PERIODIC TABLE OF FOOD INITIATIVE

LETTER FROM THE GLOBAL DIRECTOR

Launch of PTFI Scientific Resources

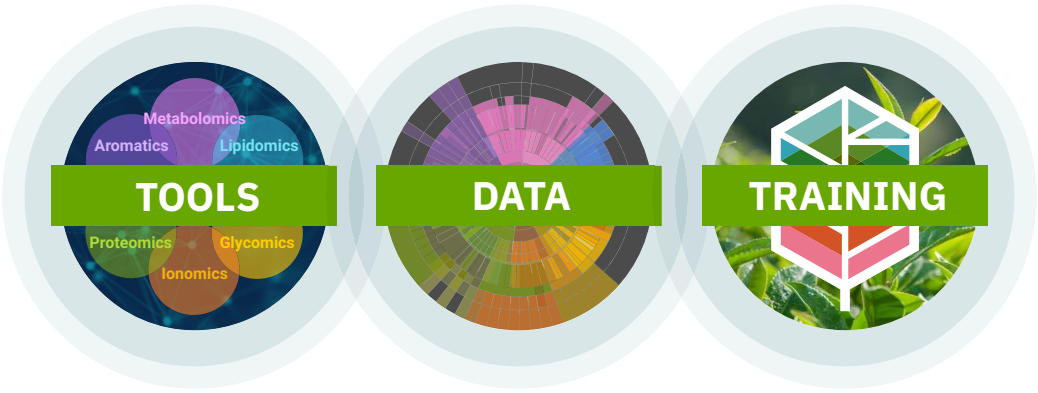
April 24, 2024

Dear Global Food + Health Community:

In honor of Earth Month, I am delighted to celebrate the launch of the **Periodic Table of Food Initiative's (PTFI) scientific and educational resources** at the Rockefeller Foundation Headquarters in New York City.

Today, the PTFI will make **three launch announcements** for the global research community of our foundational offerings - including **tools, data and training on food quality** - that are poised to expand the frontiers of food knowledge as we know it. The application and translation of these resources will revolutionize food systems with more precise and integrative recommendations for supporting people and the planet.

This celebration is co-hosted by the PTFI Secretariat, which brings together a unique collaboration between a leader in human well-being, the American Heart Association (AHA), and a leader in agriculture and the environment, the Alliance of Bioversity International & CIAT. It is being convened and broadcast live globally by FoodTank.



Announcement 1: Tools

For the past three years, the PTFI has worked to develop **standardized multi-omics tools** to answer the question: **What is in our food?** Today, we are thrilled to announce the distribution of these tools for the research community. These tools will enable us to map food quality by identifying the known and unknown components in food, including those that make up the "dark matter of nutrition". By identifying diverse food components, we will better understand their functions in ecosystems and human health. Taking an integrative approach to link food and health, the PTFI has further standardized multi-omics tools for **human serum** for application in clinical interventions. This knowledge will unlock the biomolecular pathways of food as medicine.

Apply to Onboard PTFI's Standardized Multi-omics Tools for Food and Serum

Celebrating the era of big data and artificial intelligence, PTFI's standardized -omics tools coupled with metadata will enable us to compare, compile and scale data in unprecedented ways to understand what is in our food, how it varies across food systems and its implications for well-being. PTFI's standardized multi-omics tools include:

- Glycomics for fibers
- Lipidomics for complex lipids
- FAMEs for fatty acids
- Ionomics for minerals and metals
- Metabolomics for specialized metabolites and small molecules

Profiling the comprehensive biomolecular composition of the planet's edible biodiversity is a bold undertaking, one that is too large for any country or institution. In recognition of the scale of this challenge, and the benefits of collaboration, we look forward to expanding our ecosystem of institutions that onboard PTFI's multi-omics tools.

CALL FOR ACTION

Apply to our **Request for Proposals of Interest** to be considered in our next round of institutions to onboard PTFI's tools. Applications for our next round of collaborating institutions are due August 30, 2024.

Learn more about PTFI's standardized multi-omics tools at our **Research Hub**.

PTFI's standardization of multi-omics tools is an advance in mass spectrometry. To date, we have been unable to compare multi-omics data across studies. The PTFI has cracked the daunting standardization challenge for multi-omics analysis through the development of novel customized internal standard reagents, protocols and data processing tools. PTFI's innovation in automated annotation offers notable cost and time savings, enabling the generation of a knowledge resource to inform food systems solutions at a larger scale than ever before.

We are extremely grateful for Verso Biosciences for leading this charge along with other pioneers in mass spectrometry including Colorado State University, the West Coast Metabolomics Center, University of Colorado Anschutz, Vanderbilt University, UT Southwestern and UCLA Lipidomics. We are further grateful to the first institutions in our global ecosystem to onboard PTFI tools including our nine Centers of Excellence and three National Lab Hubs that are championing food quality research, training, and translation in their regions to solve food system challenges.

