MESSAGE FROM THE CHAIR ON DIVERSITY & INCLUSION

From Dr Frank B Hu, Professor & Chair, Department of Nutrition:

There is no question we are living a critical moment in history. In the past few months, the COVID-19 pandemic has engulfed the world and further exposed the problems of health disparity and food insecurity in the US. The tragic deaths of Rayshard Brooks, George Floyd, Breonna Taylor, and others before them in the hands of police has sparked global protest against systemic racism and demands for social justice. To echo Dean Williams, racism is indeed a public health crisis, and we should do everything we can in both our personal and professional capacities to confront all forms of racism and racial discrimination.

Along with personal reflections, I have been thinking about our department’s efforts around diversity, inclusion, and equity. Although we strive to create a diverse and inclusive community, there is much that can be done. We are committed to continuous growth and improvement and recognize that we can do better.

Let’s start by identifying tangible steps to advance this collective goal. One of the actions we’re already exploring is how to create a pipeline of underrepresented minority students, postdocs, and faculty. We’re also committed to the recruitment and retention of our diverse junior faculty and staff. To enhance these and future efforts, we will be establishing a departmental committee on diversity and inclusion. This committee will engage all members of the department to develop a shared vision and action plan.

In the meantime, I look forward to ongoing discussions on these critical issues and value your ideas as to how our department can further improve our efforts to be more inclusive, diverse, and supportive of each one of our members.

Sincerely,

Frank Hu, Chair, Department of Nutrition
RESOURCES:
There are many resources available for continuous learning, engagement, and action, including these recently shared by Lilu Barbosa, our school’s new Chief Diversity, Inclusion, and Belonging Officer:

- **Anti-Racist Reading List from Harvard Kennedy School**
- **Black Experiences During COVID19 Resource**
- **Black Lives Matter Boston Chapter and Black Lives Matter (Main Page)**
- **Social Justice Training Institute**

*Racism is a public health crisis*
The killing of George Floyd and the disproportionate impact that COVID-19 has had on people of color are only the two latest examples of how structural racism can lead to devastating outcomes. Harvard Chan School stands together and is committed to helping fight this longstanding racism. This page highlights work from members of the Harvard Chan School community aimed at addressing racism and, ultimately, at helping shape a fairer, more just, and healthier world: [https://www.hsph.harvard.edu/news/racism-is-a-public-health-crisis/](https://www.hsph.harvard.edu/news/racism-is-a-public-health-crisis/)

*The Quest for Racial Justice*
Stories containing Harvard insights and coverage of the movement against systemic racism in America, from the Harvard Gazette: [https://news.harvard.edu/gazette/story/series/the-quest-for-racial-justice/](https://news.harvard.edu/gazette/story/series/the-quest-for-racial-justice/)

## NEWS FROM AROUND THE NUTRITION DEPARTMENT

### AWARDS

**Dr Lorena Pacheco**, postdoctoral Research Fellow, has been awarded a Yerby Fellowship under the Harvard Chan Yerby Fellowship Program. Named for Dr Alonzo Smythe Yerby, an African-American pioneer in public health, this program aims to expand the diversity of those entering the academic public health field. The program creates a bridge between academic training in public health-related fields and entry-level faculty positions at institutions throughout the United States.

The goal of the program is to advance the intellectual and professional development of each Yerby Fellow. Under the guidance of a senior Harvard Chan School faculty member with compatible interests, Yerby Fellows develop research agendas, receive grant support, and actively pursue publication in peer-reviewed journals. Additionally, Yerby Fellows gain teaching experience and participate in a wide variety of professional development activities. Dr Pacheco’s primary mentor is **Dr Frank Hu**; her secondary mentor is **Dr Josiemer Mattei**, both within the Department of Nutrition. Beginning this July with her Yerby Fellowship, Dr Pacheco’s secondary mentor will be **Dr Steven Gortmaker**.

