

Nutrition for Precision Health, powered by the *All of Us* Research Program



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Program Snap Shot

The goal of the **NIH Common Fund’s Nutrition for Precision Health, powered by the *All of Us* Research Program**, is to develop algorithms that predict individual responses to food and dietary patterns. Nutrition plays an integral role in human development and in the prevention and treatment of disease. However, there's no such thing as a perfect, one-size-fits-all diet. The NPH program will build on recent advances in biomedical science including artificial intelligence (AI), microbiome research, as well as the infrastructure and large, diverse participant group of the *All of Us* Research Program. These advances provide unprecedented opportunities to generate new data to provide insight into personalized nutrition also referred to as precision nutrition.

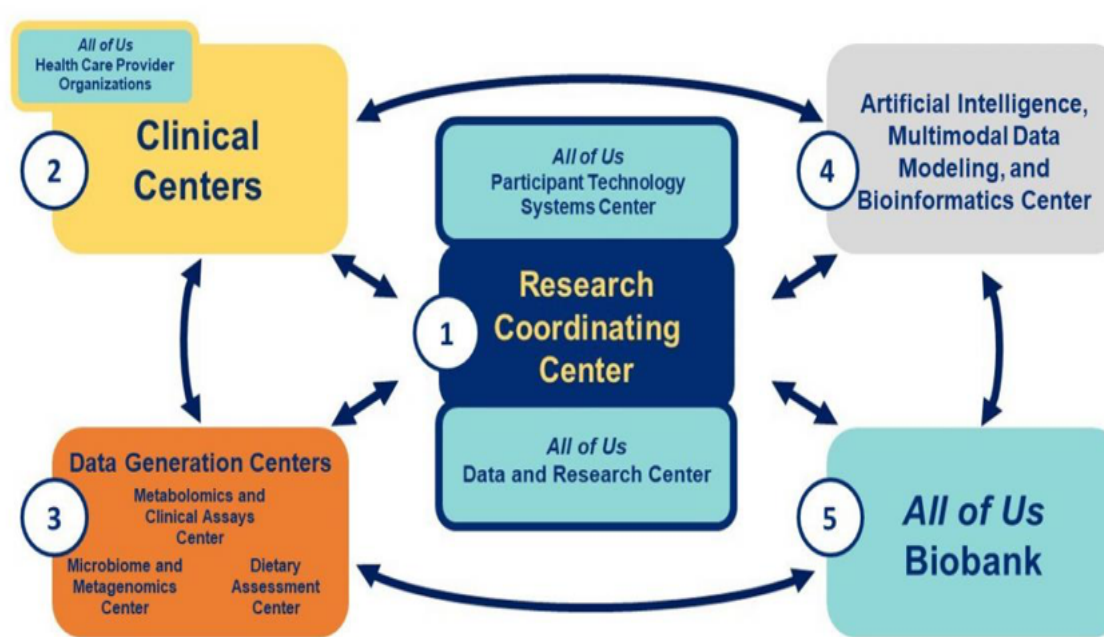
In addition, the first ever [Strategic Plan for NIH Nutrition Research](#) emphasized opportunities to improve our understanding of how individual human biology and molecular pathways influence relationships among diet and environmental, social, and behavioral factors to influence health. Designed to implement aspects of the Strategic Plan, the Nutrition for Precision Health program will conduct a study nested in the *All of Us* Research Program to explore how individuals respond to different diets. The NPH study is the first ancillary study to leverage the *All of Us* infrastructure to answer scientific questions important to participants like understanding more about the role of nutrition in health. High-quality nutrition studies such as the NPH study will help individuals and their health care providers create healthy, precise, and effective diet plans.

The objectives of the study are:

1. To examine individual differences observed in response to different diets by studying the interactions between diet, genes, proteins, microbiome, metabolism and other individual contextual factors
2. To use artificial intelligence (AI) to develop algorithms to predict individual responses to foods and dietary patterns
3. To validate algorithms for clinical application

Less

The Nutrition for Precision Health program includes several integrated components:



- 1) **Research Coordinating Center:** Provide administrative management and coordination across all sites.
- 2) **Clinical Centers:** Recruit, consent, and enroll *All of Us* participants into nutrition program.
- 3) **Data Generation Centers:** a) Perform genetic analyses of microbiome from the human gut; b) Perform metabolic analyses; c) Advance dietary assessment methods.
- 4) **Artificial Intelligence, Multimodal Data Modeling, and Bioinformatics Center:** Establish mathematical and computational modeling, develop algorithms, and enhance data visualization.
- 5) **All of Us Biobank:** Receive, process, and store biosamples and metadata.

This page last reviewed on June 29, 2021

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Healio interview with NHP's leadership:NIH will help guide precision nutrition research

The NPH program has tremendous promise to help inform personalized nutrition recommendation. Watch NPH's leaders in an interview with describe how the program seeks to advance nutrition health: <https://bit.ly/3gz8Ou2>

Precision nutrition: Tailored diet assessments to become a mainstay in medical care by 2030

Precision nutrition is taking the personalization trend to the next level, with NIH predicting it will become a mainstay in medical care by 2030. Dr. Holly Nicastro, program director of Nutrition for Precision Health program, shared with *NutritionInsight* how the NIH Common Fund's Nutrition for Precision Health program will help inform more personalized nutrition recommendations based on individual differences. Read more: <https://bit.ly/3fKcMku>

Nutrition for Precision Health Program Background

On September 11, 2020 the NIH Council of Councils approved the concept for a new NIH Common Fund program "Nutrition for Precision Health, powered by the *All of Us* Research Program." This program will be refined by NIH for potential implementation in Fiscal Year 2022. The archived videocast of the Council of Councils meeting is publicly available and can be viewed [here](#) (Nutrition for Precision Health discussion begins at **1:54:00**). [Slides pdf](#) and a brief [write-up pdf](#) are also available.