The Purdue University “Big Data, Safe Food” Conference

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Hort./Landscape Architecture/Agriculture Economics
Agriculture Sciences Education and Communication
Computer Science

Confirmed Steering Committee Members (* members outside of Purdue University)
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College of Agriculture
College of Science
North Carolina A&T University
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Significance and Purpose of the Conference: Food safety is a serious global concern complicated by climate change, the spread of antibiotic resistance and emergence of new pathogens requiring multidisciplinary efforts and partnership with industry, consumers, government and academia for resolution. One in six Americans (aprx. 48 million) are affected by foodborne illness with a resulting economic burden estimate of $78 billion. Foodborne pathogens are associated with meat and poultry, fresh produce and ready-to-eat products. The paradigmatic shift of FDA from punishment to prevention regarding food safety has provided an opportunity for a technological convergence of the food supply chain network, food production dynamics, microbial behavior, and large data science for solving food safety issues and public health concerns. Many programs exist between FDA, CDC and USDA to address aspects of foodborne outbreaks, but no agency is working toward an integrated science and technology road map for eliminating food safety issues at the source. Purdue University, as a leader of discovery, extension and use of big data in plant/animal/food sciences, Extension and Big Data, plus blockchain and human health, is well-positioned to design a roadmap that stretches the frontiers
of science to prevent foodborne diseases and improve safety at the source. Conference objectives are to: (1) **Identify a road map that would create a convergence of technologies, expertise, and data that would support FDA’s food safety prevention legislative mandate** ("Shifting the focus of FDA’s food safety oversight from reaction and after-the-fact enforcement to risk-based prevention of food safety problems") and (2) **explore how the road map can unite state, local and tribal food safety efforts, into a consistent nationwide oversight program.** **Linkage to Purdue’s Mission:** The conference addresses Purdue’s mission “World-changing Research” and three of the 150 Years of Giant Leaps anniversary themes: “Health and Longevity,” “Artificial Intelligence,” and “Sustainable Economy and the Planet.” Topics include **blockchain to increase traceability, big data to understand social implications of food recalls, and use of omics to enhance food safety** and will help shape the future of agriculture, food science research and its relationship to big data. It will initiate multi-disciplinary collaboration and engage industry stakeholders to address food safety challenges from farm to table. **Reputation of potential invited speakers:** The speakers will be drawn from the international communities of food safety research, federal government agencies, big data and computer science research, and major stakeholder groups including industry. **Highlighted** speakers had experience working with big data and/or blockchain in food systems.

**Academic Speakers from Outside of Purdue:** Henry Kautz, Ph.D., Department of Computer Science, University of Rochester. Dr. Kautz has recently explored the use of data from social media data to predict foodborne illness. Linda Harris, Ph.D., Department Chair of Food Science and Technology, UC Davis. Dr. Harris’s research and extension program supported produce and nut stakeholders’ food safety needs. William K. Hallman, Ph.D., Professor/Chair, Department of Human Ecology, Rutgers University. Dr. Hallman’s research examines public perceptions of controversial issues concerning food safety and food recalls. John Luchansky, Ph.D., Lead Scientist at USDA ARS Eastern Regional Research Center. Robert Buchanan, Ph.D., Director at Center for Food Safety and Security Systems and Professor at University of Maryland. Trevor Suslow, Ph.D., Vice President of Food Safety, the Center for Produce Safety, and Cooperative Extension Specialist, UC Davis.
Government Agency Speakers from Outside of Purdue: Mickey Parish, Ph.D., Senior Advisor at FDA, President of IAFP, Formerly, Professor/Chair at University of Maryland. Jodi Williams, Ph.D. and Isabelle Walls, Ph.D., NIFA Food Safety National Program Leader. Frank Yiannas, Deputy Commissioner, Food Policy & Response at FDA and former vice president of food safety for Walmart. Robert Tauxe, MD, MPH, Director, Division of Foodborne, Waterborne, and Environmental Diseases, CDC.

Industry Speakers from Outside of Purdue: Scott Hood, Ph.D., Director of Global Scientific & Regulatory Affairs, General Mills. Scott Stillwell, Ph.D., Senior Vice President of Food Safety and Quality Assurance, Tyson Foods. Howard Popoola, Vice President of Corporate Food Technology and Regulatory Compliance, Kroger’s. Tom Cullen, Formerly, Group Vice President and Chief Information Officer, Driscoll’s, currently Chief Information Officer, JUUL Labs. Chris Tyas, Global Head of Supply Chain, Nestlé.

