National Institutes of Health
Office of Nutrition Research

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

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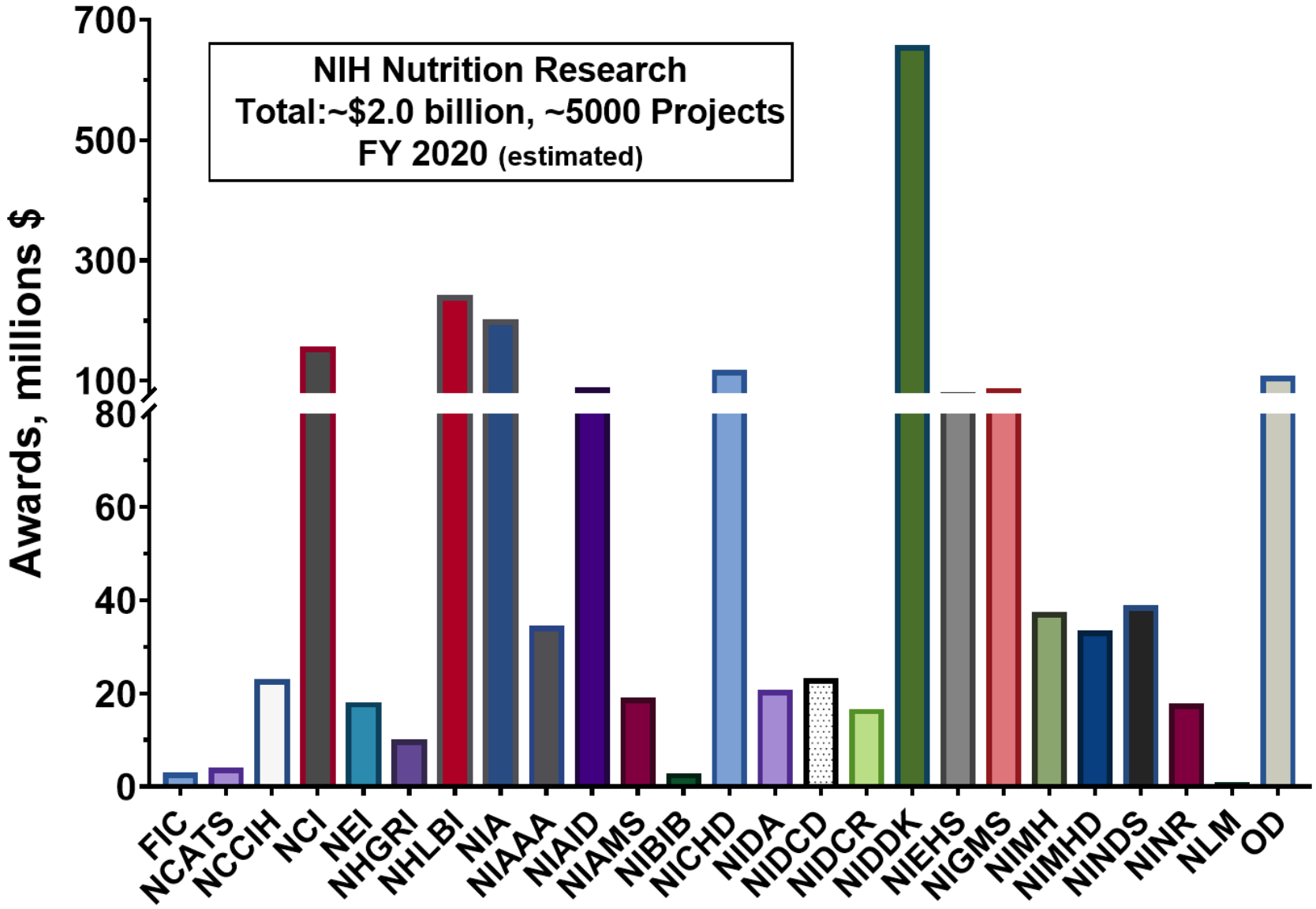
Coordinator, *Nutrition for Precision Health*

NIH National

OUTLINE

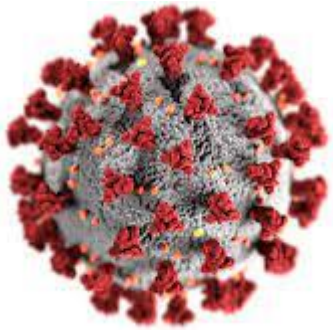
- NIH Nutrition Research and the Office of Nutrition Research
- Implementation of the 2020-2030 Strategic Plan for NIH Nutrition Research
- Nutrition for Precision Health, powered by the *All of Us* research program

