Food Composition: Is it important for the future of nutrition and health?

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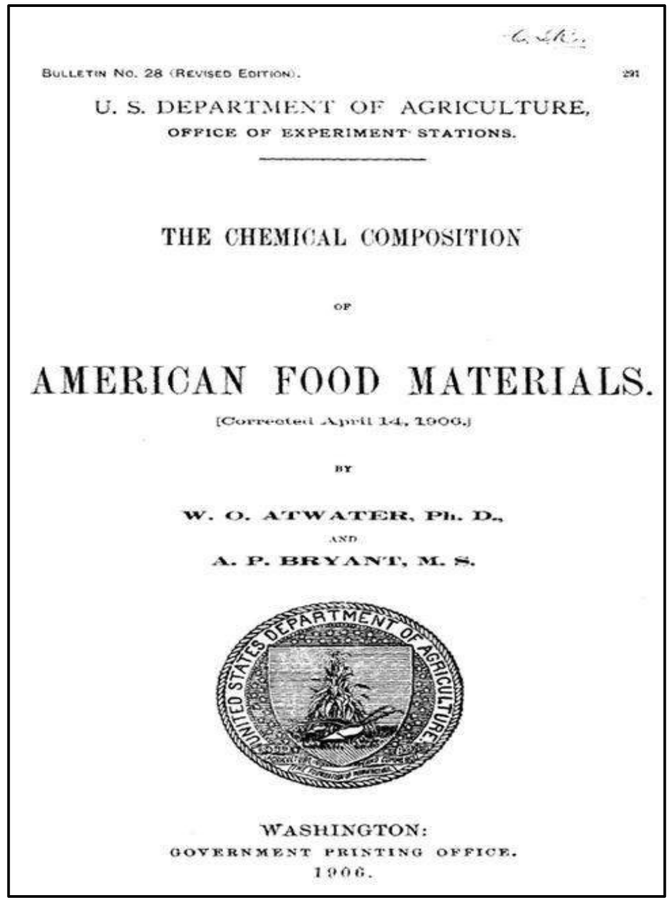
USDA United States Department of Agriculture

Disclosures

Nothing to disclose.

Views reflect those of the speaker and not that of the USDA nor the US Government

History of Food Composition, Nutrition & Health at USDA



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U. S. DEPARTMENT OF AGRICULTURE,
OFFICE OF EXPERIMENT STATIONS.

THE CHEMICAL COMPOSITION

OF

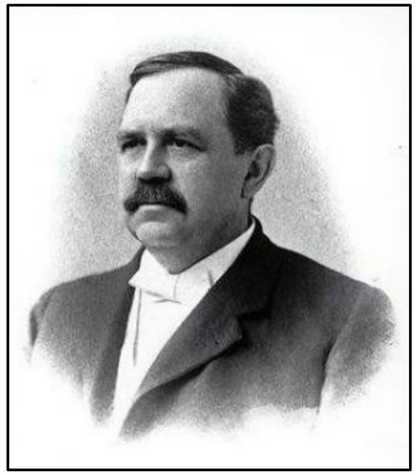
AMERICAN FOOD MATERIALS.

[Corrected April 14, 1906.]