Ability to attract a critical mass of Purdue participants: In 2018, we assembled a team of over twenty Purdue faculty members around the NIFA’s $10M Sustainable Agricultural System (SAS) food safety proposal. They came from a wide range of disciplines and represent almost all colleges and schools at Purdue. The intriguing programs offered by the “Big Data, Safe Food” conference will attract more Purdue participants. Likelihood to attract leading scholars nationwide and international: Given Purdue’s international prominence and leadership on this topic, leaders from the U.S. will likely attend and international participants will be invited. We will deliver stimulating and high-quality scientific-track sessions that promote new ways of linking big data and technology to food safety challenges in global supply chain. Interactive roundtables provide participants with a voice in identify the challenges and opportunities in the food industry. We will invite federal funding agency decision-makers and food policy organizations as observers to provide them with the latest innovations in big data and food safety to demonstrate Purdue’s leadership and initiate new fundable themes with the invited speakers.

Likelihood to showcase Purdue: Engaging federal agencies, external researchers, industry and the media will provide numerous outlets for showcasing Purdue, including peer-reviewed journals, extension articles, social and public press. The showcase opportunities will facilitate (1) the advancement of fundamental research ideas across diverse research communities; and (2)
communication with stakeholders on food safety concepts and research. **Integration of networking opportunities:** We will develop new solutions and collaborations led by Purdue researchers. These collaborations are likely to shape the funding themes by government and industry. **Proposed extramural sponsorships:** To increase the number of participants to the conference, we will submit a conference proposal to NSF or NIFA to request funding to support travel of graduate students and early-career faculty. The College of Agriculture’s Agricultural Research and Graduate Education (ARGE) will provide up to $6,000, to support this conference (Dr. Donkin’s letter of support attached). Indiana State Poultry Association, Indiana Department of Health, and the College of Agriculture have each provided a letter of support to this proposal. We will actively seek corporate sponsorship to cover coffee breaks and meal expenses. **Value to external audiences and the media:** Food safety has been under the spotlight since 1993’s Jack-in-the-box *E. coli* outbreak resulting in large media coverage. Later outbreaks have had catastrophic impact on industries, due to lack of traceability and misinformation. The conference would be expected to generate both scientific and popular media interest. We will invite journalists and science writers who have previously reported on food safety events to participate and interact with the speakers and conveners. **Conference Plan:** The two-day conference will kick off with a “futurist” keynote speaker describing what is possible from the convergence of multidisciplinary research-based innovations coupled with big data with regard to food safety. The conference will have three major brainstorming sessions leading to the development of roadmap discussions to reduce and prevent food safety issues. (1) Data science and technology to address food safety challenges in plant and animal production; (2) Blockchain addressing food safety challenges in the food supply chain information and traceability; (3) Big data addressing food safety challenges among end-consumers and (4) Roadmap development. Each session will
include lightening talks by invited speakers and Purdue researchers along the value chain to invigorate new thinking interspersed with in-depth descriptions of technology and big data under development and in use. Roundtable discussions and/or panels with industry representatives will be included. Poster sessions and product demonstrations for faculty, graduate students and invited guests will be on display throughout the conference. Informal networking will occur over meals and breaks. In addition, we propose to include a more structured networking session centered around an early evening poster session highlighting the research of Purdue faculty, students and post-docs, but also open to submitted abstracts from other attendees. Furthermore, a dinner for invited participants and Purdue organizers would facilitate interactions between the Purdue research community and world-renowned leaders in the field. After the conference concludes mid-afternoon on the second day, an internal meeting will convene for Purdue faculty (and others if they choose) to organize around the ideas presented. **Proposed post-event impact:** Insights from the conference will inform concrete strategies and best practices along with a roadmap that other organizations can adapt, scale, and apply through the convergence of Big Data and technology applied to food safety. Outcomes of the conference will be presented at meetings of several professional societies, like Institute of Food Technologists (IFT), International Associations for Food Protection (IAFP), and Agricultural Economics (AAEA). We will work to enhance existing, and develop new, collaborations with researchers nationally and internationally, with the goal of securing external funding to support multi-disciplinary and big data innovation in enhancing food safety, like the Sustainable Agricultural Systems $10M grant. **Proposed Budget:** Requesting $25,000 to cover travel expenses and a small honorarium for the invited speakers, conference meal cost, and a limited number of student scholarship for graduate students from other institutions to attend the conference.
12/11/18

Dr. Yaohua Feng
Dr. Arun Bhunia,
Department of Food Science
Purdue University,
745 Agriculture Mall Dr.
West Lafayette, IN, 47906

Dear Dr. Feng and Dr. Bhunia:

I am glad to support your efforts for a conference proposal that you are submitting to the Provost Office at Purdue University, under the Committee on Reputational Stewardship, for “Big Data, Safe Food.”

