HARVARD T.H. CHAN | SCHOOL OF PUBLIC HEALTH

NUTRI NEWS

The Department of Nutrition

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Dr Guy Crosby Explains How the Evolution of Science Transformed the Art of Cooking

NutriNews interviews ***Dr Guy Crosby***, Adjunct Associate Professor of Nutrition, who has just written a new book, "*Cook, Taste, Learn - How the Evolution of Science Transformed the Art of Cooking*", which will be published and released by Columbia University Press this November. One of Dr Crosby's passions is pairing cooking science with nutrition: how we can apply cooking science to improve the nutritional quality of home cooked food. The last two chapters of his book focuses on this theme.

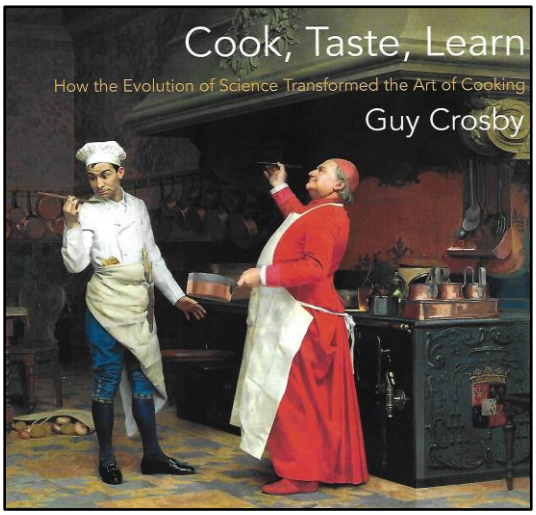
NN: Dr Crosby, what inspired you to write your new book Cook, Taste, Learn?

GC: I was fascinated by Professor Richard Wrangham's popular book "*Catching Fire – How Cooking Made Us Human"* in which he argued that cooking food with fire may have started almost 2 million years ago resulting in bigger brains giving our early human ancestors a significant evolutionary advantage over all other living species. I thought no one has written a book about the evolution of science and how it may have affected cooking. In the course I teach on food science and technology in the Nutrition Department of the Harvard T. H. Chan School of Public Health I discuss the effect of cooking on the nutritional quality of food. So why not write a book about how science has evolved from the earliest days of cooking until the present when the latest scientific research is showing how to prepare more nutritious and healthy food. I

thought a book of this nature would appeal to home cooks interested in preparing healthy meals as well as those interested in science, history, evolution, food, nutrition and health.

NN: What is unique about your book that makes it different from other books on cooking science?

CG: The book is composed of three unique elements: First, seven chapters cover a chronological history about how cooking and science evolved and impacted each other, interwoven with the lives of the great scientists and chefs who drove the transformation. Second, the book contains a collection of almost two dozen brief science sidebars that explain in simple terms the important concepts of food and cooking science that are relevant to the content of specific chapters. Third, a small number of recipes that my wife, Christine, and I love to cook that also serve to illustrate the cooking science discussed in each chapter. Each of these elements is printed on different colored pages allowing the reader to pick and choose what they want to read.



NN: Can you give me some examples of the cooking science you discuss in the science sidebars?

CG: The sidebar called "To Market to Market" explains how the tenderness, juiciness, and flavor of pork are based on the pH of the meat which in turn is related to the color of the meat. So darker pork is a much better choice to buy than pale, lean pork. Another sidebar explains why heat and temperature are not the same, while a related sidebar called "Thomas Keller and the Science of Butter Poached Lobster" explains why poaching in butter is such a gentle method for cooking fish. Yet another sidebar explains the role of water in food, and another discusses the role of water in forming gluten in dough and the factors that affect the strength of gluten. The science explained in each sidebar is related to a specific topic discussed in the chapter.

NN: How about some examples of the recipes in your book, especially those appropriate for the Thanksgiving Holiday?

