Committee on Reputational Stewardship

2019-2020 Conference Competition

Proposal for a International Symposium on Revolutionary, Sustainable Approaches to Control of Vector-borne Diseases

Fall 2019

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The need for a global revolution in mosquito-borne disease control. Sustainable control of mosquito-borne diseases such as Zika, dengue and malaria represents a major Societal Grand Challenge. These diseases impact the health of billions and are on the rise as a result of unprecedented human population growth, habitat destruction and climate change. Today, mosquito control relies on just four classes of neurotoxic insecticides inherited from the agrochemical industry. More than fifty years after "Silent Spring" control employs "blunt hammer" synthetic pesticides that kill helpful as well as harmful species, concentrate in the environment, and harm human health, inspiring substantial and costly public controversy. In addition, resistance to pesticides has developed in mosquito populations around the globe, threatening continued disease control and epidemic response. Within the next five to 10 years, scientists must develop new technologies to prevent pandemics of mosquito-borne diseases. The agrochemical industry must innovate with "smarter" pest control products, but remains resistant to change. Replacement of traditional pesticides with nature-based, environmentally benign products is controversial and challenging to industry, public health officials and the general public. This radical concept is one that must be explored and championed by scientists, industry representatives and public policy developers.

We propose a one-day national forum for fall 2019 to seed revolutionary, global change in vector control. The goals of the symposium are to inspire paradigm shifts in academic and industrial research, facilitate thoughtful debate among industry partners, NGOs and regulatory bodies regarding the adoption of new insect control technologies, and encourage the development of public policy and communications models to improve response during emergent domestic and exotic crises. The forum is a key goal of a Big Idea Challenge (BIC) Project led by the PIs of this proposal focused on driving disruptive change in vector control (https://www.purdue.edu/discoverypark/initiatives/big-idea-challenge/projects/?id=vector-borne-

diseases). The forum has received approval as a "Giant Leaps 150" event and aligns with two themes of the sesquicentennial celebration – "Giant Leaps to Health, Longevity and Quality of Life" and "Giant Leaps to a Sustainable World".

Symposium Overview. This event will stimulate robust debate and creative problem solving among diverse stakeholders from academia, industry, government and philanthropic organizations. The symposium will be headlined by up to five high profile speakers - prominent scientists, and representatives of government, industry and NGOs. The keynote will be followed by panel discussion lead by three to five expert speakers who will provide brief opening statements and facilitate panel discussion. Thought leaders and stakeholders will also participate in a workshop to propose scientific, regulatory and business solutions. The workshop will employ "Appreciative Inquiry" – a proven method for navigating controversial subjects. Proposed speakers are as follows:

Keynote Speaker

- **Professor Janet Hemingway**, **Director, Liverpool School Tropical Medicine (LSTM), Liverpool, United Kingdom.** Professor Hemingway is a world leader in malaria control, associate of the U.S. National Academy of Sciences: https://www.lstmed.ac.uk/about/people/professor-janet-hemingway

Expert Panelists

- **Dr. Nick Hamon**, **Director, Innovative Vector Control Consortium (IVCC), Liverpool, United Kindgom.** The IVCC is an NGO that delivers new products for mosquito control in disease endemic countries.

- **Dr. Dan Strickman, Manager, Vector Control Program, Bill and Melinda Gates Foundation, Seattle, WA.**
- **Mike Mendlehson, Emerging Technologies Group, U.S. Environmental Protection Agency.**
- **Representative of U.S. CDC or the WHO, TBA**

The symposium, hosted by Discovery Park in partnership with the Purdue Center for the Environment (C4E), the Purdue Policy Research Institute (PPRI), the Purdue Institute for Inflammation, Immunology and Infection (PI4D), and the College of Agriculture, is expected to attract approximately 100-150 attendees, representing the academic, corporate and government sectors. The emphasis on environmental stewardship and sustainable solutions is expected to generate substantial interest from the campus community, the general public and the media. Discovery Park facilities will provide an appropriate venue. Oversight will be provided by a leadership committee comprising Purdue faculty and charged with securing speakers, event publicity and funding, and post forum communications.

Potential to Attract High Profile Speakers and Leading Scholars. Professor Hemingway and Dr. Hamon have indicated interest to participate in the event. Other speakers under consideration include representatives from the CDC and WHO involved in emergency response programs. Multiple stakeholders have also expressed interest, including industry partners representing both established pest control companies and start-ups active in the environmental vector control space.

Value to Purdue. The symposium will establish Purdue as a driver in "green" technologies, public health and environmental policy. The event will be unique as symposia hosted by professional societies typically focus on traditional chemical technologies and ignore the socio-political factors necessary for a paradigm shift across the field and industry. In showcasing Purdue's expertise in drug and insecticide discovery, the forum will link to the Purdue Mission of "World Changing Research". Greater engagement in academia-industry partnerships, increased visibility, demonstrated leadership and enhance reputation are expected outcomes. The forum will have broad appeal to members of the campus community interested in environmental science, infectious disease and public health and will likely draw members of the PI4D, C4E and other centers.

Linkage to professional organizations/extramural funding. The symposium will be publicized through the Entomological Society of America (ESA), the American Chemical Society (ACS), and the American Society for Tropical Medicine and Hygiene (ASTMH). These societies reach a broad membership expected to show strong interest in the topics that the forum will tackle. Potential sources of external funding via industry and philanthropic organizations will be pursued by the forum leadership committee.

Value to External Sources and the Media. The symposium will explore controversial topics of substantial public interest (i.e., the risk trade off between toxic pesticides versus infectious disease epidemics) and is planned as a biannual event. Anticipated impacts include publication of a workshop report, with outcomes and directions summarized in high profile communications (e.g., Nature "Correspondence" or "Perspectives", or Science "Policy Forum" article). The support of the Department of Agricultural Communications has been enlisted, and we are

confident of our ability to broadly message via social media, press releases, and direct engagement with media.

Budget and Justification. This event will leverage funding ($5K) received though the Discovery Park Big Idea Challenge project and the College of Agriculture. Funds in the amount of $25K are requested here to expand the scope and increase the impact of the forum. Monies will offset flight and accommodation costs for international ($15K) and domestic speakers ($5K), and support promotional materials ($4K), hospitality ($5K; welcome reception and refreshments), and a modest honorarium ($1K) anticipated for the keynote speaker. Administrative and communications support will be provided by Discovery Park and the College of Agriculture, respectively.