The proposed conference is addressing new technology and tools to ensure food safety, reduce foodborne illness, and yield economic and social benefits, which fits with the strategic themes for the college and is an area where we have a particular emphasis.

The conference is designed to attract external speakers and stakeholders to enhance the reach and impact of Purdue and to highlight the efforts of our talented faculty, staff, and students as they conduct world-leading research.

You have my full support and I wish you the best of luck with your application.

Sincerely yours,

Karen Plaut, PhD.
Glenn W. Sample Dean of Agriculture
Purdue University
December 18, 2018

Dr. Yaohua Feng and Dr. Arun Bhania
Department of Food Science
Purdue University
745 Agriculture Mall Drive
West Lafayette, IN 47906

Dear Dr. Feng and Dr. Bhania:

I am the State Health Commissioner and I am writing to support your conference proposal to the Provost Office at Purdue University, under the Committee on Reputational Stewardship, for “Big Data, Safe Food.”

The mission of the Indiana State Department of Health (ISDH) is to promote, protect, and improve the health and safety of all Hoosiers. The Indiana Food Protection Program within ISDH strives to ensure a safe and wholesome food supply throughout the state of Indiana. The program develops regulations, conducts routine inspections of wholesale food establishments and retail food establishments on state property, investigates foodborne illness complaints, and responds to other food emergency incidents. The Food Protection Program participates in cooperative food safety inspection programs with other state, federal, and local agencies.

With several high-profile foodborne outbreaks occurring in recent years, an in-state conference addressing food safety would provide essential information to protect Hoosiers. I fully support your proposal and will send our staff to attend and participate at the conference.

Good luck with your application.

Sincerely,

Kristina M. Box, MD, FACOG
State Health Commissioner
December 11 2018

Dr. Yaohua Feng
Dr. Arun Bunia,
Department of Food Science, Purdue University,
745 Agriculture Mall Dr., West Lafayette, IN, 47906

Dear Drs. Feng and Bhunia,

I enjoyed our recent exchanges regarding your ‘Big Data, Safe Food’ conference proposal.

I am pleased to inform you that the College of Agriculture is very supportive of your efforts to organize this conference and will provide $6,000 towards this event. I appreciate that the costs for the conference will exceed this amount of support from the College and therefore encourage and support your application to the Center for Reputational Stewardship for the balance needed to organize this event. I am convinced that the conference you are proposing will have a significant impact in identifying a path forward for food safety.

As you are aware, the College of Agriculture at Purdue University is one of the world’s leading colleges of agriculture, food, life, and natural resource sciences. As a land-grant institution, we are committed to preparing students to make a difference, stretching the frontiers of science to find solutions to some of our most pressing global challenges; and outreach programs that help the people of Indiana, the nation and the world improve their lives and livelihoods.

The conference you are planning will meet many industry stakeholder needs and will foster multi-disciplinary collaborations to address food safety challenges. I enthusiastically support your efforts.

I look forward to learning more about conference planning and look forward to the event..

Sincerely,

[Signature]

Shawn S. Donkin, PhD
Interim Associate Dean for Research and Graduate Education
College of Agriculture
Purdue University
December 18, 2018

Dr. Yaohua Feng and Dr. Arun Bhunia,
Department of Food Science, Purdue University,
745 Agriculture Mall Drive
West Lafayette, IN, 47907

Dear Drs. Feng and Bhunia:

The poultry industry contributes over 4 billion annually to Indiana’s economy. The Indiana State Poultry Association (ISPA) represents Indiana’s poultry producers. Among our services, we provide disease and biosecurity programs, education, and regularly communicate to our members. As the Executive Vice President of the ISPA, I am excited to hear that you are preparing a conference proposal to the Provost Office at Purdue University, under the Committee on Reputational Stewardship, for “Big Data, Safe Food.”

With several high-profile foodborne outbreaks across the country in the recent years, an in-state conference addressing food safety will be beneficial to all producers. I appreciate you addressing the needs of poultry stakeholders. I fully support your proposal and will encourage our members and staff to participate in the conference.

Sincerely,

Indiana State Poultry Association

[Signature]

Paul Wm. Brennan
Executive Vice President