Nutrition and Nursing – The Perfect Pairing!

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United States of America (USA)

Acknowledgments

The ONR team (past and present)

The ODS team (past and present)

Our NIH colleagues (past and present)

Our federal colleagues (past and present)

Our extramural colleagues (past and present)

Figure source Teamwork makes the Dreamwork

Overview

- Nutrition research at NIH
- Overview of ONR and ODS
- Integration and areas of synergy with NINR
- Future opportunities

Partner Logos

Our Guiding Principles

ONR → biology
ODS → translation

- Food and nutrition are central to the human experience
- Nutrition ≠ Food
  - Nutrition connects the foods we eat to our overall health (physical and mental)
    - Soil/land/water → food → metabolites → biological function → health
- The biology of nutrition touches every cell and system in our bodies – at every age and stage across the lifespan – and is inextricably linked to all aspects of health and disease
- Nutritional status is a fundamental biological variable – like age and sex – reflecting its intimate and inextricable role in *all* biological systems and is both an *input* and an *outcome* of health and disease
- Nutrition is disease agnostic

Our Conceptual Framework:

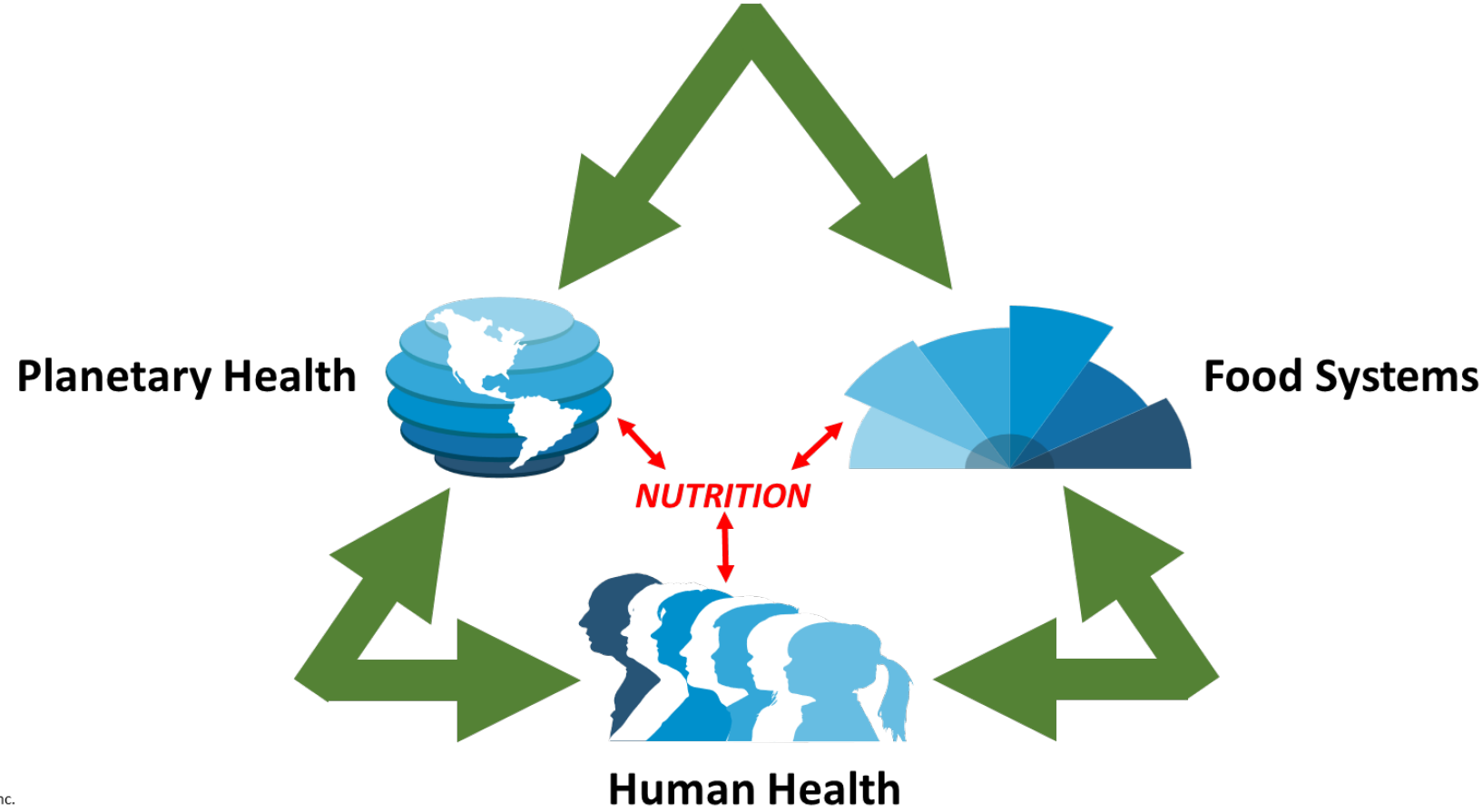

Figure design: CommCore Marketing & BioCentric, Inc.

Why Do We Care So Much? So What?

- The US and the whole world are facing an urgent nutrition-related health crisis
- Malnutrition (in all its forms) is the leading cause of morbidity and mortality in the world today
- In the US specifically, suboptimal nutrition is threatening our public health, economy, and national security, and is estimated to lead to the death of ~15,000 Americans each week
- The combined health care spending and lost productivity from suboptimal diets costs the US economy >$1.1 trillion per year
- Suboptimal diets are responsible for more deaths globally than any other risk factor – including tobacco smoking, air pollution, and high blood pressure
- As many Americans die each year from diet-related illnesses as died during the entire American Civil War and World War II combined

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NIH Nutrition Research Report

Actual Obligations for NIH Nutrition Research and Training in Current and Constant Dollars and as a Percentage of Total NIH Obligations, FY19-FY23 (in thousands of dollars)

Fiscal Year	Nutrition Research & Training Current Dollars[a]	Nutrition Research & Training Constant Dollars[b]	Actual Total NIH Obligations[c]	Constant Nutrition Dollars as a Percentage of Actual Total NIH Obligations
2019	$1,931,268	$1,931,268	$39,420,151	4.90
2020	$2.047,194	$2,012,392	$41,524,839	4.85
2021	$2,065,040	$1,980,373	$42,738,079	4.63
2022	$2,102,819	$1,928,285	$45,327,368	4.25
2023	$2,230,647	$1,967,431	$48,371,641	4.07

[a]Source: NIH RePORT using the Nutrition RCDC category.
[b]Based on the Biomedical Research and Development Price Index, Fiscal Year 2019 equals 100 percent.
[c]Source: NIH Budget Office Actual Total Obligations by Institute and Center FY00-FY23. The amounts for FY22 and FY23 include ARPA-H.