**Dr Andrea A Lopez-Cepero**, Postdoctoral Research Fellow, was selected as a 2020 Health Disparities Research Institute Scholar (from the National Institute on Minority Health and Health Disparities). Scholars in this program are selected based on an interest in becoming a health disparities researcher and for their accomplishments. The goal of the Health Disparities Research Institute is to provide scholars with a broad overview of the leading issues facing minority health and health disparities research and stimulate discussion of proposed research projects.
Dr Deirdre K Tobias, Assistant Professor in the Department of Nutrition, has received the HMS 2020 Dean's Community Service Award. Community service is an integral part of the missions of Harvard Medical School and Harvard School of Dental Medicine. In faithfulness to this commitment, the Dean’s Community Service Award was established in 1999 to recognize individuals whose dedication and commitment to community service have made a positive impact on the local, national, or international community.

Since the inception of the Dean’s Community Service Award, Harvard Medical School has recognized the contributions of 142 individuals and donated $1,000 to 138 organizations that serve our community. 11 faculty members have been honored with a Lifetime Achievement Award for Community Service. Dr Tobias received this award on behalf of a non-profit community farm that she helps run called Norwell Farms, on the South Shore. Her team teaches the community about sustainably grown local agriculture and promotes access to healthy food for all. They donate a portion of what they grow to local food pantries.

GRANTS

Dr. Josiemen Mattei, Donald and Sue Pritzker Associate Professor of Nutrition, recently obtained funds from the Puerto Rico Public Health Trust Grants Program to conduct a mixed-methods project to assess food insecurity, access to food and healthcare services, and glycemic control before and during the COVID-19 pandemic, and deeply understand these experiences, in individuals with diabetes in Puerto Rico. Dr. Andrea Lopez-Cepero, postdoctoral research fellow, is a co-principal investigator of this study.

In addition, Dr. Mattei obtained an award from the Robert Wood Johnson Foundation - Community Change Leadership Network Activation Fund to create an equity-centered pilot program that will connect and empower farmers, consumers, and community clinics stakeholders to increase access to local fresh produce, reduce food insecurity, and improve health in low-income adults in Puerto Rico. Doctoral candidate Abrania Marrero is actively contributing to this project. The project expands upon direct relief funds that RWJF awarded Dr. Mattei's team to provide free fresh produce to individuals still living in shelters since the January earthquakes in Puerto Rico and now facing the pandemic.

NEW PUBLICATIONS

Dr Jorge Chavarro, Associate Professor of Nutrition and Epidemiology, together with colleagues from HSPH, MGH and the UK have published several co-authored papers in Science and Nature Medicine on a new COVID-19 symptom tracker in our NHS cohorts, which contributed data to this consortium. Chavarro and other NHS investigators are listed as members of the consortium.


**PRESENTATIONS**

**Dr Xuehong (Hong) Zhang,** Assistant Professor in the Department of Nutrition, was invited to present at the International Liver Cancer Association 2020 Virtual Conference (Sept. 11-13) with the title *"Inflammatory And Insulinemic Potential Of Diet And Lifestyle With Risk Of Hepatocellular Carcinoma".* Dr Zhang also presented at the minisymposium, *New Insight from Classic Epidemiologic Factors* at the 2020 AACR Annual Meeting (6/22-24). The title of his presentation was *"Brisk walking and hepatocellular carcinoma risk in US men and women".*

Its related paper, first-authored by **Dr Xiao Luo**, Postdoctoral Research Fellow in the department of Nutrition, was recently published.


**Dr Frank Qian,** Visiting Scientist, and colleagues presented a talk titled *“Pre-pregnancy plant-based diet and the risk of gestational diabetes mellitus: a prospective cohort study”* recently at the 80th American Diabetes Association Scientific Sessions.