BY

W. O. ATWATER, Ph. D.,
AND
A. P. BRYANT, M. S.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1906.

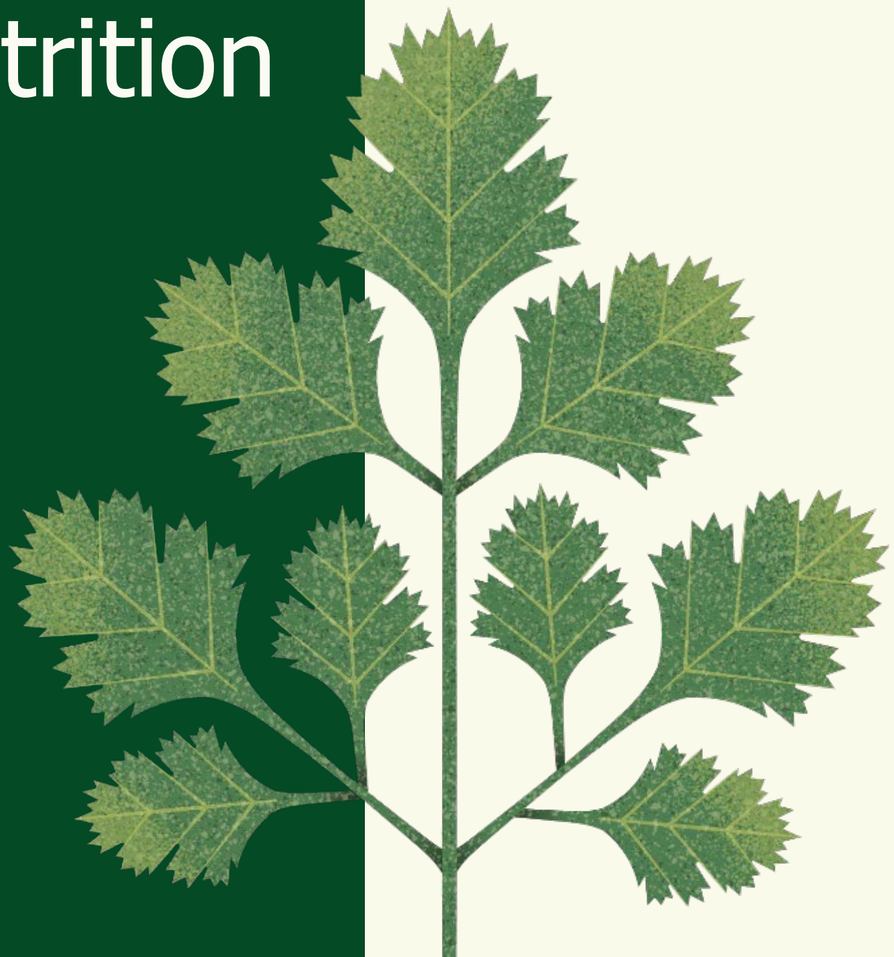


Monitor Food Composition & Food Intakes

- Provide U.S. Food Composition Data
- Determine Food Consumption & Dietary Patterns of Americans

USDA has held this responsibility for over 100 years.

USDA Laying the Groundwork for Food & Nutrition



- Monitor food supply
- Food intake/Dietary patterns
- Food composition beyond nutrients
- Research on metabolism & utilization of food components
- Nutrition Education
- Nutrition Policy

FoodData Central

Integrated data system providing expanded nutrient profile data and links to related agricultural and experimental research.

https://fdc.nal.usda.gov/

Five distinct data types about food and nutrient profiles:

1) Foundation Foods
2) National Nutrient Database for Standard Reference (SR) Legacy 2018
3) Food and Nutrient Database for Dietary Studies (WWEIA)
4) USDA Global Branded Food Products Database
5) Experimental Foods

Findable **A**ccesible **I**nteroperable **R**eusable (FAIR)