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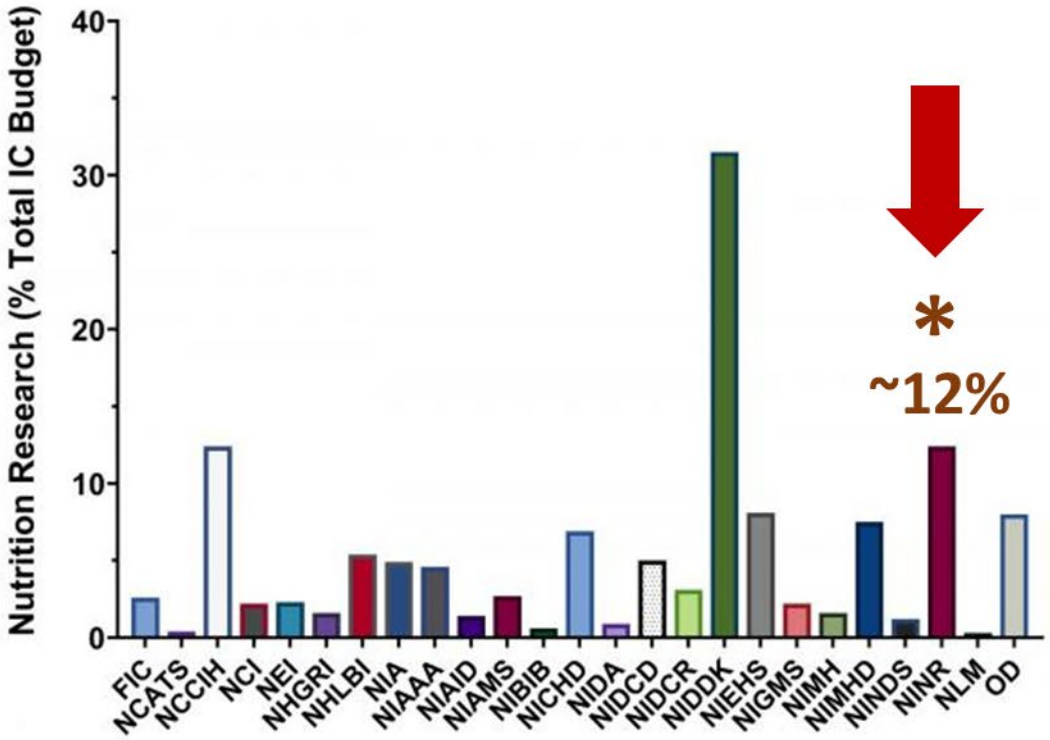
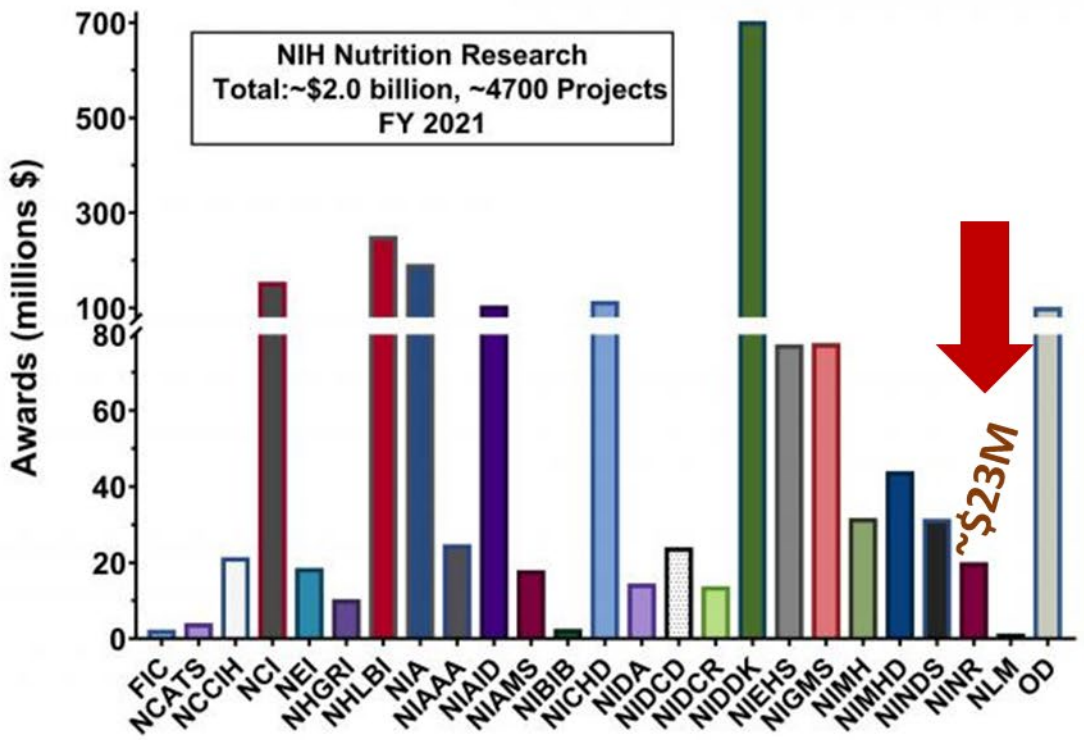
Funding for nutrition research is distributed across the NIH

~$2B ≈ ~4% of total NIH obligations

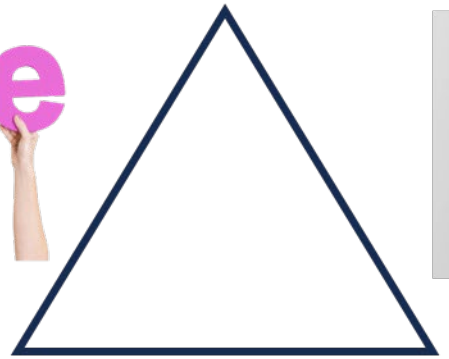
Note: ONR moved from NIDDK to the NIH OD in Jan 2021





Our Value-Added:

Technical Support



Service

Coordination

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ONR Responsibilities

- Reinforce the integral role of nutrition in all aspects of human biology, health, and disease
- Coordinate nutrition research across the NIH
- Advise NIH leadership and other key officials on matters related to nutrition research
- Lead interagency committees and working groups on matters related to nutrition research
- Produce the biennial NIH Nutrition Research Report

FY25 Operating Budget: $2,141,819

- **Current Staff:** 6
- **Interactions:** 24 NIH ICs and the OD have a nutrition portfolio
- **Context:** ~$2B/yr is spent at NIH on nutrition-related research (~$4% of total NIH obligations)
- **Reach:** USG and beyond
- **Purpose:** Elucidate the fundamental biology of nutrition and its role in optimizing whole person health across the lifespan

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Office of Nutrition Research

Vision:

Advance nutrition science for the health of this and future generations.