Nutrition is a cross-cutting topic across many ICs



COVID-19 and Nutrition Research

- **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**



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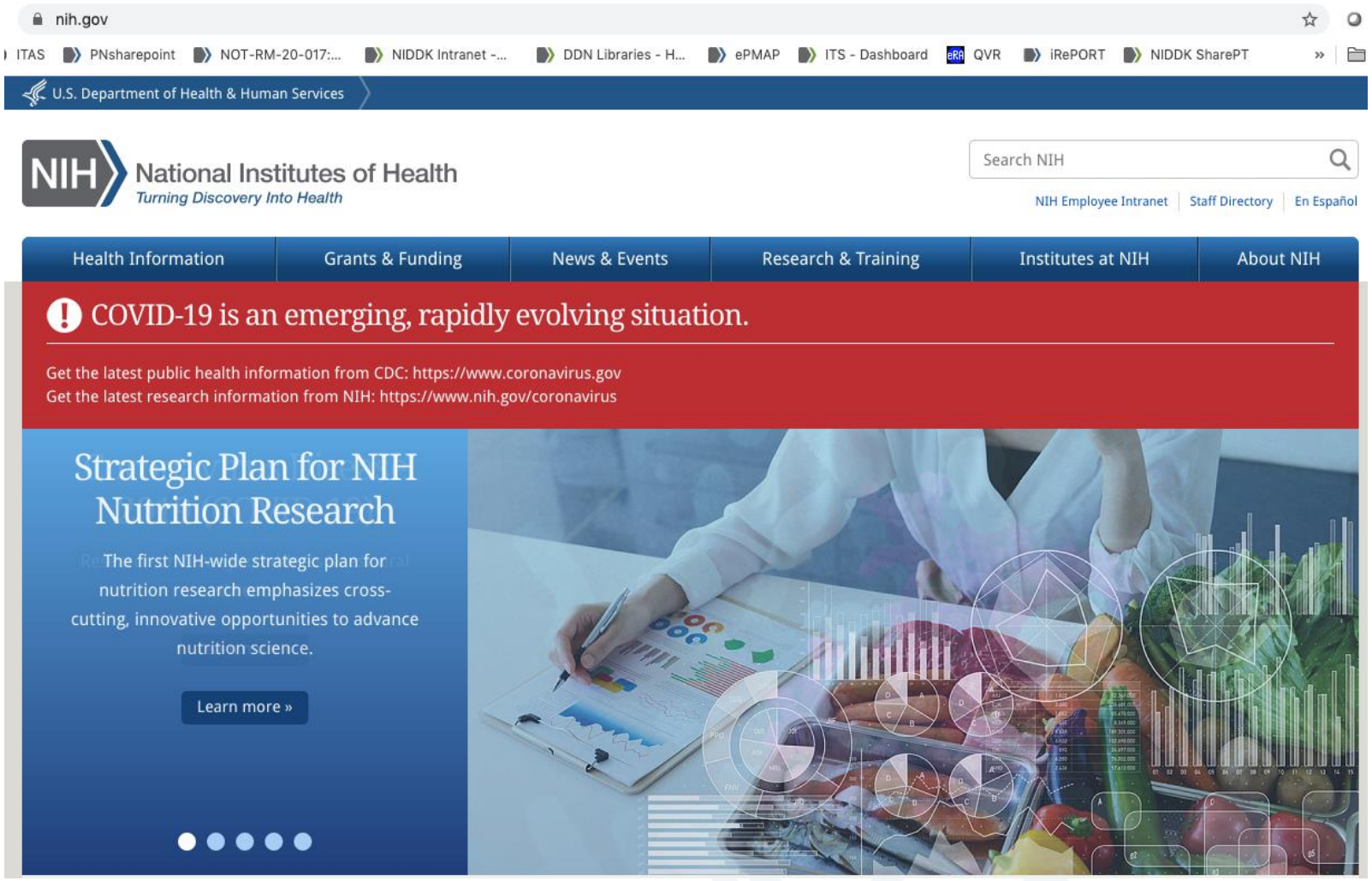
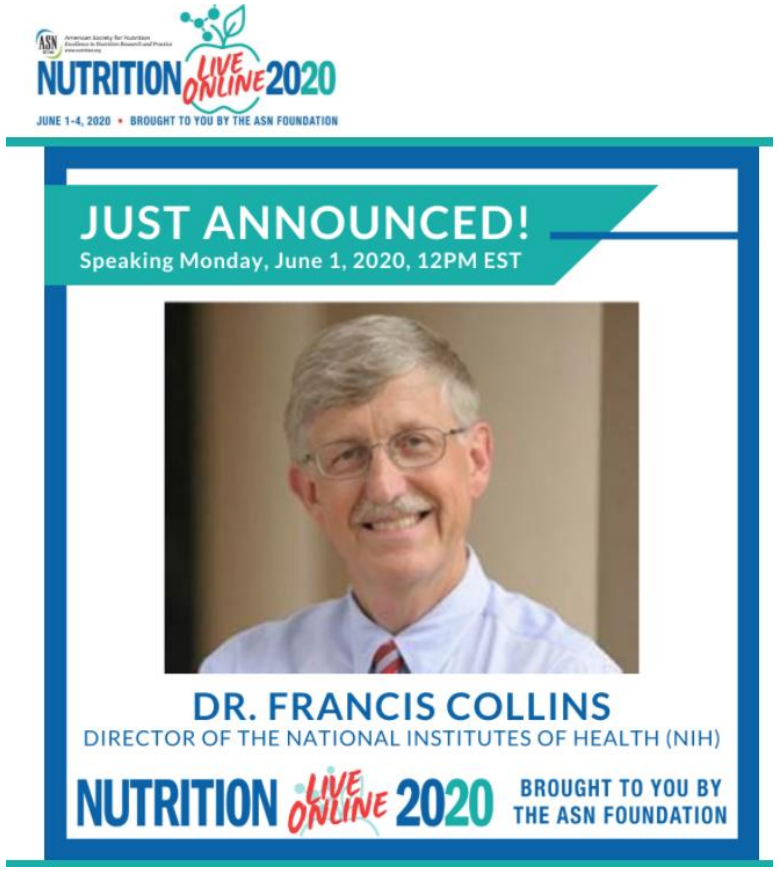
Strategic Plan Release Announced by Dr. Collins