Data and vocabularies **Humans** **Machine Search Engines**

FINDABLE

Uses globally persistent dereferenceable and unique identifiers

ACCESSIBLE

Is open and free, for anyone to use, not behind a paywall

INTER-OPERABLE

Able to work together with other data and vocabularies

REUSABLE

Enable automated meta-analyses and study replication from similar data

NEED: Melding of systems biology with data science

USDA

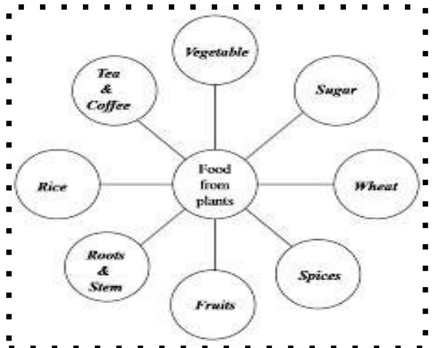
Wilkinson et al. 2016 Scientific Data

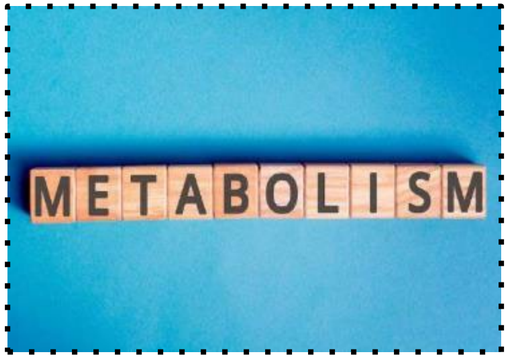
https://www.force11.org/fairprinciples

Immediate Challenges

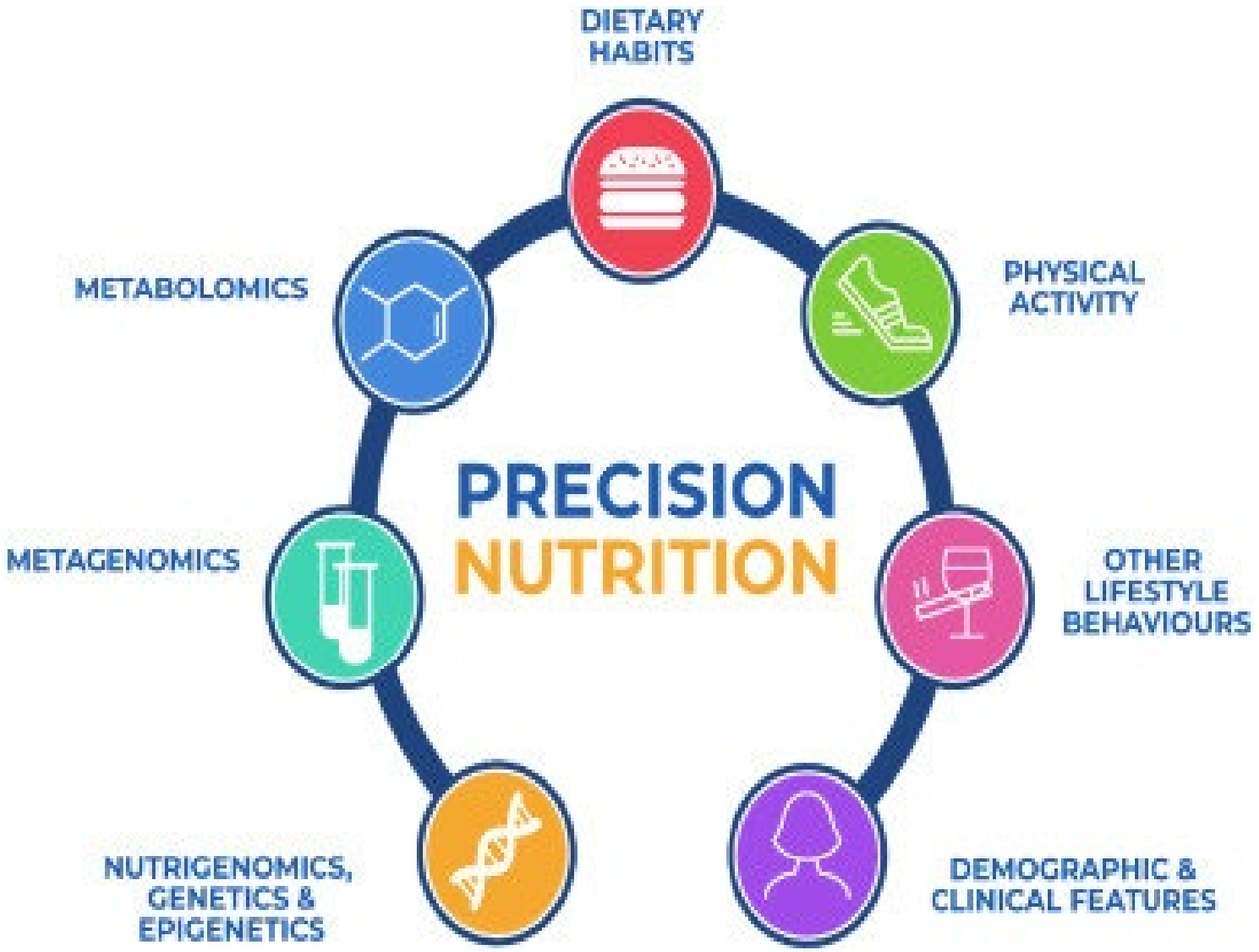
- Dietary intake assessment
- Prioritization of food components
- Understanding bioavailability, interactions, metabolism
- Impact of G(enetics) x E(nvironment x M(anagement) x P(rocess/eople)

"GxExMxP"