Values:

Integrity, Curiosity, Teamwork, Communication, Transparency, Growth

Mission:

Stimulate innovative research to address the complexities of nutrition, its ecology, and its critical role in health across the lifespan for all.

Goal:

Reinforce the integral role of nutrition in all aspects of human biology, health, and disease. Achieving this goal will:

- Improve the precision of assessment and attribution of one's nutritional status to support clinical and public health interventions.
- Provide the evidence base to develop context-specific, culturally appropriate, resilient, and sustainable solutions to address priority health outcomes across the lifespan.

Strategy:

Serve as a synergistic hub across NIH, the federal government, and nongovernment multisectoral partners to support the nutrition research agenda. This will be accomplished through:

- Service
- Technical support and assistance
- Coordination

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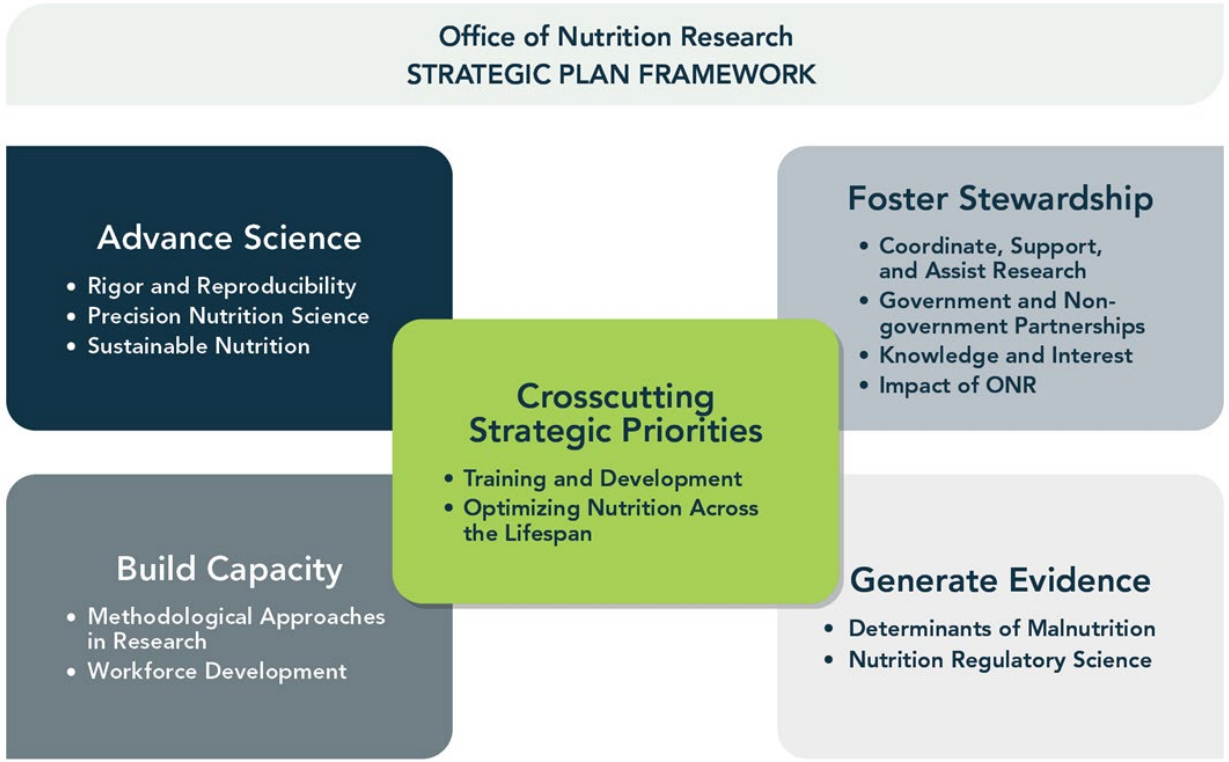
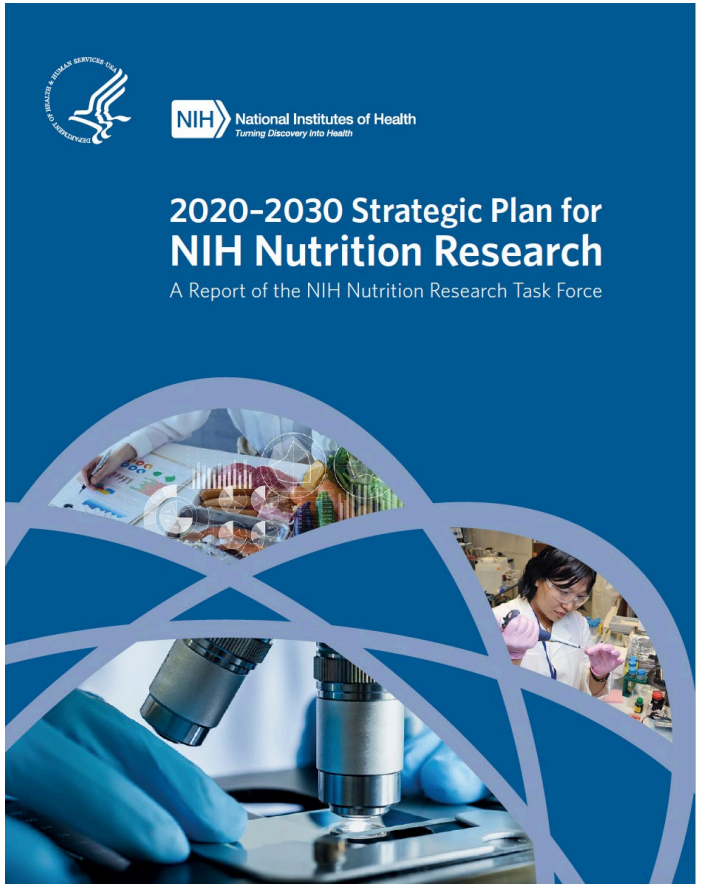
Office of Nutrition Research Strategic Plan Framework



NIH Nutrition Research



National Institutes of Health
Office of Dietary Supplements

Operating Budget

Established in 1995, the legislated† purpose of ODS is:

1) To explore more fully the potential role of dietary supplements as a significant part of the efforts of the U.S. to improve health care, and
2) To promote scientific study of the benefits of dietary supplements in maintaining health and preventing chronic disease and other health-related conditions

Specific duties include:

- Conduct and coordinate dietary supplement research within NIH
- Collect and compile the results of dietary supplement research
- Serve as principal advisor to the HHS Secretary, NIH Director, CDC Director, and FDA Commissioner on issues related to dietary supplements

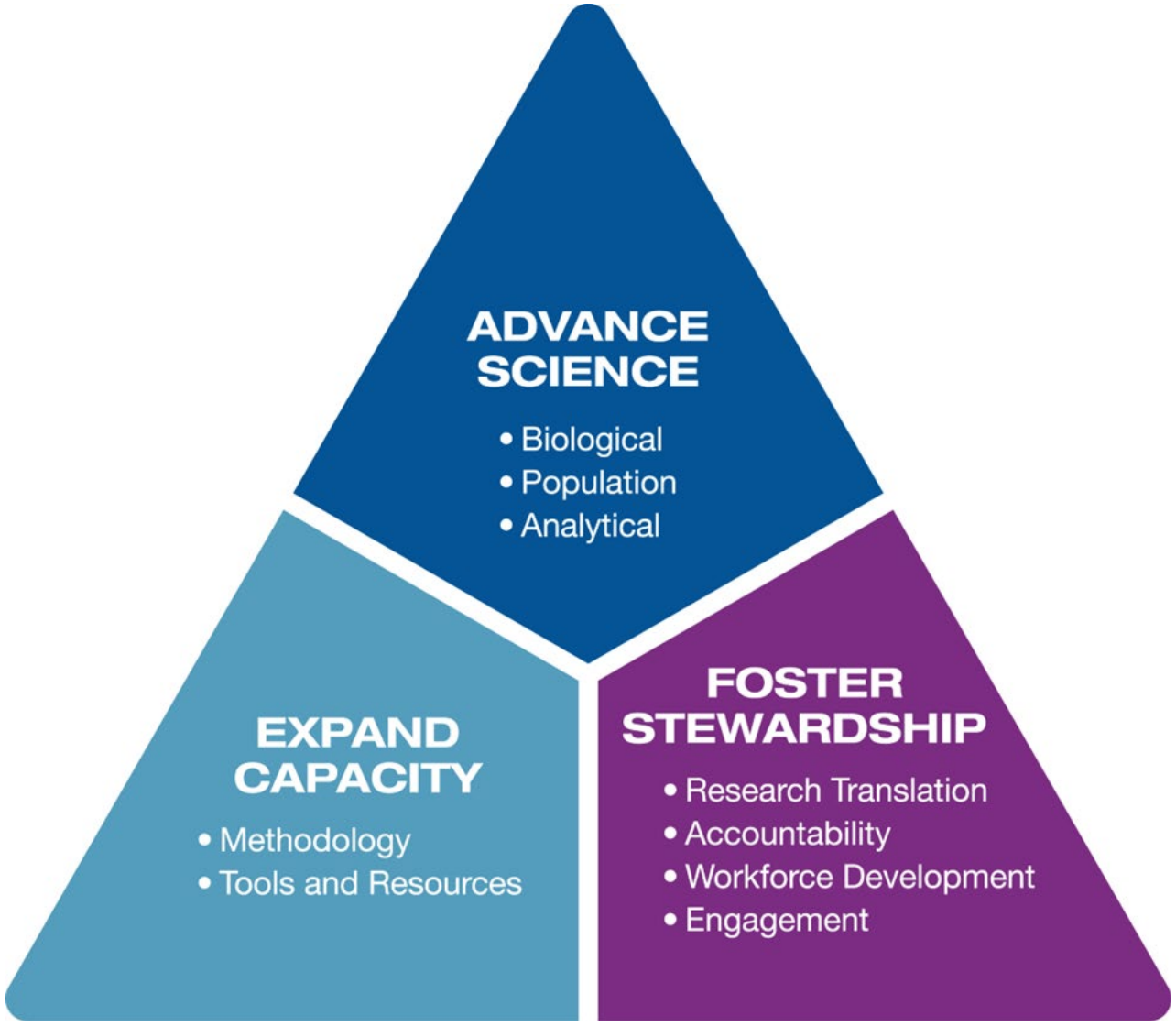
- **FY25 Operating Budget:** $28,577,222
- **Current Staff:** 21 (11 FTEs, 8 contractors, 2 fellows)
- **Interactions:** ODS has supported DS-related research in 20 ICs over the past 10 years
- **Context:** ~$300M/yr is spent at NIH on DS-related research (~600 unique awards/yr); ODS co-funds ~50 extramural awards/yr (~$8.5M)
- **Reach:** USG and beyond
- **Purpose:** Elucidate the role of dietary supplements in optimizing health

†*Dietary Supplement Health and Education Act of 1994 (Public Law 103-417)*

**FDA oversees regulation of dietary supplement ingredients and finished products*

Mission Driven Goals

- To advance dietary supplement science and catalyze innovative, collaborative research to close critical gaps of public health interest
- To expand the capacity to strengthen the field of dietary supplement science and address emerging public health concerns
- To foster stewardship, collaboration, and accountability



Cross-Cutting Strategic Priorities:

Healthy Americans

- To understand biological and social factors that influence Americans' use of dietary supplements and the effects that dietary supplements have on health outcomes

Healthy Lifespan

- To understand associations between dietary supplement use, disease prevention, and health optimization at different ages and life stages and the biological mechanisms through which dietary supplements impact health

Resilience

- To understand how dietary supplements trigger biological mechanisms that result in resilient health outcomes and how these outcomes may vary across the lifespan