Healthy plant-based diets prior to pregnancy may help lower the risk of gestational diabetes, data from a large, prospective cohort study indicate. According to Qian, "From these results, we can say that a pre-pregnancy plant-based diet, particularly one that also limits unhealthful plant-based foods such as refined grains, potatoes, and sugar-sweetened foods and beverages, may be associated with a lower risk of gestational diabetes,"

Their talk was featured in a news report on Medscape (https://www.medscape.com/viewarticle/932548#vp_1).

The authors are as follows: Zhangling Chen, Frank Qian, Gang Liu, Mengying Li, Trudy Voortman, Deirdre Tobias, Sylvia Ley, Shilpa N Bhupathiraju, Lingjun Li, Jorge E. Chavarro, Qi Sun, Frank B Hu, Cuilin Zhang

**STUDENT NEWS**

**Dr. Erica Kenney,** Assistant Professor of Public Health Nutrition, and doctoral students **Hannah Cory** and **Mary Kathryn Poole** recently published findings for how the 2017 revisions to the Child and Adult Care Food Program (CACFP) have impacted family child care home providers in Boston.


Recent graduate **Simone Passarelli** will be starting on the Nutrition Department’s T32 training grant at the end of July as a postdoctoral fellow under the joint mentorship of **Drs. Christopher Golden**, Assistant Professor of Nutrition and Planetary Health, and **Christopher Duggan**, Professor in the Department of
Nutrition. Her research will build upon Dr. Golden's current projects in Kiribati exploring the interplay between environmental and economic transitions and nutrition outcomes, in addition to other emerging work pertaining to planetary health and human nutrition.

In spite of the many challenges posed by the current COVID-19 crisis, all of our MPH students have successfully secured practicum experiences for the summer.

NEW PEOPLE IN THE NUTRITION DEPARTMENT!

Elizabeth Burkley
Research Assistant

Hello there! My name is Lauren but I go by Elizabeth (Eliz) at HSPH. I’ve spent the past two years working part-time as a Diet Technician in the Nutrition Questionnaire Service Center. I graduated from the University of Alabama with a BS in Food and Nutrition and recently finished my MS at Framingham State University. I’ve been in school the past 8 years so I am very excited to jump start my professional career!

I’ve accepted a full-time position working as a Research Assistant for the Nutrition Department. I will continue processing FFQ’s as well as help maintain the nutrient database. I plan to sit for my RD exam this Fall. Lots of studying to do! In my free time, I love taking my dog Millie on field trips to various trails and parks. Now that I’m out of school, I have the time to pick up old hobbies. I look forward to reading novels instead of textbooks, refinishing furniture and crafting!!

Looking forward to meeting everyone, whether online or in the office!

Dr. Tian-Shin Yeh
Postdoctoral Fellow

Dr. Yeh is a physician from Taiwan. She received her MD and Master of Medical Science degree in Taiwan, and her PhD in Population Health Sciences in Clinical Epidemiology from the Harvard T.H. Chan School of Public Health in May 2020. Her dissertation, mentored by Drs. Walter Willett, Deborah Blacker, Alberto Ascherio, and Bernard Rosner, focused on the associations between long-term diet and cognitive function. Dr. Yeh would like to express her deepest gratitude to all mentors for their wisdom, inspiration, and consistent support during her doctoral journey.

She is also very grateful to her postdoctoral supervisors—Drs. Walter Willett, Alberto Ascherio, and Marc Weisskopf—for giving her the exciting opportunity to enhance knowledge and research skills and to lay a solid foundation for her future career as an independent physician scientist. Her research will focus on diet/risk factors and biomarkers of neurodegenerative diseases and cognitive decline.

Dr. Yeh feels very honored and delighted to join the department of nutrition. In her spare time, she enjoys exercise, music, movies, healthy foods, and time with family and friends.
Variety of Healthy Eating Patterns Now Associated with Lower Heart Disease Risk

According to new research published in *JAMA Internal Medicine*, a greater adherence to a variety of healthy eating patterns was associated with a lower risk of cardiovascular disease (CVD). These findings lend support for the 2015-2020 Dietary Guidelines for Americans, which focus on healthy eating patterns vs individual ingredients and nutrients to better account for diverse cultural and personal food traditions and preferences.

