

Bridging the Gap Between Dietary Biomarker and Population Science Research

Joint Penn-PSU Virtual Symposium June 1, 2022

Diet quality plays an important role in human health and disease. More recently, there is significant interest in understanding the impact of a western ultra-processed diet on the growing incidence of diseases such as obesity, metabolic syndrome, cardiovascular disease, and cancer. Population-based studies, that most commonly use surveys or interviews to quantify dietary quality and composition, indicate that such dietary factors are particularly impactful in underserved communities. In parallel, there is growing interest in quantitatively characterizing dietary biomarkers based on broad omic profiling technologies, such as metabolomics, to provide objective data on diet quality using human biospecimens.

The focus of this symposium is to bring together experts in population science research, traditional dietary assessment research, metabolomics, and data analytics to explore opportunities by which dietary biomarker research can be applied to population-based studies with a focus on food insecurity. Presentations will set the stage for a panel discussion at the end of the symposium designed to bridge the gap between dietary biomarker and population science research by exploring various topics of common interest.

8:15-8:30 am: Opening remarks: Gary Wu, MD

8:30-9:00 am: Keynote Talk: “Precision Nutrition at NIH”, Chris Lynch, PhD (NIH Office of Nutrition Research):

9:00-9:30 am: Overview Talk: “Update on technology platform for population science research: The MATCH and ET studies”, James Lewis, MD, MSCE

9:30-10:30 am: Session 1: Population based research focused on diet and nutrition in food insecure population and their association with health outcomes. Co-Moderators: Karen Glanz, PhD (Penn) and Gene Lengerich, VMD, MS (PSU)

Speaker 1: “Rural Appalachia”, Susan Veldneer, PhD (PSU):

Speaker 2: “North and West Philadelphia”, Christina Roberto, PhD (Penn)

10:30-10:45 am: Break

10:45-11:45 am: Session 2: Dietary survey tools including screeners (implementation, strengths/weaknesses, data analysis). Co-Moderators: Ariana Chao, PhD (Penn) and Jennifer Savage Williams, PhD (PSU)

Speaker 1: “The Penn Dietary Screener”, Charlene Compher, PhD (Penn)

Speaker 2: “Dietary Survey Tools”, Diane Mitchell, PhD (PSU)

11:45-12:15 pm: Lunch Break

12:15-1:15 pm: Session 3: Metabolomics and high dimensional data analytics in dietary biomarkers research. What’s the state-of-the-art and current value in nutrition research? Co-Moderators: Ashley Shay, PhD (PSU) and James Lewis, MD, MSCE (Penn)

Speaker 1: “Metabolomics and Dietary Biomarkers”, Andrew Patterson, PhD (PSU)

Speaker 2 “Data Analytics”, Hongzhe Li, PhD (Penn)

1:15-2:15 pm: Panel Discussion

Moderators: Andrew Patterson, PhD and Gary Wu, MD

Participants: Session moderators, speakers, and Robert Schnoll, PhD (Penn), Sunni Mumford, PhD (Penn), Molly Hall, PhD (PSU), Muzi Na, PhD, MHS (PSU), Joshua D. Lambert, Ph.D(PSU).

Topics for discussion include:

- What are the most effective dietary survey tools for population science studies?

- What are “state-of-the-art” technologies available for the characterization of dietary biomarkers and will they have utility in population-based studies?
- What are the best dietary biomarkers for the assessment of diet quality?
- What type of technologies are available to collect biospecimens for population-based research?
- Is there value in combining results obtained from dietary surveys with an assessment of dietary biomarkers?
- What is the value of describing dietary quality in underserved populations with food insecurity and what are the hurdles in collecting dietary survey data and biospecimens in this population?

2:15 pm: Closing remarks: Andrew Patterson