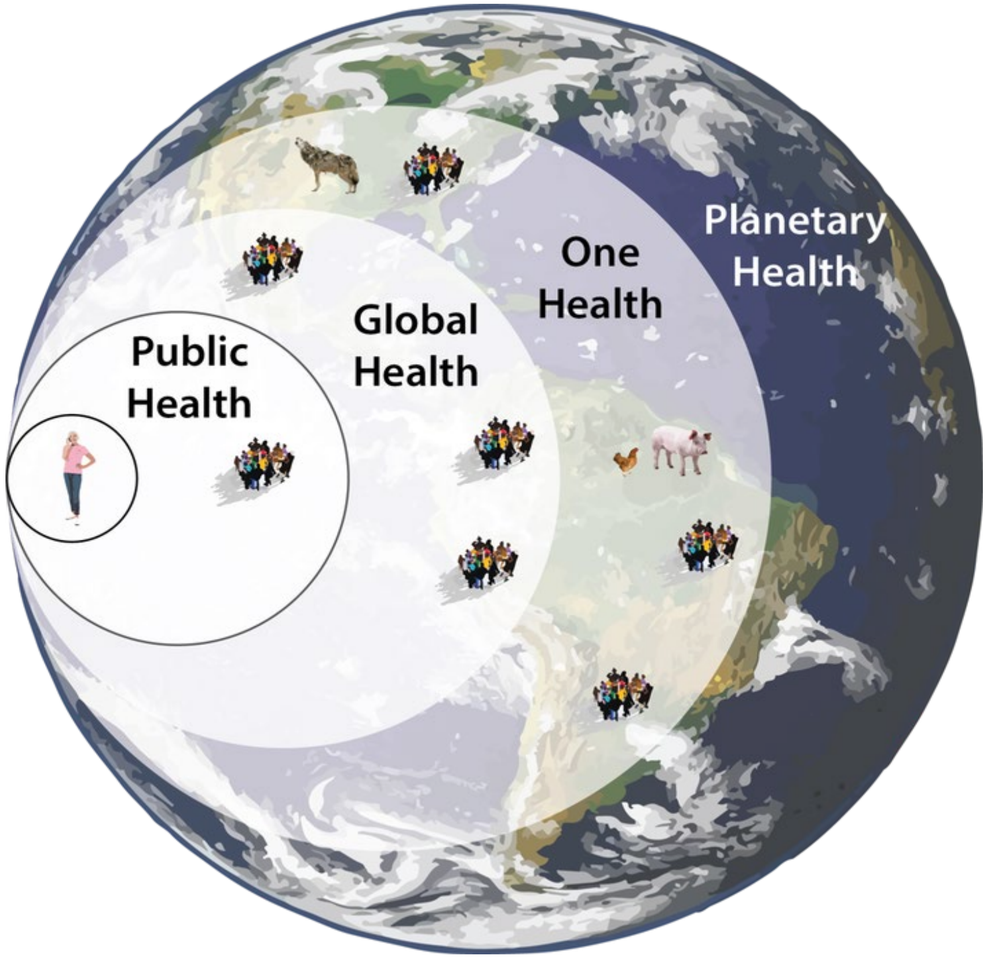


Future Vision: Food & Health Ecosystem



? Food Composition?