DEPARTMENT OF HEALTH & HUMAN SERVICES · USA

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January 8, 2021

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.

National Institutes of Health
Division of Program Coordination, Planning, and Strategic Initiatives

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

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Office of Nutrition Research

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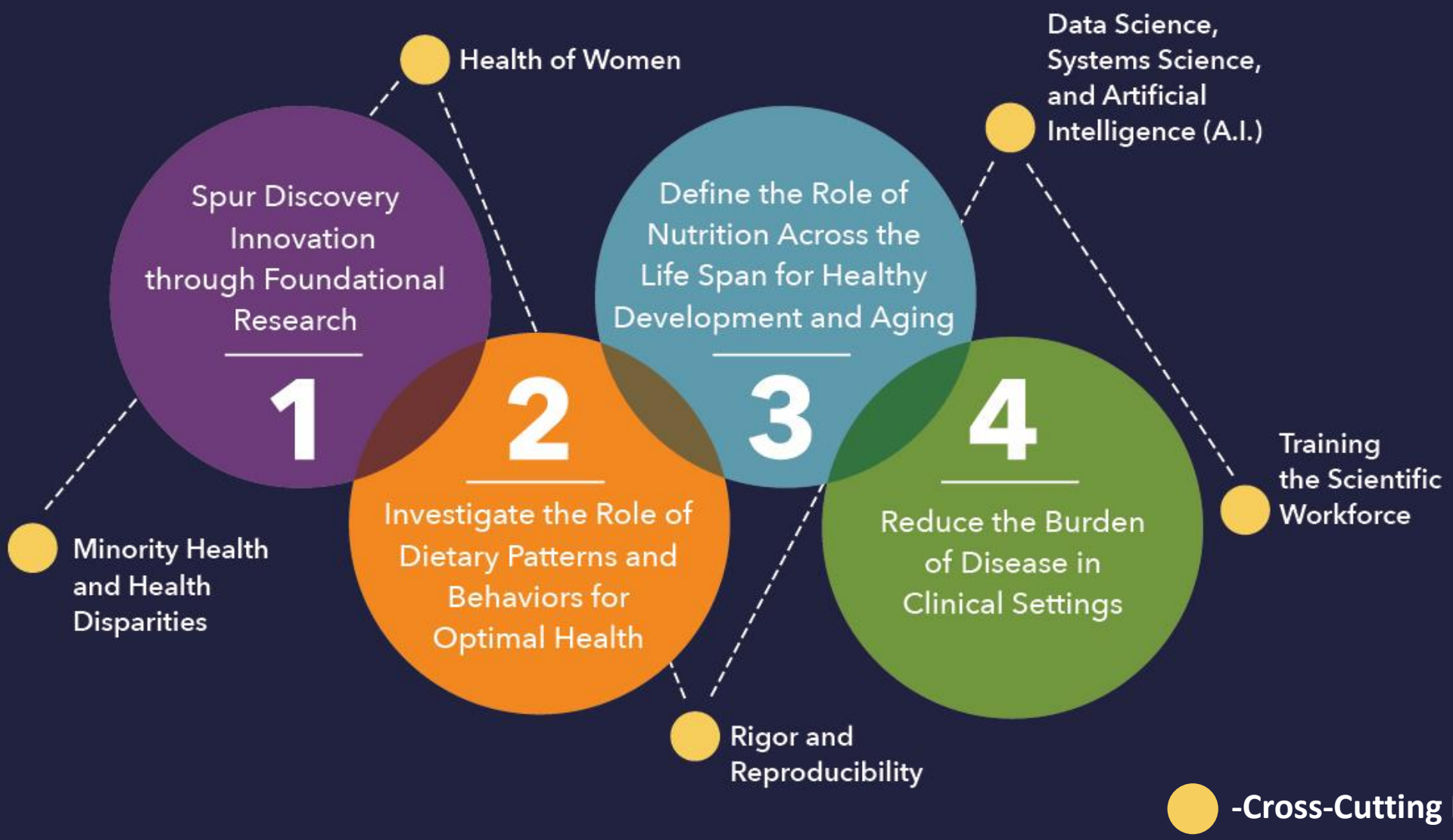
nutritionresearch@nih.gov