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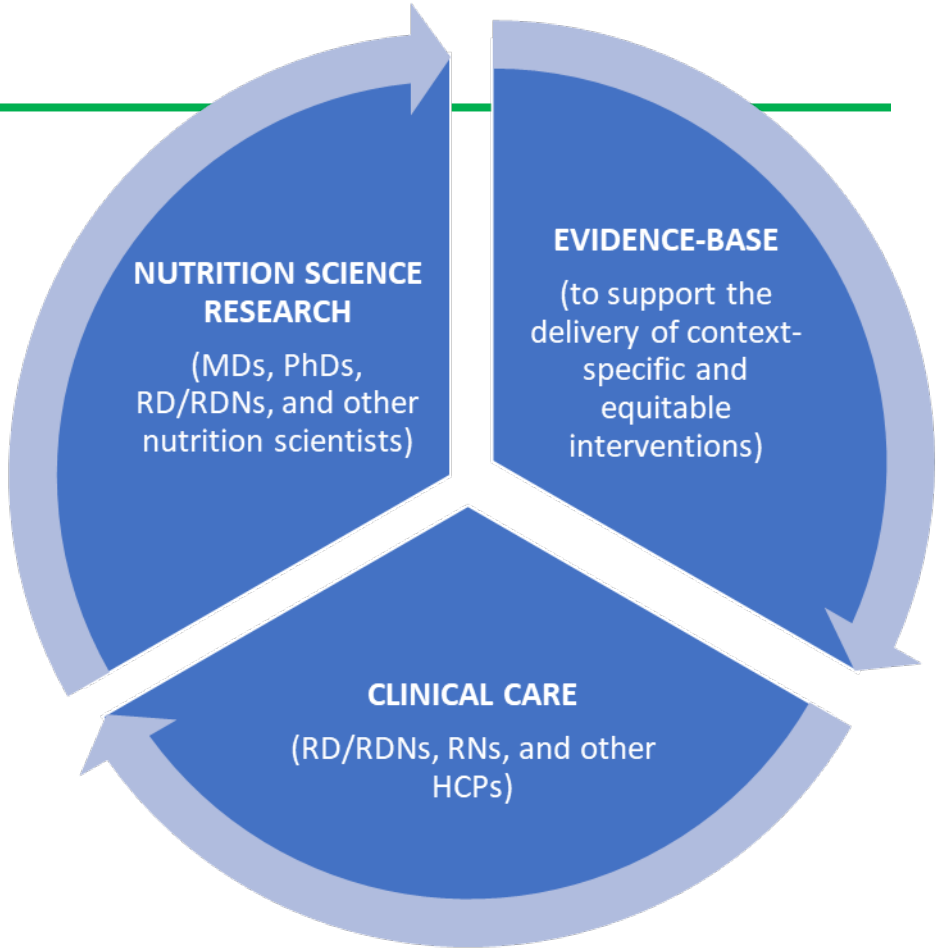
Office of Nutrition Research

Our Goals:

- ONR & ODS are committed to addressing priority issues in public health and nutrition and to the concept of translational research and the development of new and evidence-informed assessment methodologies and interventions to improve clinical care and to lead and move biomedical science and discovery in all areas of nutrition
- ONR & ODS support the delivery of evidence-informed, equitable, context-specific, culturally appropriate, resilient, and sustainable solutions to inform programs, policies, and practices to address priority diet, nutrition, and health challenges in the US and globally



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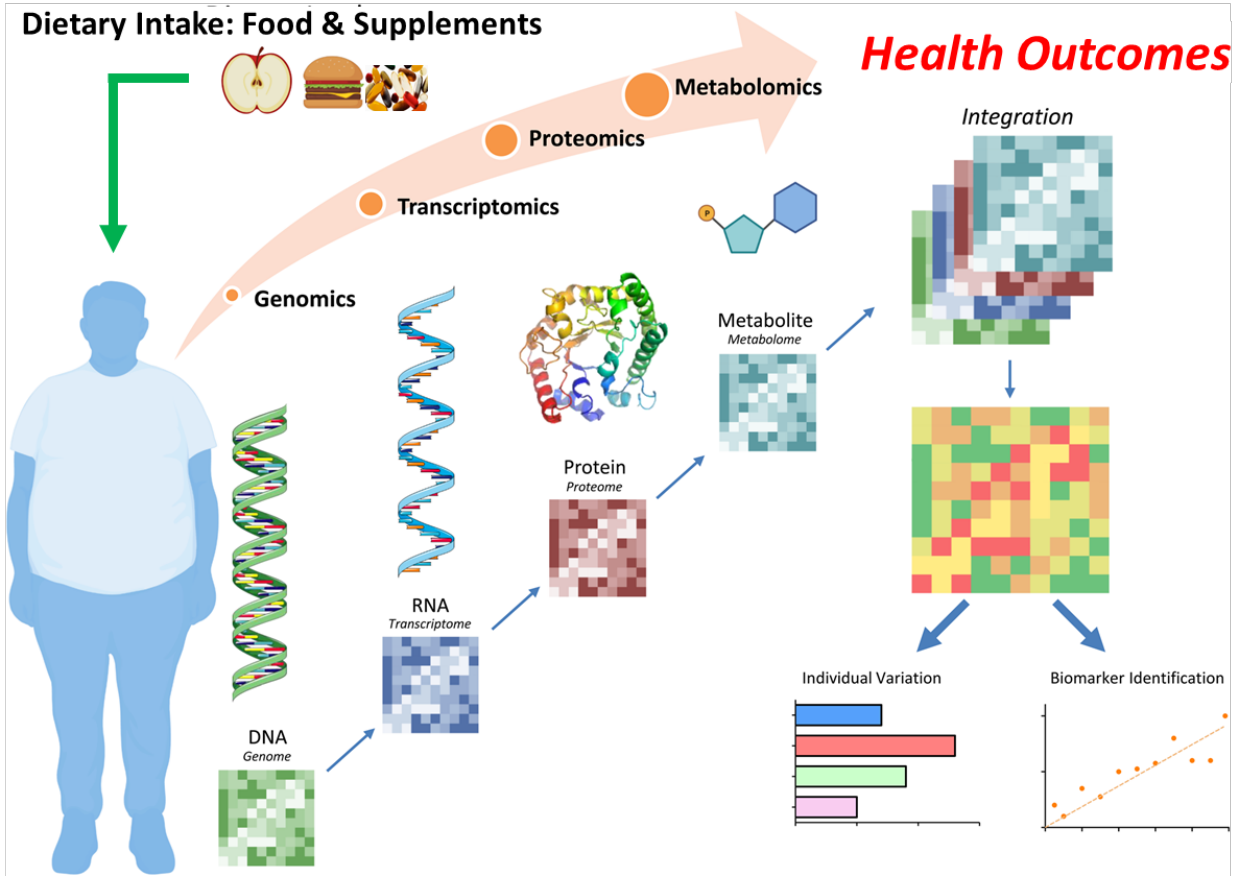
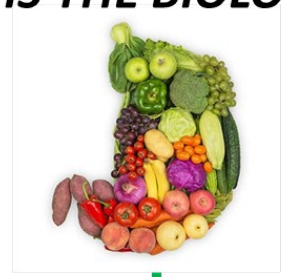
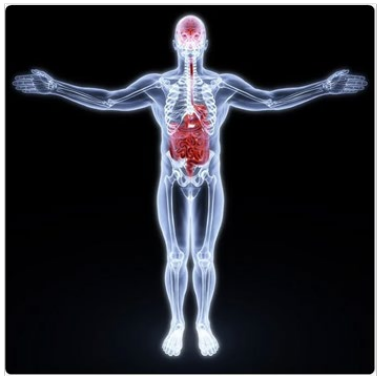
Dietary Intake: Food and Supplements and Health Outcomes



WHAT IS THE BIOLOGY?