*Dr Zhilei Shan*, first author on the paper and a research associate in the Department of Nutrition, said “Although each healthy eating pattern represents a different combination of dietary constituents, our study indicates that greater adherence to any of the four healthy eating patterns we looked at is associated with lower risk of cardiovascular disease and the health benefits persist across racial and ethnic groups”.

This study is important because so far few studies have examined how adhering to recommended healthy eating patterns influence long-term risk of CVD. The researchers focused on dietary scores for four healthy eating patterns: Healthy Eating Index–2015 (HEI-2015); Alternate Mediterranean Diet Score (AMED); Healthful Plant-Based Diet Index (HPDI); and Alternate Healthy Eating Index (AHEI). Results indicate that despite different scoring methods, each of these patterns emphasizes higher intake of whole grains, vegetables, fruits, legumes, and nuts, and lower intake of red and processed meats and sugar-sweetened beverages.

In order to assess the associations of each pattern with CVD risk, Shan and colleagues looked at data from 74,930 women enrolled in the Nurses’ Health Study, 90,864 women in the Nurses’ Health Study II, and 43,339 men in the Health Professionals Follow-Up Study. They asked participants in each study every 2-4 years about their dietary habits, including how often, on average, they consumed a standard portion size of various foods.

Their analysis found that greater adherence to any of the healthy eating patterns was consistently associated with lower risk of CVD. The findings also showed that these different healthy eating patterns were similarly effective at lowering CVD risk across racial and ethnic groups and other subgroups studied, and that they were statistically significantly associated with lower risk of both coronary heart disease and stroke.

Corresponding author *Dr Frank Hu*, Fredrick J. Stare Professor of Nutrition and Epidemiology and chair of the Department of Nutrition, stated that “These data provide further evidence to support current dietary guidelines that following healthy eating patterns confers long-term health benefits on cardiovascular disease prevention. There is no one-size-fits-all diet that is best for everyone. One can combine foods in a variety of flexible ways to achieve healthy eating patterns according to individuals’ health needs, food preferences, and cultural traditions.”

“Association Between Healthy Eating Patterns and Risk of Cardiovascular Disease,” Zhilei Shan; Yanping Li, Megu Y. Baden, Shilpa N. Bhupathiraju, Dong D. Wang, Qi Sun, Kathryn M. Rexrode, Eric B. Rimm, Lu Qi, Walter C. Willett, JoAnn E. Manson, Qibin Qi, Frank B. Hu. JAMA Internal Medicine, June 15, 2020, doi: 10.1001/jamainternmed.2020.2176

Visit the Harvard Chan School website for the latest news, press releases, and multimedia offerings.
Recruitment Process Completed in PREDIMAR Study

The recruitment process in the PREDIMAR study has been completed with a total of 720 participants. The aim of this trial is the secondary prevention (recurrence) of atrial fibrillation in patients after an ablation. Drs Miguel Martínez González, Adjunct Professor of Nutrition, and Miguel Ruiz-Canela are members of the steering committee of this new trial with Jesús Almendral y and Teresa Barrio, two cardiologists from Hospital Montepríncipe in Madrid. More than 80% of participants have already been followed for 1 year and it is expected that all participants will finish the 2-year follow-up by January 2022. PREDIMAR-OMICS is a continuation of this project. It has recently received funding for a pilot proteomic study and it has submitted a new project to combine metabolomic and genomic data, and to observe a the recurrence of atrial fibrillation after 4 years of follow-up.

MONDAY NUTRITION SEMINARS

The Department of Nutrition holds its weekly Monday Nutrition Seminar Series every Monday throughout the academic year. The talks are varied, but they highlight the many different aspects of cutting-edge research that is currently being conducted in the fields of nutrition and global public health. These seminars are held from 1:00-1:20 pm and are free and open to the public. Because of COVID-19, the seminars have been presented via Zoom since March of this past spring, and this zoom format will continue in the fall of 2020. A zoom link for viewing will be available one week prior to each seminar.

