

Johns Hopkins University has consistently led all other academic institutions in the country in total research dollars, and with that public funding comes also significant responsibility to provide returns to benefit humanity and to ensure health equity. TTI provides a framework by which the University can harness the fruits of such research to benefit the most disadvantaged.