April 20, 2023

National Academies of Science, Engineering, and Medicine
Attn: Kara Laney
500 5th St NW
Washington, DC 20001

To the Study Committee:

On behalf of the combined 43,000 members of the American Society for Microbiology, Soil Science Society of America, and American Society for Nutrition, thank you for tackling the important challenge of exploring linkages between soil and human health. Supporting the health and food and nutrition security of a growing population is one of today's greatest challenges, which is only growing more dire in the face of a changing climate.

The National Academies of Sciences, Engineering, and Medicine has recruited an impressive group of experts to conduct this study, including international experts in nutrition, epidemiology, plant pathology, food science, soil science, agronomy, and microbiology. As the study gets underway, we strongly encourage the sponsors, team, and expert panel to stay true to the intent and scope as expressed by the 117th Congress in the following language in the FY2022 Omnibus Appropriations Act, House Appropriations Agriculture and Food and Drug Administration Subcommittee Report:

Human Health and Soil Health Study.—The Committee provides $1,000,000 for the Secretary to enter into an agreement with the National Academies of Sciences, Engineering, and Medicine within 60 days of the enactment of this Act to ***conduct an analysis of current scientific findings to determine the links between human health and soil health by reviewing existing research on the connections between the human microbiome and soil microbiome and the direct interaction of humans with soils, identifying linkages between soil management practices and the nutrient density of foods for human consumption, determining how to best leverage healthy soil management practices to maximize benefits and minimize adverse impacts on human health, and exploring areas for future research****. A report including the study's findings and recommendations shall be submitted to the Committee not later than 18 months after the date of the enactment of this bill.*

Microbes are key indicators of soil health. The tiniest forms of life on our planet, microbes are adept at adapting, surviving, and thriving in extreme, constantly changing environments. Microbe-based innovations support the agricultural bioeconomy and protect us from pathogens and disease. In soil, microbes mitigate plant health and control greenhouse gas cycling.

Thanks to investments in the Human Microbiome Project (HMP), researchers can now identify associations between changes in the microbiome and conditions ranging from autism to cancer, to the efficacy of drugs used to treat cardiac conditions. Launched in 2007, the HMP was tasked by the National Institutes of Health with creating resources and methods that link interactions between humans and their microbiomes to health-related outcomes. As in human health, applications of the microbiome in soil health are expanding rapidly, with exciting prospects for food production, carbon storage, and conservation. As our soil changes, it becomes ever more important to understand if and how these changes will impact the nutritional quality of our food supply and agricultural productivity. There is not

one definition of “soil health”, and the experts engaged in this report will need to make key decisions on the indicators to be considered.

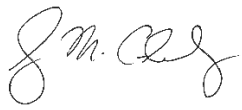
In scoping the report, we urge the committee to explore the varied definitions of soil health, and the functional characteristics to which they connect. And in turn, how they are connected to human health. Do soil microbiomes affect the human microbiome, and how? Fundamentally, we hope this study examines the evidence regarding if and how soil management practices impact nutrient density, purge toxic chemicals, and impact human health for better or worse. As it looks to recommendations for the future, the Committee may wish to suggest areas for future exploration such as a “Soil Microbiome Project” and what that would entail. Similarly, the Committee may wish to note topics outside of the scope of this study, but still vital to this discussion, for future studies. Animal and plant health, and their dependence on healthy soil, may be future areas for consideration.

Understanding the world of microbes can help us harness their power for a sustainable and nutritious global food supply, decarbonization, energy security and the growing bioeconomy, while curbing the impact of dangerous pathogens, and a report from the National Academies has the unique power to drive conversation among scientists as well as policymakers. We look forward to the outcome of your work on the key findings and knowledge gaps, promising research directions, and recommendations for enhancing the human health benefits of the soil microbiome.

Sincerely,

Stefano Bertuzzi, Ph.D., M.P.H.
Chief Executive Officer
American Society for Microbiology

John E. Courtney, Ph.D.
Chief Executive Officer
American Society for Nutrition



James E. Cudahy, CAE
Chief Executive Officer
Soil Science Society of America