Credit: Dim Dimich/Shutterstock.com

Mitchelson KAJ et al. Proc Nutr Soc 2023;82:208-218.

The fun stuff - moving ahead

- Integration and areas of synergy with NINR
- Future opportunities

Nursing science and nursing research:

Science and research that capitalizes on the interdisciplinary, problem-solving, and holistic approach to nursing while taking into consideration the impact of the conditions of daily life on health outcomes.

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

1

Examine **baseline diet** and physiological responses to meal challenges in an observational study

2

Examine responses to 3 short-term intervention diets in **community-dwelling controlled feeding** studies

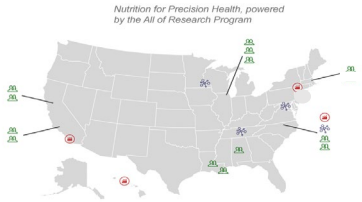
3

Examine responses to 3 short-term intervention diets in **domiciled controlled feeding** studies

Objectives:

- 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
- To use artificial intelligence (AI) to develop algorithms to predict individual responses to foods and dietary patterns

Nursing science plays a key role in all aspects of the NPH Initiative



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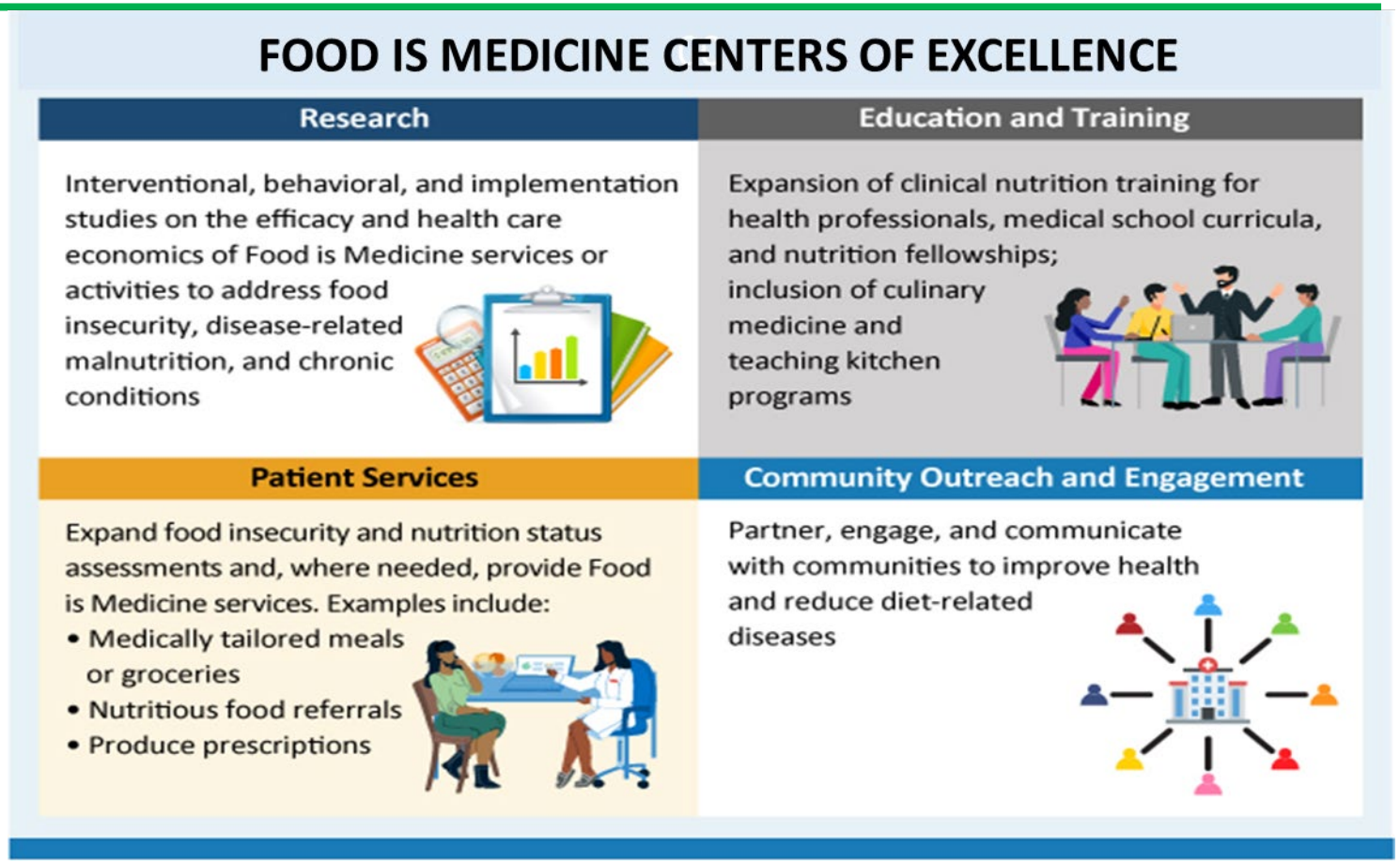
NIH Food Is Medicine (FIM) Concept:

- Research
- Education and Training
- Patient Services
- Community Outreach and Engagement