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*



The implementation strategy includes trans-NIH activities and initiatives inspired by strategic goals and cross-cutting research areas in the Plan.

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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

https://dpcpsi.nih.gov/onr/iwg/nutrition-health-disparities

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.

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Nutrition Health Disparities Research Framework

		Levels of Influence			
		Individual	**Interpersonal**	**Community**	**Societal**
Domains of Influence *(Over the Life Course)*	**Biological**	Taste Predispositions, Nutritional Status, Nutrition Metabolism, Nutrigenomics, Metabolomics, Microbiome, Food Allergies and Intolerances	Maternal -Child Interaction, Feeding Practices (e.g., breastfeeding), Family Microbiome	Community Illness Food Contaminant	Sanitation Pathogen Exposure (e.g., E Coli)
	Behavioral	Dietary Intake, Dietary Habits, Eating Patterns, Coping Strategies	Family Dietary Practices (e.g., family meals) School/Work Dietary Behavior	Community Functioning Community engagement (lobbying for full- service grocery stores)	Nutrition Policies and Laws (e.g., food assistance programs and access) State- and City-level Food and Nutrition Policies (e.g., soda taxes)
	Physical/Built Environment	Personal Food Environment and Access (e.g., exposure to fast food at home)	Household Food Environment School/Work Food Environment	Community Environment Community Resources Neighborhood Food Environment (e.g., food deserts, food marketing)	Societal Structures (e.g., zoning laws) Dept. of Education and School System Workplace Policies and Accommodations, Food Marketing
	Sociocultural Environment	Food Preferences, Sociodemographic (e.g., discretionary income) Food Literacy and Preparation Skills Limited English Cultural Identity/Acculturation Response to Discrimination	Social Networks Family/Peer Norms Interpersonal Discrimination (e.g., dietary practice, body image)	Community Norms Local Structural Discrimination (e.g., dietary practice, body image)	Social Norms Food System (e.g., supply chain, food costs) Societal Structural Discrimination
	Health Care System	Insurance Coverage, Access, Utilization Health Literacy Treatment Preferences Nutrition Medical Therapy	Patient-Clinician Relationship Medical Decision-Making (e.g., referrals to RDs)	Availability of Services Safety Net Nutrition Services (e.g., WIC, SNAP, food pantries)	Quality of Care Health Care Policies for Nutrition Services (e.g., screening & treatment)
Health Outcomes		**Individual Health** 	**Family/Organizational Health** 	**Community Health** 	**Population Heath** 

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/. **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

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Virtual Workshop
September 21 – 23, 2021
12:30 – 5:30 p.m. EDT