CG: Thanksgiving would not be complete without Christine's rich brown gravy, as well as her rendition of Julia Child's brown-braised pearl onions. The two pair incredibly well with roasted turkey (or chicken). The secret to the gravy is to prepare a flavorful stock with finely chopped onion. Research has shown that simmering onions that have been finely chopped for 2-4 hours produces a compound that is the most potent contributor to the flavor of stock and gravy. A related sidebar on making stock explains all of the science. Another sidebar explains the science of emulsions and how it relates to preparing a thick velvety sauce or gravy. The recipe for Julia Child's brown-braised onions explains how the cooking process leads to the formation of high levels of glutamate and nucleotides to produce an intense umami flavor. There is also a recipe for wonderful healthy creamy mashed cauliflower as an alternative to traditional mashed

potatoes. The method of preparation results in very little loss of the vitamins and minerals along with the enhancement of healthy soluble fiber and optimum flavor.

NN: Can you discuss how cooking science increases the nutritional quality of food?

CG: Research shows how some vitamins and minerals are leached from food during cooking in water, and that a factor as simple as the volume of water used for cooking will affect the loss of vitamins and minerals. In this case steaming is best for retaining vitamins and minerals. The recipe (above) for creamy mashed cauliflower is an example in which a minimum amount of water is used to cook the cauliflower, and all of the water containing the nutrients and phytochemicals is retained with the cauliflower. Cauliflower is a member of the cruciferous vegetable family that has been shown to reduce the risk of developing a number of cancers. Another example is one in which sautéing a variety of vegetables including kale, Brussels sprouts, cabbage, and mustard greens releases soluble fiber that binds and lowers the level of cholesterol in the blood. Finally, cooking greatly increases the release and absorption of carotenoids (the colored pigments in food such as tomatoes and carrots) into the blood. For example, the red pigment in cooked tomatoes called lycopene significantly reduces the risk of prostate cancer in men. We are just beginning to learn how cooking influences the nutritional quality of food.

NN: The book has a very colorful eye-catching cover. How does it relate to the book?

CG: As soon as I saw this painting, I knew it had to be the cover for the book. The older cardinal dressed in his bright red-colored outfit represents the art of cooking. He is obviously very pleased with his "marvelous sauce" (the name of the painting), perhaps having received some heavenly guidance in its preparation. The younger chef tasting the sauce appears skeptical. Using the scientific process of cooking, tasting, and learning he thinks he can make the sauce even better. So, the young chef represents the science of cooking. One of my passions from a very early age has been painting. I spent significant time selecting the artwork for the book, including several of my own works of art, some of which I prepared specifically for this book

Dr. Frank Hu Discusses Recent Disputed Studies on Red Meat

In a recent interview with Alvin Powell of the ***Harvard Gazette*** on November 8, 2019, ***Dr Frank Hu,*** Professor of Nutrition and Epidemiology, and department chair, discussed recent studies on red meat. This is in response to recent studies questioning dietary recommendations that we eat less red meat, even as plant-based substitutes have moved into the spotlight, thus wreaking havoc on the whole national nutrition discourse as to whether or not red and processed meats are healthy or nonhealthy. Their findings drew an immediate backlash from several quarters, including the American Heart Association, the American Cancer Society, and nutritional epidemiologists such as Frank Hu. Hu discussed the shifting landscape with the *Gazette*.

Here are some of the takeaway points from that interview:

- When asked to clarify some of the confusion that ensued from some recent guidelines suggesting that it's OK for adults to continue their consumption of both red and processed meats, Hu responded that "The recent guidelines published in the *Annals of Internal Medicine* should not change existing recommendations on healthy and balanced eating patterns for the prevention of

chronic diseases. Guidance to reduce red and processed meats is based on a large body of evidence indicating that higher consumption of red meat — especially processed red meat — is associated with higher risk of Type 2 diabetes, cardiovascular disease, certain types of cancers, and premature death. While this guidance is supported by both national and international organizations, including the American Heart Association, American Cancer Society, and the World Health Organization, consumers should know that the new guidelines were released by a self-selected panel of 14 members. Furthermore, when my colleagues and I closely reviewed the studies informing the panel's decision, we saw that their findings contradicted their guidance. In short, the three meta-analyses of observational studies actually confirmed existing evidence on the potential for health benefits when cutting back on red and processed meats. However, because they based their analysis on a measure of three servings of red meat per week, the effects of an individual reducing consumption appeared small. But if you consider that about a third of U.S. adults eat one serving or more of red meat each day, the potential health benefits of reducing consumption become much greater".