Summer picnic tips
Although summer 2020 is heating up, unfortunately there’s no playbook for picnicking during a pandemic. Keeping activities within your own household—and to your own backyard—is likely the safest option. Along with tips and recipes for safe and healthy summer meals, here are some additional precautions to consider if you open up your gathering to guests:
https://www.hsph.harvard.edu/nutritionsource/healthy-summer-picnic-tips/

If you would like to remain current as to what is happening in the field of nutrition, please be sure to view our Nutrition Source website for the latest updates!
(See: https://www.hsph.harvard.edu/nutritionsource/)

RECIPE CORNER

Arugula, watermelon, feta, and mint salad with balsamic vinaigrette

Recipe courtesy of Dr Guy Crosby via The Nutrition Source

Serves 4
Ingredients:
• 3 ounces fresh arugula leaves
• 4 cups watermelon, cut into 1-inch pieces
• 1 tablespoon fresh mint leaves, finely chopped
• 3 1/2 ounces feta cheese
• 2 tablespoons balsamic vinaigrette

Preparation:
1. For vinaigrette, combine 1 tablespoon of aged balsamic vinegar, 3 tablespoons of extra-virgin olive oil, and ½ teaspoon of mayonnaise in a small bowl. Whisk mixture vigorously to form stable emulsion.
2. To start salad, cut watermelon into 1-inch pieces and drain for 15 minutes.
3. Tear arugula into bite-sized pieces and place in large salad bowl.
4. Add chopped mint to arugula and mix thoroughly.
5. Add drained watermelon to bowl.
6. Crumble feta cheese on top of mixture.
7. Season with salt and pepper.
8. Toss lightly with desired amount of balsamic vinaigrette.
Q&A

Food Insecurity, Inequality and COVID-19

Presented jointly with TheWorld WGBH

Live Q&A will stream on Facebook and on The Forum site, Tuesday, June 30, 2020
12 PM ET
There is no registration required to watch the event online.

Send questions for the panelists in advance or during the Q&A to forums@hsph.harvard.edu
or post them to @ForumHSPH or @TheWorld

We will post the video later on demand on:

- YouTube
- The Forum website
**Virology**

SARS-CoV-2 is a new virus belonging to the Coronavirus family, which includes less pathogenic strains responsible for the common cold, as well as the virus responsible for SARS and MERS. It is genetically related to the coronavirus responsible for the SARS outbreak in 2003; the closest identified relative was isolated from bats.

- **Spike (S) protein** - a trimeric structure resembling corona or crown
- **Envelope (E) protein** - interacts with M to form viral envelope
- **Hemagglutinin-esterase (HE) protein** - important for virus infectivity
- **Matrix (M) transmembrane glycoprotein** - most abundant structural protein
- **Nucleocapsid (N) protein** - responsible for receptor binding, membrane fusion, and hemagglutinin activity
- **Target for entry into host cells**
- **Unique SARS-CoV-2 polyornavirus** - 5’-activation of human furin protein (found in lungs, liver, and small intestine), which may explain the association of COVID-19 with liver failure

**Pathophysiology**

- **Transmission**
  - SARS-CoV-2 is spread primarily via droplet, though it can be aerosolized and can persist on plastic and stainless steel surfaces for up to 72 hours
  - Disinfectants with commercial concentrations of ETOH or H2O2 are effective

**Clinical**

**Symptoms**

- Fever, 87.9% (often 48 hr at time of diagnosis)
- Dry cough, 87.9%
- Fatigue, 38.1%
- Sputum production, 31.4%
- Cyanosis, 10.6%
- Myalgia/myalgia, 10.4%
- Shortness of breath or dyspnea, 10.4%
- Chills, 11.4%
- Sore throat, 11.3%
- Sputum production, 8.7%
- Headache, 3.7%
- Nausea/vomiting, 5%