OVERVIEW AGENDA SPEAKERS ABSTRACTS & POSTERS SPONSORS & PARTNERS HELP

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

Share

Food Insecurity, Neighborhood Food Environment, and Nutrition Health Disparities: State of the Science

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

www.labroots.com/ms/virtual-event/food-insecurity-neighborhood-food-environment-nutrition-health-disparities-science

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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

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Advanced Training in Artificial Intelligence for Precision Nutrition Science Research (AIPrN)

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

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Nutrition for Precision Health

Powered by the *All of Us* Research Program

The first *All of Us* Ancillary study

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

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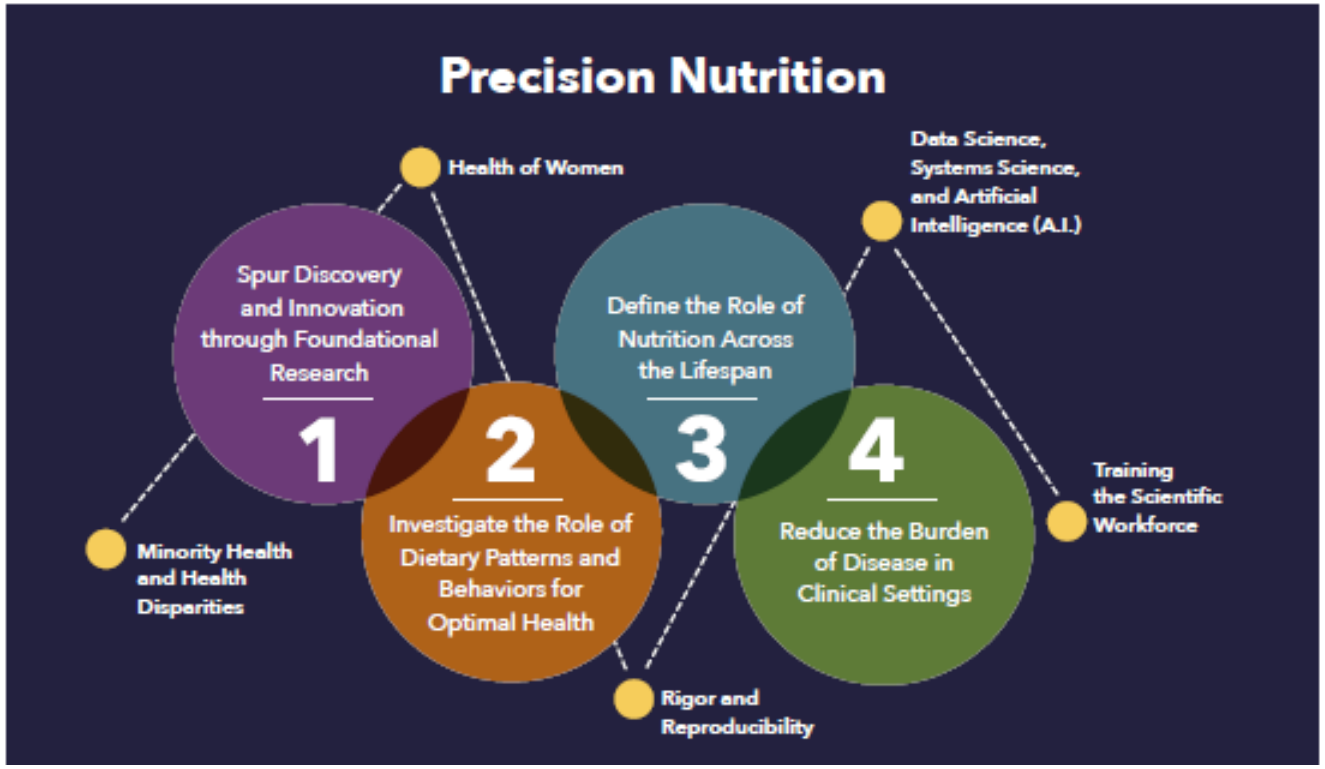
2020–2030 Strategic Plan for NIH Nutrition Research

A Report of the NIH Nutrition Research Task Force

Precision Nutrition is a Unifying Vision



Objective 2-5. Develop and Validate Algorithms to Predict What All of Us Should Eat

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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

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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

