NIH 2020-2030 Vision: Increasing the Scope, Quality, Dissemination, & Impact of Nutrition Research

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Program Director, NIH Office of Nutrition Research
Coordinator, Nutrition for Precision Health
OUTLINE

• NIH Nutrition Research and the Office of Nutrition Research
• Implementation of the 2020-2030 Strategic Plan for NIH Nutrition Research
• Nutrition for Precision Health, powered by the All of Us research program
Nutrition is a cross-cutting topic across many ICs

NIH Nutrition Research
Total: $2.0 billion, ~5000 Projects
FY 2020 (estimated)
• **Nutrition research** to address and mitigate diet-related chronic diseases is **especially important now**, in light of the current COVID-19 pandemic, given the increased risks faced by people with these underlying diseases.

• The consequences of COVID-19 infection are even greater for vulnerable populations, where diet related diseases are more prevalent due to **health and social disparities**
Strategic Plan Release Announced by Dr. Collins
I’m pleased to share that this week, NIH has begun the official transfer of ONR to DPCPSI. This reorganization positions ONR to enhance engagement of the NIH Institutes and Centers in implementing the 2020-2030 Strategic Plan for NIH Nutrition Research to develop new collaborations and relationships focused on nutrition research within and outside NIH, and to ensure coordination of and leadership for nutrition research across the agency.

Francis S. Collins, M.D., Ph.D.
Director, National Institutes of Health

January 8, 2021

Statement on the establishment of the Office of Nutrition Research within the NIH Office of the Director
ONR Mission

Advance nutrition science to promote health and reduce the burden of diet-related diseases
What’s Inside
The 2020-30 Strategic Plan for NIH Nutrition Research?

Unifying Vision: Precision Nutrition
Precision Nutrition is the overarching theme with multiple Strategic Goals and Cross-cutting Research Areas.

1. Spur Discovery Innovation through Foundational Research
   - Minority Health and Health Disparities

2. Investigate the Role of Dietary Patterns and Behaviors for Optimal Health
   - Health of Women

3. Define the Role of Nutrition Across the Life Span for Healthy Development and Aging
   - Data Science, Systems Science, and Artificial Intelligence (A.I.)

4. Reduce the Burden of Disease in Clinical Settings
   - Training the Scientific Workforce

-Cross-Cutting Research Areas
The implementation strategy includes trans-NIH activities and initiatives inspired by strategic goals and cross-cutting research areas in the Plan.
An example Implementation Working Group

Nutrition and Health Disparities IWG

Co-Chairs:
Alison Brown, NHLBI
Tanya Agurs-Collins, NCI

Members:
Ligia Artiles, NIMHD
Josephine Boyington, NHLBI
Paul Cotton, NHLBI
Mary Evans, NIDDK
Kirsten Herrick, NCI
Bill Jirles, NIEHS
Lyndon Joseph, NIA
Linda Nebeling, NCI
Holly Nicastro, ONR
Charlotte Pratt, NHLBI
Nishadi Rajapakse, NIMHD
Jill Reedy, NCI
Karen Regan, ONR
Marissa Shams-White, NCI
Yang (Scarlet) Shi, NHLBI
Darien Weatherspoon, NIDCR
Dan Xi, NCI
Giovanna Zappalà, NIA

This IWG seeks to advance NIH research to understand the interactions between diet, nutritional status, the environment, and biological and behavioral processes, and how they contribute to health disparities.

https://dpcpsi.nih.gov/onr/iwg/nutrition-health-disparities
The Nutrition Health Disparities Research Framework was adapted from the NIMHD Minority Health and Health Disparities Research Framework. The framework highlights multiple factors and their intersection that are relevant to understanding and addressing nutrition-related health disparities. Our definition of health disparities includes race/ethnicity, low socioeconomic status, rural, sexual/gender, and minority populations. Additionally, other fundamental characteristics such as sex/gender, disability, and geographic region are included in the framework. For more information about the NIMHD Minority Health and Health Disparities Research Framework see [https://www.nimhd.nih.gov/about/overview/research-framework/](https://www.nimhd.nih.gov/about/overview/research-framework/). We welcome your comments on the Nutrition Health Disparities Research Framework. Please submit feedback to nutritionresearch@nih.gov.
Food Insecurity, Neighborhood Food Environment, and Nutrition Health Disparities: State of the Science

September 21-23, 2021 12:30-5:30 p.m. EDT-Doors open at 12:00 p.m. EDT

NOT-OD-21-183 Request for Information (RFI): Research Opportunities to End Hunger, Food and Nutrition Insecurity.
Past Workshop

Workshop on Bioactive Ingredients in Infant Formula

September 23-24, 2021

Sponsor/Co-Sponsor(s)

Pediatric Growth and Nutrition Branch (PGNB), Division of Extramural Research (DER), NICHD; Office of Dietary Supplements, Office of the NIH Director, NIH; Center for Food Safety and Applied Nutrition, U.S. Food and Drug Administration

Location

Webinar; registration is free, but required

Purpose

This 2-day, virtual workshop—Exploring the Science Surrounding the Safe Use of Bioactive Ingredients in Infant Formula: Considerations for an Assessment Framework—focuses on the functional state-of-the-science of biologically active human milk components and analogs and the implications for safety assessments when used in infant formula.