Livingstone et al. 2022 Trends in Food Science & Technology



Food Composition

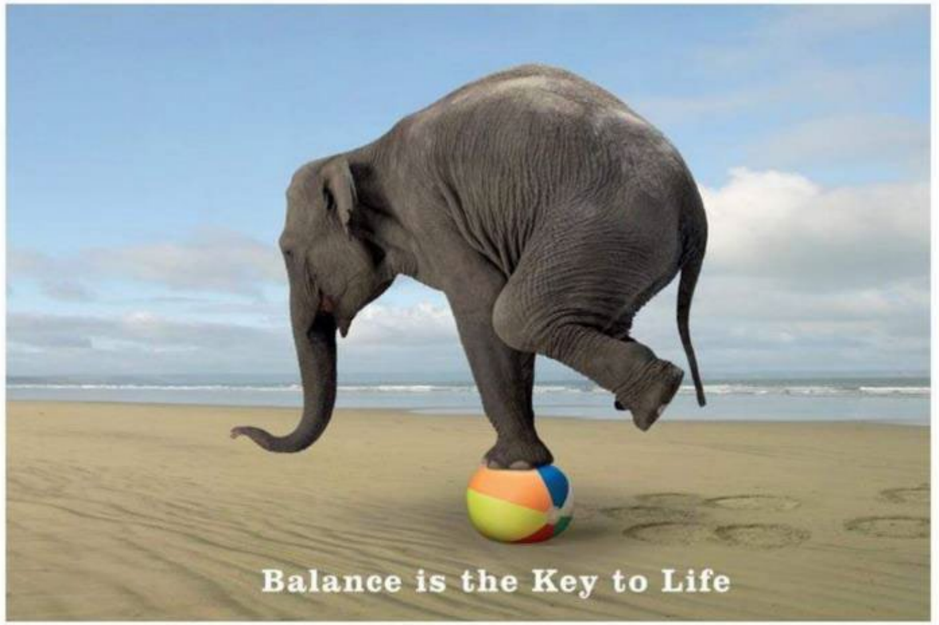
Eric Marty 2021 Forbes

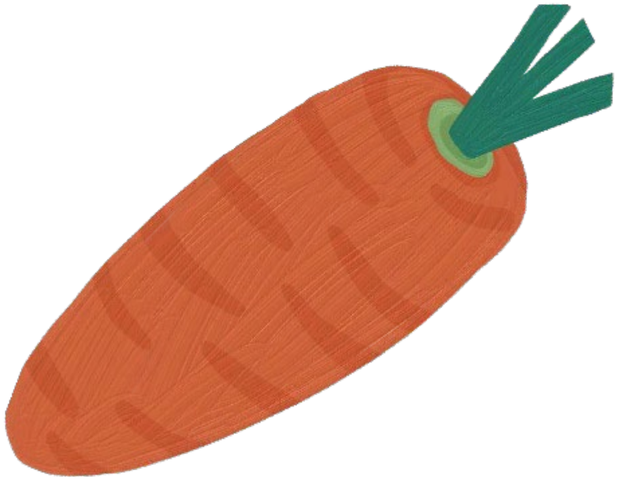
Food Composition: Is it important for the future of nutrition and health?

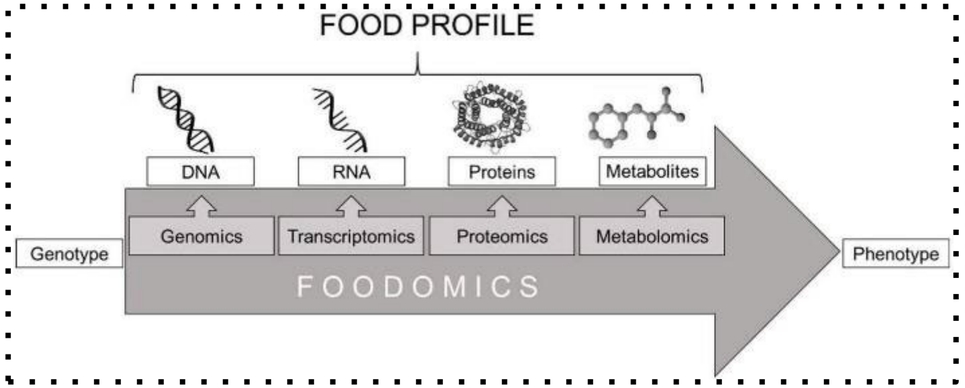
Yes!

Long-term Challenges

- Data quality
- Foodomics & Health Outcomes
- Marketing & Profit
- Defining Wellness/Biomarkers
- Collaborative/Cooperative Dialogue



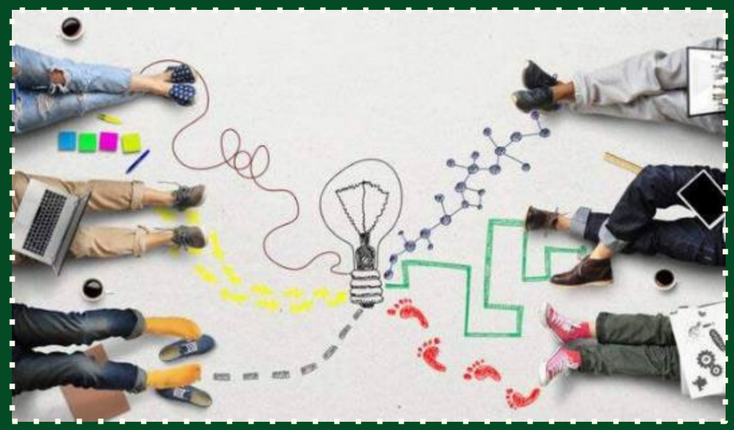




Solutions: Workforce Development

- Integrative physiologists
- Listeners & Communicators
- Transdisciplinary team science

Look ahead while honoring the past…..



Take-home Messages

- Reach beyond single nutrients and single outcomes
- Systems approaches to biology, food production, & assuring health of people and the planet
- Bridge scientific advances with "4 A's of food": **A**vailability, **A**ccessibility, **A**ffordability and **A**cceptability

Thanks to many mentors, colleagues and friends ……. past, present and future…….