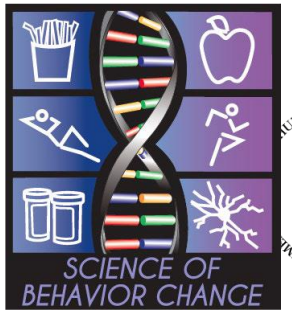
500-1000 Module 1 participants

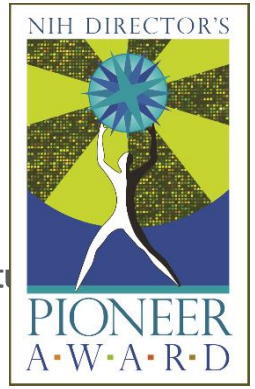
In all 3 modules

- 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

Transformative	Must have the potential to dramatically benefit biomedical and/or behavioral research
Catalytic	Must achieve a defined set of goals within 5-10 years
Synergistic	Outcomes must synergistically advance individual missions of Institutes and Centers
Cross-cutting	Program areas must cut across missions of multiple Institutes and Centers, requiring a coordinated approach
Unique	No other entity is likely or able to do





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/

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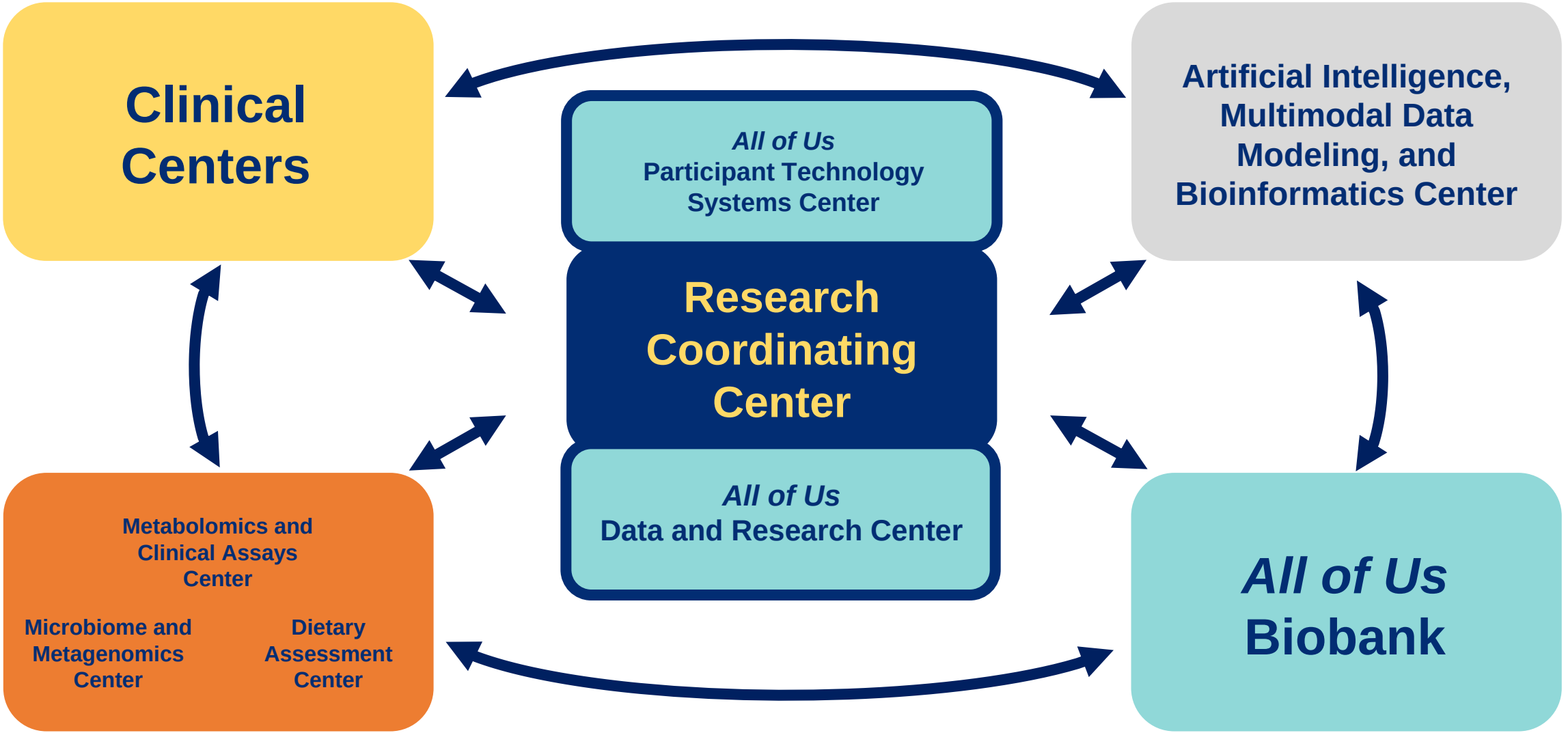
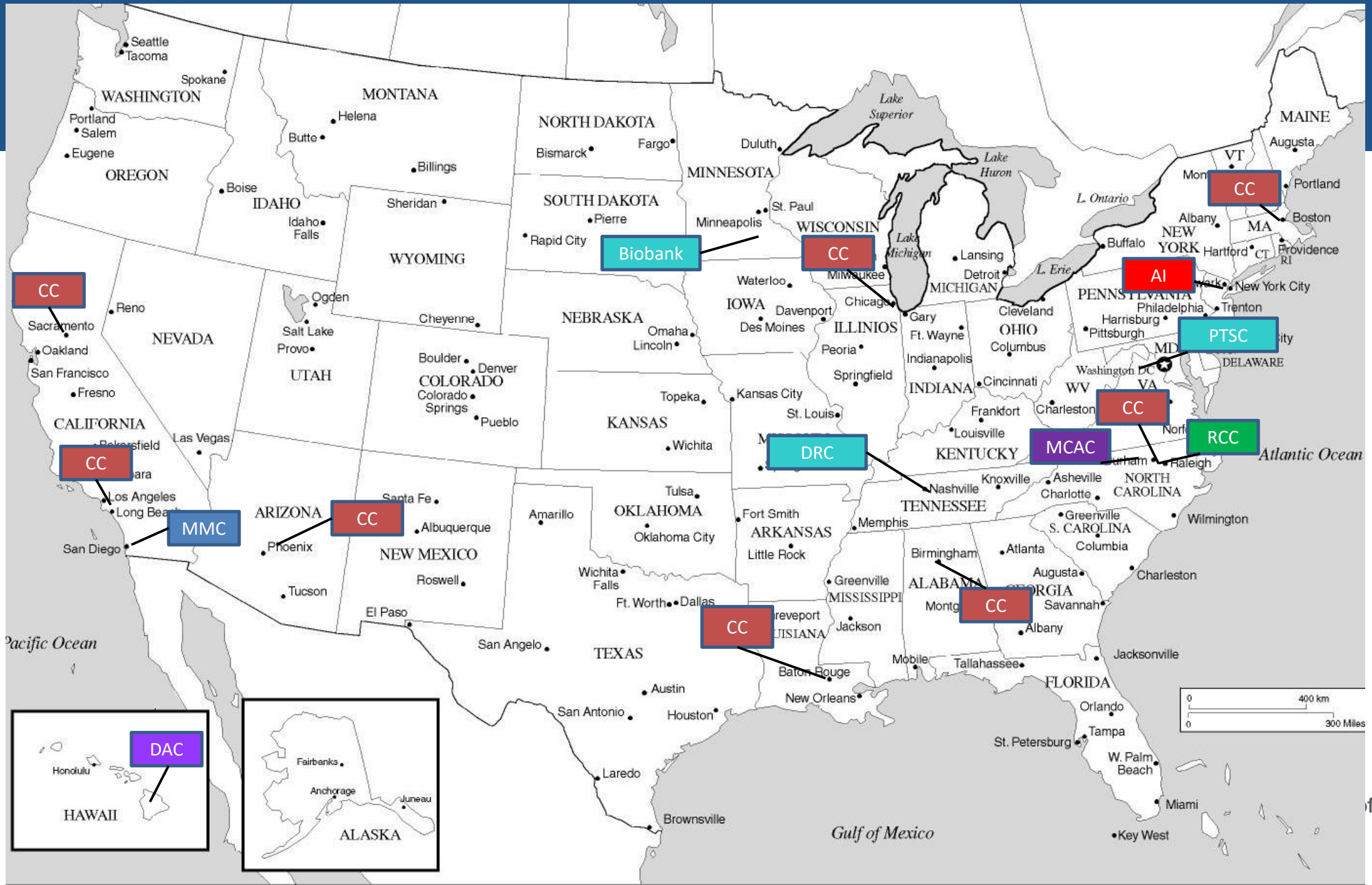
NPH Program structure