Contact

Dr. Ashley Vargas, PGNB, DER, NICHD
Phone: 301-827-6030
Email: ashley.vargas@nih.gov

National Institutes of Health
**Program Goal**

This program aims to build a future workforce that will be able to make pivotal discoveries using an increasingly complex landscape of Big Data and a wide array of data tools to tackle complex biomedical challenges in nutrition science and diet-related chronic diseases.

**Initiative**

- An institutional research training program [T32] for advanced training in artificial intelligence for precision nutrition science research (AIPrN)
- ONR and participating institutes intend to co-fund 8-12 programs, contingent upon NIH appropriations and the quality of proposals
**Goal**: To develop algorithms to predict individual responses to foods and dietary patterns based on **microbiome, physiological, metabolic, behavioral, cognitive, and environmental data**, and leverage existing **All of Us genomic, EHR, and survey data.**

[https://commonfund.nih.gov/nutritionforprecisionhealth](https://commonfund.nih.gov/nutritionforprecisionhealth)
Precision Nutrition is a Unifying Vision

Objective 2-5. Develop and Validate Algorithms to Predict What All of Us Should Eat
Nutrition for Precision Health
Powered by the All of Us Research Program

• NPH Primary Goal: to develop algorithms to predict individual responses to foods and dietary patterns
  • Using comprehensive set of microbiome, genomic, physiological, metabolic, behavioral, cognitive, contextual, electronic health record, survey, and environmental data
  • In large and diverse population of participants

• NPH Secondary Goals:
  • Improving dietary assessment methods
  • Nutrition Science Discovery Engine

• Learn more: https://commonfund.nih.gov/nutritionforprecisionhealth
Study overview – modular design

1. Examine baseline diet and physiological responses to meal challenges
   - 10,000 All of Us participants

2. Examine responses to 3 short-term intervention diets in free-living controlled feeding studies
   - 1,000-1500 Module 1 participants

3. Examine responses to 3 short-term intervention diets in domiciled controlled feeding studies
   - 500-1000 Module 1 participants

In all 3 modules
- Collect microbiome, physiological, metabolic, behavioral, cognitive, and environmental data, and leverage existing genomic, EHR, and survey data, and conduct mixed meal challenges to model the impact of diet and dietary patterns on physiological responses
- Use machine learning and artificial intelligence to develop predictive algorithms
## NPH is a Common Fund Program

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<thead>
<tr>
<th>Characteristics</th>
<th>Requirements</th>
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<td><strong>Transformative</strong></td>
<td>Must have the potential to dramatically benefit biomedical and/or behavioral research</td>
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<td><strong>Catalytic</strong></td>
<td>Must achieve a defined set of goals within 5-10 years</td>
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<td><strong>Synergistic</strong></td>
<td>Outcomes must synergistically advance individual missions of Institutes and Centers</td>
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<td><strong>Cross-cutting</strong></td>
<td>Program areas must cut across missions of multiple Institutes and Centers, requiring a coordinated approach</td>
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<td><strong>Unique</strong></td>
<td>No other entity is likely or able to do</td>
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NPH is nested in the *All of Us* Research Program

- Diversity at the scale of 1 million people or more
- Focus on participants as partners
- Longitudinal design, ability to recontact
- **Multiple data types**: EHR, surveys, baseline physical measurements, biospecimens, genomics
- **National, open resource for all**: broadly accessible to all researchers with open source software & tools
- **Security and privacy safeguards** for all participant data

https://allofus.nih.gov/
Timeline

- **Jan 2021**
  - Funding Opportunity Announcement publication

- **April 2021**
  - Application receipt date

- **Early 2022**
  - First awards made, readiness year begins

- **Early 2023**
  - First participant enrolled

Learn more: [https://commonfund.nih.gov/nutritionforprecisionhealth](https://commonfund.nih.gov/nutritionforprecisionhealth)
Opportunities for the nutrition research community to engage ad hoc with NIH staff in person has been and will continue to be limited in the next year.

Through our new NutRitioNaLS program, we’re facilitating discussions between relevant NIH staff and nutrition research stakeholders (trainees, scientists or groups).
Thank you!
Questions?