- When asked about the environmental impact of eating so much red meat, Hu explained that "From a planetary health perspective, already our current production of red meat, particularly beef, stands out for its disproportionate greenhouse-gas emissions in comparison to other foods, especially plant-based foods. Beyond emissions, there is concern that industrial meat production can contaminate our water resources with runoff from animal-waste lagoons. Concerns have also been noted about the welfare of animals raised in these industrial conditions. For those concerned with human health and the health of the planet, these multifaceted issues are alarming in light of projections that the global demand for meat will continue to increase in the coming decades".

- Hu was also asked about plant-based alternatives to red meat, such as the Impossible Burger and Beyond Meat and whether a better strategy might exist by encouraging people in developing nations to embrace the healthy aspects of their own traditional diets rather than Western diets, and the health effects of highly processed plant products. Hu's bottom line was that "[he thinks] it's important to know that although these plant-based products may have less environmental impact than their animal-based counterparts, there is no evidence that these products are also beneficial to human health. Clearly, there is no evidence to suggest that they can substitute for healthy diets focused on minimally processed plant foods".

To read this interview in full: https://news.harvard.edu/gazette/story/2019/11/clearing-up-the-confusion-over-red-meat-recommendations/

NEWS FROM AROUND THE NUTRITION DEPARTMENT

AWARDS AND HONORS

Dr Gang Liu, former postdoctoral fellow, and ***Dr Qi Sun*****,** Associate Professor, were selected by the editors of *Circulation Res*earch as one of the winners of their 2019 Best Manuscript Awards because their article has met high standards of scientific excellence in terms of novelty, impact, and methodology; it has been widely read online following publication and represents some of the best work published in *Circulation Research*. The awards ceremony took place at the annual *Circulation Research* editorial board dinner during the AHA Scientific Sessions 2019 in Philadelphia, Pennsylvania.

Liu et al., Nut Consumption in Relation to Cardiovascular Disease Incidence and Mortality among Patients with Diabetes Mellitus. *Circ Res*. 2019;124:920–929

NEW PUBLICATIONS

Aviva Musicus' first dissertation paper was published in the *American Journal of Preventive Medicine:*

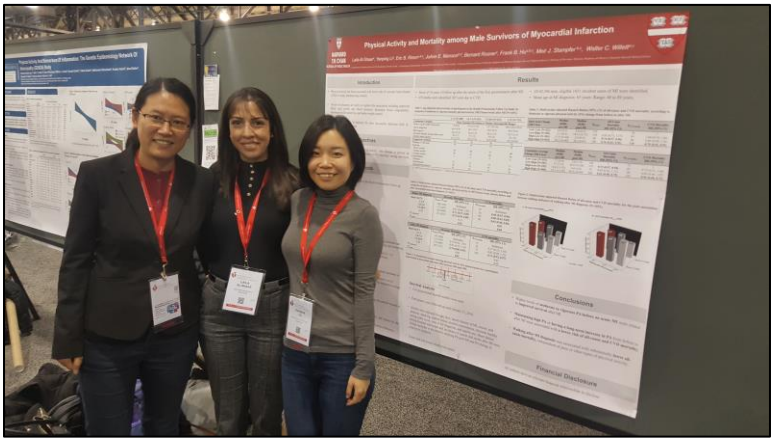
> Musicus AA, Moran AJ, Lawman HG, Roberto CA. Online Randomized Controlled Trials of Restaurant Sodium Warning Labels. Am J Prev Med. 2019 Dec;57(6):e181-e193.