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Tampa
St. Petersburg
W. Palm Beach
Miami
Key West
Gulf of Mexico
Atlantic Ocean
Pacific Ocean
Lake Superior
Lake Huron
Lake Michigan
L. Erie
L. Ontario
Buffalo
Albany
NEW YORK
Hartford
CT
Providence
RI
MAINE
Augusta
VT
Portland
Boston
MA
New York City
PENNSYLVANIA
Philadelphia
Trenton
Harrisburg
Pittsburgh
MD
DELAWARE
Washington DC
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Raleigh
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ALASKA
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Juneau
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400 km
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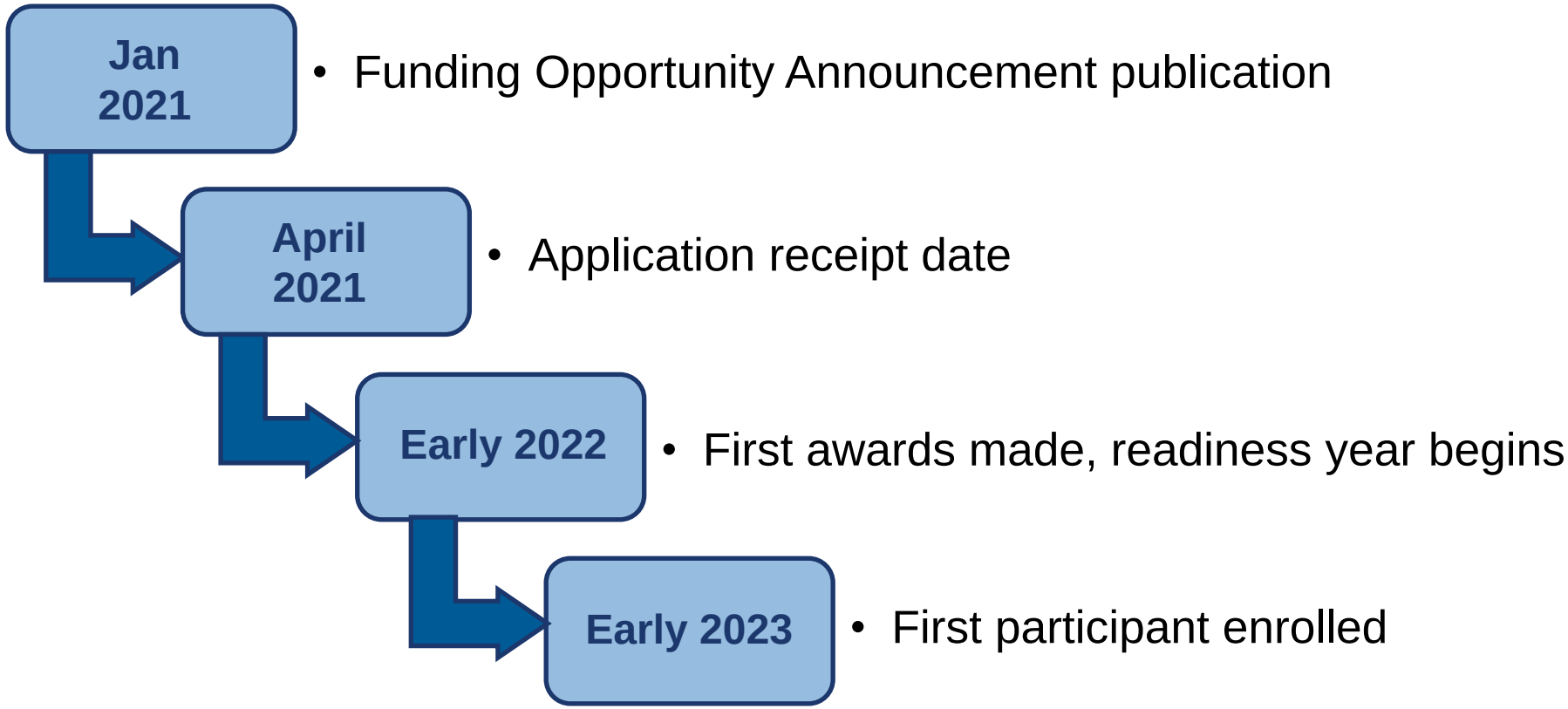
300 Miles

Timeline



Learn more: https://commonfund.nih.gov/nutritionforprecisionhealth

We're Listening

- Opportunities for the nutrition research community to engage ad hoc with NIH staff in person has been and will continue to will be limited in the next year
- Through our new **N**ut**R**iti**oN**a**LS** program, we're facilitating discussions between relevant NIH staff and nutrition research stakeholders (trainees, scientists or groups).

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Thank you!
Questions?