Food is Medicine
Centers of Excellence

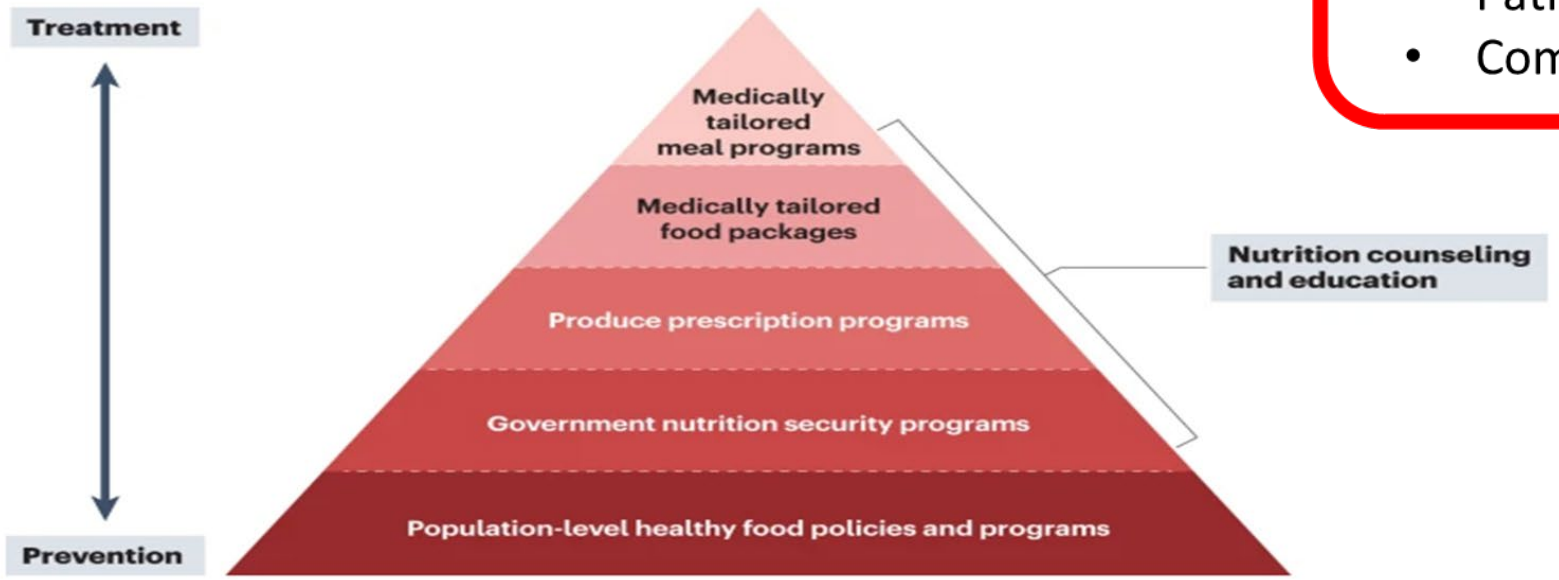
Nursing science plays a key role in FIM



Food Is Medicine (FIM)

NIH FIM concept priorities:

- Research
- Education and training
- Patient services
- Community outreach and engagement



Individuals:

- Health care access
- Food availability
- Food access

Systems:

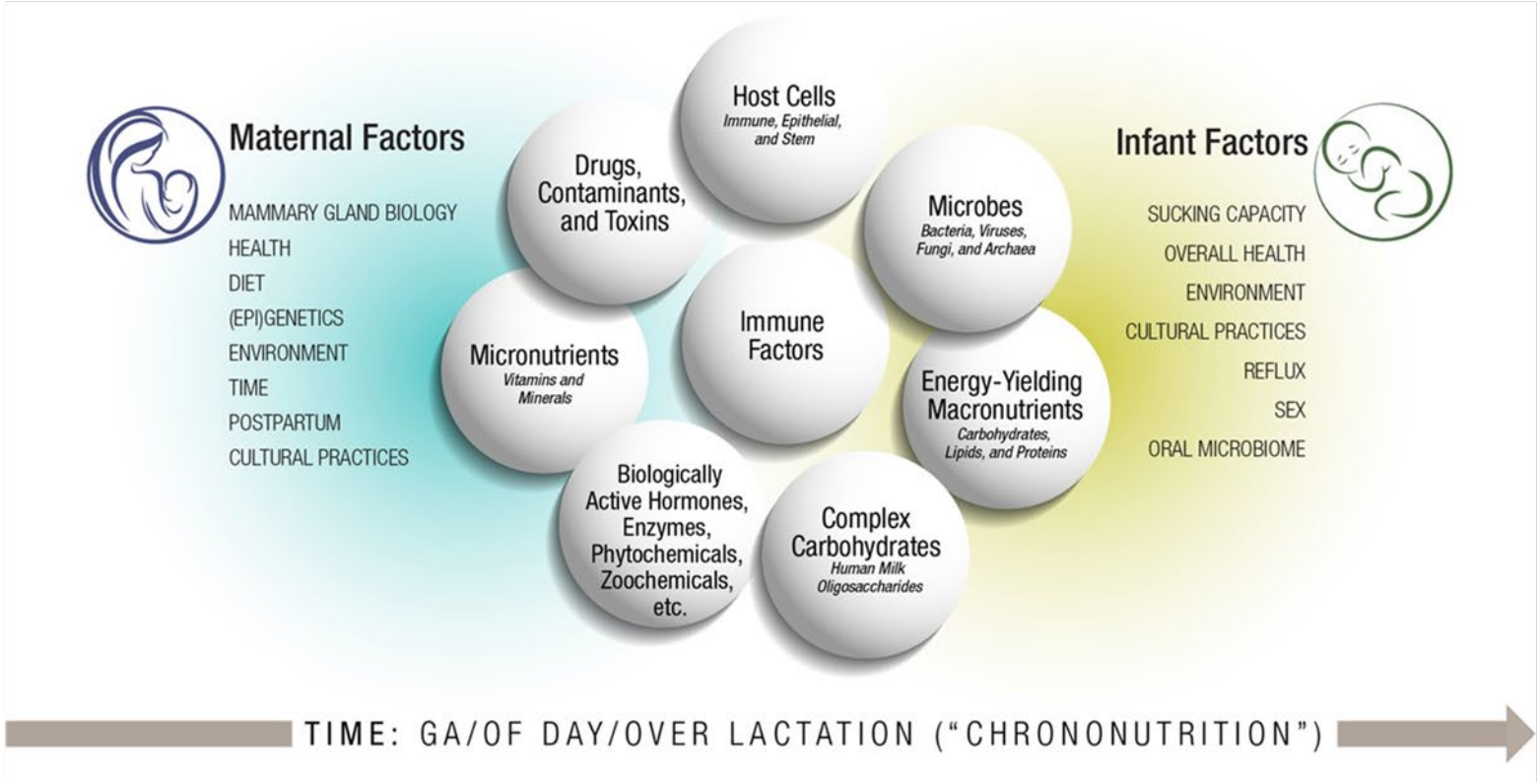
- Health care
- Food production

Nursing science plays a key role in all levels of the FIM pyramid

Source: "A Food is Medicine Approach to Achieve Nutrition Security and Improve Health" Mozaffarian et al., Nature Medicine 28, 2238-2240 (2022).

Breastmilk Ecology – Genesis of Infant Nutrition (Begin)

Again, the power of nursing...