Aviva Musicus, doctoral student, gave a talk titled "Messages to Promote Healthy Restaurant Choices for Kids: A Randomized Controlled Online Experiment" at The Obesity Society's annual conference, Obesity Week, in Las Vegas on November 3-7. Her presentation was given at the Policy and Public Health Orals Session: Communicating about Nutrition and Weight Bias, and was about the study she led to help parents order healthier food for their children at restaurants.

Dr Walter Willett, Professor of Epidemiology and Nutrition, gave the President's Lecture titled "**The search for a path to feed 10 billion a healthy and sustainable diet"** at the FNCE meeting in Philadelphia on October 27, 2019. At their request he talked about the intersection of food, health and the environment.

Dr Walter Willett also gave the Wade Hampton-Frost Lecture titled **"The Role of Nutritional Epidemiology in Finding a Sustainable Future"** at the APHA meeting on November 4, 2019, which is the annual lecture for the Epidemiology Section. At the same APHA meeting, Dr Willett gave another lecture for the Food and Nutrition Section titled **"Food as Medicine".**

Postdoctoral fellow ***Laila Al-Shaar's*** study on "Physical Activity and Mortality among Male Survivors of Myocardial Infarction" was featured in the AHA Scientific Sessions 2019, Philadelphia, Nov 16-18. The study was conducted by Laila Al-Shaar, Yanping Li, Eric Rimm, Bernard Rosner, JoAnn Manson, Frank Hu, Meir Stampfer, and Walter Willett, using the Health Professionals Follow Up Study cohort data.



Laila Al-Shaar, Ming Ding, and Xiaoran Liu attending the AHA Scientific Sessions 2019, Philadelphia, Nov 16-18.

Dr. Josiemer Mattei selected as Culture of Health Leader

Dr. Josiemer Mattei, Donald and Sue Pritzker Associate Professor of Nutrition in the Department of Nutrition at the Harvard T.H. Chan School of Public Health, has been selected to participate in the Robert Wood Johnson Foundation's Culture of Health Leaders program.

Designed for people from all fields—from technology and business to architecture and urban planning—Culture of Health Leaders fosters cross-sector collaboration and supports leaders in their continued growth and development as agents of change for equity and health. Together, they learn new ways of thinking and leading, expanding their perspectives and accelerating their impact.

As a member of the program's newest cohort, Dr. Mattei aims to support healthy communities among people of Latin American heritage, especially in Puerto Rico. She is steering coordinated multi-level changes (i.e. individual, community, environmental, and policy) that will improve the access to, and intake of, healthy foods, to lessen cardiometabolic disparities in Hispanic/Latin@ populations.

To learn more about Culture of Health Leaders and RWJF's other leadership programs, and to meet other participants, visit https://cultureofhealth-leaders.org/

From: https://www.hsph.harvard.edu/nutrition/2019/11/04/josiemer-mattei-culture-of-health-leader/

Dr Erica Kenney, Assistant Professor of Public Health Nutrition, and her doctoral student, ***Mary Kathryn Poole,*** presented on November 5, 2019 at the American Public Health Association (APHA) annual meeting in Philadelphia. They had the wonderful opportunity to present together in the same session. Dr Kenney discussed her findings of how changes to the Child and Adult Care Food Program (CACFP)'s nutrition standards increased children's intake of fruits and whole grains in child care, while Mary Kathryn discussed a complementary study on the problems that child care providers had in trying to understand and implement the new nutrition standards.

* * * COMING SOON! * * *

Dr Christopher P Duggan, Professor and Editor-in-Chief of the *American Journal of Clinical Nutrition*, is pleased to announce that AJCN will be expanding its scope even further by adding several new sections in the journal. More details will appear in the next issue of *NutriNews!*

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 in Kresge 502** at the Harvard T.H. Chan School of Public Health. The seminars are free and open to the public.

The following speakers will present their work in December:

Dec 2: ***Dr Marion Roche,*** Senior Technical Advisor for Adolescent and Women's Health and Nutrition. Nutrition International – *"Adolescent Nutrition: Innovative Programs and Partnerships to Reach Adolescents Beyond the Health System"* – NGHP.