Announcement 2: Data

The PTFI has applied its standardized multi-omics tools along with existing protocols to profile the food biomolecular composition of an initial set of 500 foods from 250 unique species. Currently, many foods consumed around the world are not included in food composition databases, and most national food composition databases provide data on fewer than 150 biomolecules (and mostly up to 50 components) despite the tens of thousands of biomolecules in food.

Findings from the analysis of our first 500 foods highlight the incredible diversity of what is in food, with over 20,000 biomolecules that have diverse biological functions in ecosystems and humans, including our gut microbiome. PTFI's initial dataset represents the most comprehensive food composition data to date based on standardized multi-omics tools - and is just the start. Over the coming months, PTFI's Centers of Excellence, National Lab Hubs and other collaborating labs will begin to contribute food composition data of their regional edible biodiversity using our standardized tools. We hope others will join in this endeavor to profile the thousands of biomolecules of the tens of thousands of edible species on our planet.

Explore PTFI Multi-omics Data

PTFI's initial food composition data is being made available through two customized open-access data interfaces for research use.

- **Verso Biosciences MarkerLab interface.** MarkerLab is a web-based visualization platform that makes multi-omics data accessible, interpretable and valuable for researchers.
- **American Heart Association's Precision Medicine Platform (PMP).** The PMP is a cloud-based system that allows researchers to collaborate and analyze datasets using the power of machine learning. Researchers can also upload their own data and integrate with PTFI data to better understand the role of food in medicine.

CALL FOR ACTION

Explore comprehensive food composition data of an initial 500 foods.

Set up an account at PTFI's **Research Hub** to access MarkerLab and search the food components in your favorite foods!

Join our **Data Exploration Challenge** to explore PTFI data of the first 500 foods via the AHA Precision Medicine Platform. The winning project will be eligible to receive a $20,000 USD cash prize.

Our team has curated each food in our initial dataset with standardized ontologies, Access and Benefit Sharing guidelines and metadata on food system attributes. The inclusion of metadata will enable analysis of the drivers of variation of food composition including the impacts of agricultural practices, climate change and food processing on food quality. Ultimately, we intend for PTFI data to be a global resource for **tracking the impact of climate change on food quality** based on biomolecular composition.

Announcement 3: Trainings

In recognition of the importance of **capacity strengthening** for empowering stakeholders to generate and apply scientific knowledge, the PTFI seeded **Food EDU**. Food EDU is an **open-access educational platform facilitating the translation and application of cutting-edge research in food, agriculture, health and nutrition**. We offer online courses, global case studies, fellowships through our Good Food Fellows program and other professional development opportunities for students, scientists, policymakers and food and health practitioners. Our Good Food Fellows program provides training on how to generate and apply data on food quality using PTFI's tools along with training in community-engaged research and science communication.

Centering Food in Education

It is with great enthusiasm that we announce the launch of a pilot program of the inaugural Food EDU course track, *Foodomics and Society*. This pilot program will provide access to the first three eLearning modules of our *Foodomics and Society* course track. We are further pleased to announce the launch of our **Good Food Fellows** program with an inaugural class of 38 Fellows selected from six of the PTFI's Centers of Excellence in Colombia, Ethiopia, Fiji, Ghana, Mexico and Thailand. We have great hopes for these Fellows as food system leaders paving the path for a more nourishing tomorrow.

CALL FOR ACTION

Contact **FoodEDU@heart.org** to participate in the pilot program and receive exclusive access to modules 1-3 of *Foodomics and Society*.

Learn more about FoodEDU at our website: **Periodic Table of Food Initiative - Learn**.

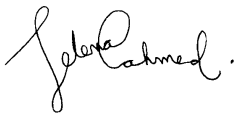
Learn about our **inaugural class of Good Food Fellows** and their diverse research projects in sustainable and regenerative agricultural practices, health, nutrition and climate change in this **program announcement**.

We invite you to learn more about the Periodic Table of Food Initiative at our updated **website** and sign-up to stay connected.

The launch of PTFI's scientific resources mark the start of our journey together. We envision collectively driving a paradigm shift from one focused on yields, calories, and the nutrition label to a more integrative approach focused on food quality and diversity. The PTFI seeks to be an engine for driving foundational knowledge to support translational programs including efforts in regenerative agriculture / agroecology, Food is Medicine, climate change solutions, and food procurement. We realize our efforts must go beyond the generation of data to its translation into guidelines and other solutions to improve the health of people and the planet. Further, we realize these efforts must equitably benefit communities around the world. Such an effort requires international multilateral and transdisciplinary collaboration.

I would like to thank all members of our ecosystem for their dedication in making these milestones possible. The power of PTFI is the power of its partnerships. Our collective efforts will lay the foundation for how we revolutionize our food systems, enhance health and transform communities for a more nourishing tomorrow, for *all*.

With gratitude,



Selena Ahmed
Global Director, Periodic Table of Food Initiative
Dean, Food EDU
American Heart Association