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Power of Nursing

BOND KIDS

BIOMARKERS OF NUTRITION FOR DE

KNOWLEDGE INDICATING DIETARY SUFFICIENCY

WFP
World Food Programme

School Meals Coalition
Nutrition, Health and Education for Every Child

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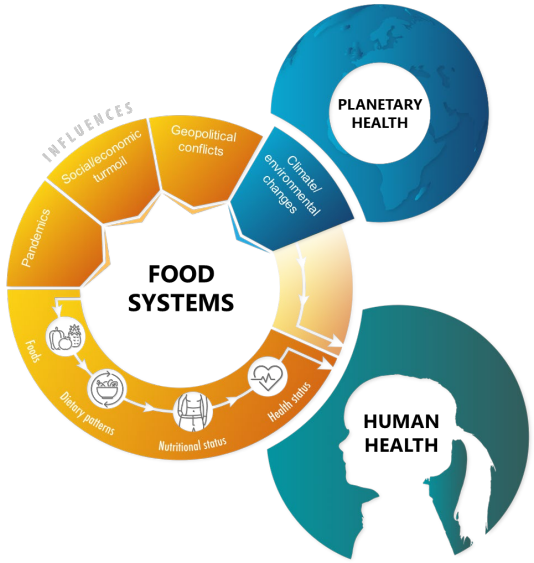
U.S. Government Global Nutrition Coordination Plan 2021-2026
ADVANTAGE Project

Agriculture and Diet: Value Added for Nutrition, Translation, and Adaptation in a Global Ecology

Again, the power of nursing…



CHANGE: Climate, Health, Agriculture, and Nutrition in a Global Ecology

EPIC: Ecology of Parental, Infant, and Child

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Teaching Kitchen Programs at NIH

The Children's Inn at NIH

The NIH Clinical Center

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Children's Inn at NIH

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The Nutrition Continuum

*The **Nutrition Continuum** – a framework that recognizes the multiscale network of relationships between food and health throughout the lifespan*

Figure: created by Bryan Ewsichek

Bremer AA et al. Am J Clin Nutr 2025;121:203-206.

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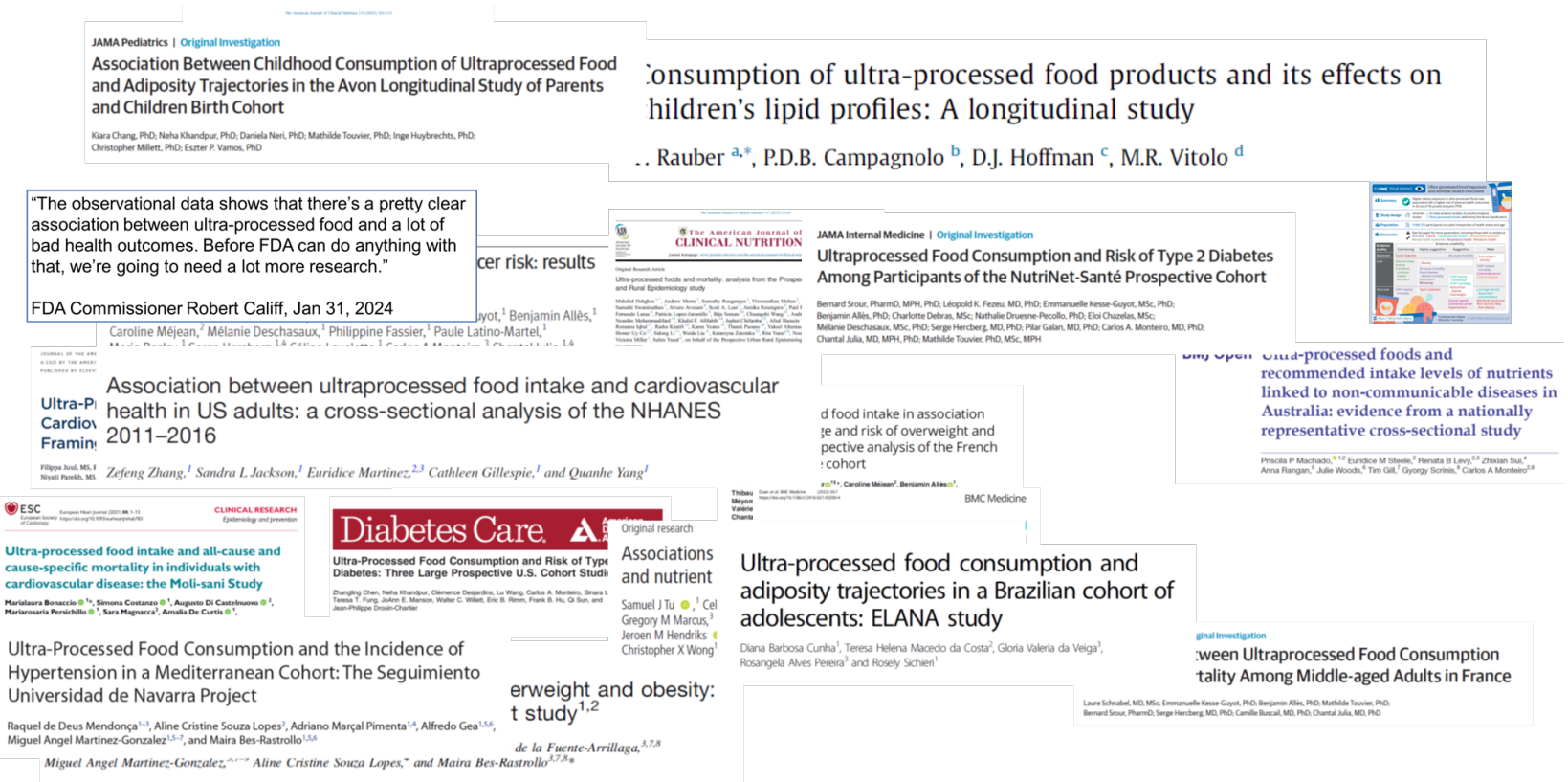
Headlines



NIH-FDA Nutrition Regulatory Science Program

Program Goal:

Implement and accelerate a comprehensive nutrition research agenda that will provide critical information to inform effective food and nutrition policy actions to help make Americans' food and diets healthier.

Key Questions to be Addressed:

- How and why can ultra-processed foods harm people's health?
- How might certain food additives affect metabolic health and possibly contribute to chronic disease?
- What is the role of maternal and infant dietary exposures on health outcomes across the lifespan, including autoimmune diseases?

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U.S. FOOD & DRUG ADMINISTRATION

Thank you


thank you
danke
謝謝
рахмат
ngiyabonga
teşekkür ederim
gracias
спасибо
Баярлалаа
bedankt
dziękuję
obrigado
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Questions? Thank you

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