**Risk stratifying factors**

- Cardiovascular disease
- Hypertension
- Diabetes
- Chronic Respiratory Disease
- Cancer (any)
- Older, generally >60 yrs
- Immunocompromised status

**Diagnostic testing**

- Currently a syndromic diagnosis of COVID-19 while awaiting definitive microbiological diagnosis
- RT-PCR against SARS-CoV-2 transcripts is the current gold standard diagnostic for SARS-CoV-2
- High specificity
- Variable sensitivity based on testing kit

**Laboratory findings**

- Common findings: lymphopenia, most common laboratory finding, thrombocytopenia, leukopenia, CRP
- Less common findings: ALT, AST, LDH
- In severe cases: troponin, myoglobin, LDH, ferritin, lactate dehydrogenase

**Imaging**

- Imaging is not recommended for screening, but common chest CT findings include ground-glass opacities, consolidation, and crazy-paving patterns. In a bilateral peripheral distribution

**Clinical course**

- Clinical outcomes: mild disease, pneumonia, severe pneumonia, acute respiratory distress syndrome (ARDS), septic shock
- Case fatality rate (CFR) estimated at 2%, but given that many mild cases have gone undiagnosed, CFR may be lower

**Investigational treatment**

- There are currently no FDA-approved treatments directed against COVID-19 at this time (3/19/20).
- However, a variety of therapies are under investigation. These include repurposing of:
  - Antivirals: remdesivir, favipiravir/tenofovir
  - Antibiotics: chloroquine/hydroxychloroquine
  - Immunosuppressive medications: tocilizumab
  - Transfusing antibodies against SARS-CoV-2 analogs SARS-CoV

**Investigational prevention**

- It is expected that COVID-19 vaccine development will take a minimum of one year

**Type I Pneumocyte**

- Cuboidal epithelial cell
- 3% of alveolar epithelium
- Secretes pulmonary surfactant to decrease lung surface tension
- Act as alveolar epithelial stem cells, proliferating in settings of lung inflammation and damage
- Express Angiogenin converting enzyme 2 (ACE2), which is implicated in the Renin-Angiotensin-Aldosterone System and the pathogenesis of hypertension

**Type II Pneumocyte**

- Alveolar type II pneumocytes
- 97% of alveolar epithelium
- Thin, ideal for blood-gas barrier to adjacent pulmonary capillary endothelium

**Immune response**

- **Innate immune system**
  - Delayed or suppressed Type I interferon (IFN) response during initial infection
  - Viral replication triggers hypoxiainflammatory conditions and cytokine storm
  - Inflamed alveoli and instilled pro-inflammatory cytokines are associated with severity of disease
  - Activated T lymphocytes
    - T helper cells Th1/Th17 are induced
    - Specific antibodies not yet established
  - Sheep lymphocytes may be related to an antiviral response of bone marrow suppression

**Adaptive immune system**

- B cells
  - IgM-producing cells
  - IgA-producing cells
  - IgG-producing cells

**Treatment**

- **Mild**
  - Symptomatic/Low-grade fever
  - Dry cough
  - Malaise and arthralgias
  - Nasal congestion
  - Headache
  - Sore throat
  - Management: 14-day home quarantine, return precautions, supportive care: encourage eating and drinking, acetaminophen for fever

- **Moderate**
  - High-grade temperatures
  - Shortness of breath/trouble breathing especially if mocking the need for supplemental oxygen
  - Chills
  - Profound fatigue
  - Management: airborne isolation, supportive care: conservative fluid management, acetaminophen for fever, respiratory support, treat complications: suspected sepsis, empiric antibiotics, flu antivirals, azithromycin/cope: bronchodilators

- **Severe**
  - Severe dyspnea
  - Hypoxia
  - Delirium
  - Management: as above plus: advanced ventilatory support