Dec 9: ***Dr Philip Demokritou***, Associate Professor; Director, HSPH Center for Nanotechnology and Nanotoxicology – *"Sustainable Nanotechnology: Bio-inspired, nature derived and non toxic nanomaterials for agri-food applications".*

Dec 16: ***Dr Manja Koch***, Research Associate, Department of Nutrition – *"Novel biomarkers for dementia".*

This will be the last Monday Nutrition Seminar for the fall semester. Due to the Winter Recess and Martin Luther King Day, there will be no Monday Seminars until February 3, 2020

For more information, contact: hfarmer@hsph.harvard.edu

New Faces in the Department!

Chengcheng Liu
Visiting Graduate Student

Hi, everyone!

I am ***Chengcheng Liu,*** a PhD student from the National Cancer Center of China/ Cancer Hospital, Chinese Academy of Medical Sciences, Peking Union Medical College. My research mainly focuses on the cost-effectiveness evaluation of cancer screening based on the Cancer Screening Program in Urban China. Under the supervision of ***Dr Stephanie Smith-Warner***, I will be joining the Pooling Projects of Alcohol and Cancer, Circulating Biomarkers and Breast and Colorectal Cancer. I look forward to meeting all of you!

MORE NUTRITION NEWS

Study finds that posting calories on menus may not result in long-term dietary changes

According to a new study published in a November 2 *Salon* article led by ***Dr Joshua Petimar***, postdoctoral research fellow, adding calorie counts to chain restaurants' menus did not have a sustained effect on customers' purchasing habits. The authors of the study found that fast-food chain customers in Louisiana, Mississippi, and Texas ordered around 60 calories, or about 4%, fewer calories per transaction in the weeks following the enactment of a 2018 FDA law mandating calorie labeling. Further, customers purchased only 23 fewer calories per transaction after one year.

According to Petimar, "Our findings suggest that calorie labeling may be most effective as a short-term strategy for reducing calorie purchases, but that other nutrition interventions may be necessary for long-term positive dietary changes in these settings".

Read the Salon article: Calorie counts added to fast-food menus lead to modest or no changes: study

From: https://www.hsph.harvard.edu/news/hsph-in-the-news/calories-menus-dietary-changes/

NUTRITION SOURCE UPDATES

Prioritize plants for hearty holiday cooking
Looking for inspiration for your holiday table? Here are some hearty and delicious dishes that feature a variety of vegetables, so you can wow your guests with a display of vibrant colors, textures, and flavors.
https://www.hsph.harvard.edu/nutritionsource/healthy-holiday-cooking_recipes/

Spotlight on Legumes and Pulses
Legumes and pulses—the edible seed of a legume plant—are nutritious staples of diets around the world. They are an inexpensive source of protein, vitamins, complex carbohydrates, and fiber.
https://www.hsph.harvard.edu/nutritionsource/legumes-pulses/

Antioxidants
Often used as a marketing buzzword, learn about the role of antioxidants beyond the hype, and some of the research on health and disease prevention. https://www.hsph.harvard.edu/nutritionsource/antioxidants/

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/)

Symposium Save the Date!

Monday, January 27, 2020—2:00-5:00 pm, Kresge G1

Join us as we discuss red meat, novel meat alternatives, and implications for human and environmental health. The event will also explore broader challenges in conducting, implementing, and communicating public health research and policy.

CALL FOR PROPOSALS:

The Massachusetts Academy of Nutrition and Dietetics (MAND) is requesting proposals for educational sessions at the 2020 Annual Nutrition Conference & Expo.

MAND is looking for polished speakers who will provide high-quality and evidence-based sessions. Session content should be based on the latest research with practical applications related to clinical, community, food service, education, public policy, consulting, and professional communication.

The conference will take place on Friday, April 3, 2020.

Please visit the MAND website to download the application: https://www.eatrightma.org/event/1121

All applications are due by Friday, November 8, 2019 via e-mail to: nicolette.maggiolo@gmail.com

Save The Date

The Nutrition Holiday Party will be on Friday,
December 13th, 2019