

College of Agriculture and Life Sciences • University of Wisconsin-Madison

NOTE FROM THE CHAIR: DR. DAVID EIDE



Fall greetings from the Department of Nutritional Sciences. To say that the past few months have brought on differences from our normal operations is a bit of an understatement. The COVID-19 pandemic has had profound effects on how we do our work, but I'm happy to say it impacted our accomplishments less than originally expected. Our courses are being taught and our research is still progressing. To those who have not been following events on the UW-Madison campus closely, all of our courses were moved to remote instruction and all on-site research activities were shut down in mid-March. Instruction continued online for the remainder of the semester. On-site research was reactivated in early June and was allowed to increase in activity over the course of the summer. In the fall semester, large courses were limited to online instruction only, while smaller courses were allowed

to be in person, albeit with mask wearing requirements and social distancing. While there was a spike of COVID-19 cases among students early in the semester, I am happy to report that transmission on campus has been largely under control since September and campus is faring better than the surrounding community and the rest of the state. Our success as a department and as a campus has come from the dedication and perseverance of our students, staff, and faculty. Our faculty has spent a remarkable amount of effort converting in-person courses to the online format. While online instruction is not preferable, we are still able to offer a quality education to our students. Our staff, many of whom have worked from their homes since March, have surmounted many obstacles in getting their work done, and our department continues to operate smoothly. Our graduate students have been doing their research under trying conditions and making good progress towards their degrees. Finally, our undergraduate students have been terrific. They're taking the virus seriously to control its spread and they remain focused on their education. To quote one of my favorite movies, "When the going gets tough, ... the tough get going!" (John Belushi, Animal House). I wish you all a safe, healthy winter and spring as we look forward to a better 2021.

IN THIS EDITION...



Celebrating Native Foodways, Resilience, and Ingenuity by Erika Anna, MS, RDN, CD



New Grad Student Placements



Room 290 Renovations

LET FOOD BE YOUR MEDICINE

For three decades, Huichuan Lai has been finding ways to improve the lives of people with cystic fibrosis

Printed in Grow Magazine, Fall 2020 by Nicole Sweeney Etter

Medical student Alice Huang was dutifully taking notes during a lecture at the Mayo Clinic Alix School of Medicine when she snapped to attention. There on the projection screen, next to the title of a cystic fibrosis study, appeared a familiar name.

"That's my mom!" she gasped to the student beside her. Alice's mother happens to be Huichuan Lai MS'90, PhD'94, a renowned cystic fibrosis researcher and professor of nutritional sciences at CALS.

A couple of years later, Huichuan Lai's younger daughter, Leslie Huang, a genetic counseling student, had her turn to beam with pride when her mother's influential research turned up in her cystic fibrosis training at Mount Sinai in New York. Of all the ways to measure research impact, perhaps the most surreal is learning that your work is being taught to your children in professional training programs across the country.

"That's when you know your work is being not just viewed but used to educate the next generation," says Lai, who also has affiliated appointments in the pediatrics and population health sciences departments in the UW School of Medicine and Public Health.

After more than a quarter of a century studying cystic fibrosis (CF) and leading the largest prospective, longitudinal birth cohort study of the condition, Lai has made an undeniable impact on the field. Her work has illuminated the role of nutrition in the disease and its progression, changing the standard of care.

There is still no cure for CF, which afflicts more than 70,000 people worldwide. The complex hereditary disease, which makes it difficult for patients to breathe and absorb nutrients, can lead to deadly malnutrition, infections, diabetes, liver disease, and other



Assistant scientist Sangita Murali works with a blood specimen from a patient with cystic fibrosis at the Huichuan Lai Lab in the Nutritional Sciences Building. Photo by Michael P. King

complications. And while life expectancy has improved in recent decades, many patients with CF still die before their mid-30s. But earlier screening, new treatments, and research like Lai's are making it easier to manage the disease and improve patients' quality of life.

"Working in the field of cystic fibrosis is very rewarding," says Lai, whose work is supported by the National Institutes of Health (NIH), the Cystic Fibrosis Foundation, and the Legacy of Angels Foundation. "One reason is that the Cystic Fibrosis Foundation bridges research and clinical practice, and they take the research findings and broadcast them to the community. With diabetes or other diseases, it might take years for new findings to make it into clinics. In CF, it can be within months. It's very, very fast, and they work very hard to reduce the barrier between research and clinical practice."

From Student to Professor at UW

It was the University of Wisconsin–Madison that sparked Lai's interest in CF research. After she earned her undergraduate degree in health and nutrition at Taipei Medical College in Taiwan, Lai debated between Rutgers University and UW–Madison for graduate school. Her father, who had lived briefly in New York, lobbied for Rutgers.

But then Lai's phone rang. It was Denise Ney, Billings-Bascom Professor of Nutritional Sciences, with some questions about Lai's application. The personal connection made UW even more appealing, and Ney would later become Lai's Ph.D. mentor.

Lai didn't stop with her Ph.D. She decided to become a registered dietitian (RD) – not because she intended to practice as an RD, but because she wanted to deepen her understanding of the clinical world. "That would allow me to meet clinicians and perhaps get involved in clinical nutrition research," explains Lai, who later earned a master's degree in biostatistics as well.

During her one-year internship for the RD program, she spent a rotation at the UW Pediatric Pulmonary Center. There she met Philip Farrell, the former dean of the UW School of Medicine and Public Health and a neonatologist and pediatric pulmonologist who has spent his career studying CF.

At the time, Farrell was conducting the largest pediatric research study since the polio vaccine field trials of the 1950s – a clinical trial that evaluated the potential benefits of newborn screening for CF, particularly in preventing malnutrition. It was thanks to Farrell's work that Wisconsin (and eventually the rest of the country) started screening all newborns for CF.

Lai spent her postdoctoral fellowship in Farrell's lab and continues to collaborate with him today. "We now always joke that I was on his grant before, and now he's on my grant," she says. "It's a very fruitful collaboration."

Toward Precision Nutrition

Before newborn screening, children with CF were diagnosed at an average age of 9 months — a point when many babies' nutrition and growth had already suffered, and most mothers had stopped breastfeeding. But by 2011, most babies were diagnosed within the first two months of life, which made it possible to investigate an important question: What's the best food for those babies? "It is the very first question that all CF physicians face in the clinic the first



Huichuan Lai, professor of nutritional sciences, walks through her neighborhood to deliver a blood specimen, recently analyzed in her lab, to the nearby UW Hospital and Clinics in Madison, Wis. Photo by Michael P. King

time they see a family with a newly diagnosed infant," Lai says. "Moms will ask: 'Can I continue to breastfeed?' And physicians had no answer."

That's because there were no clinical standards for CF nutrition before Lai's study. "In clinical practice, we typically wait and watch until growth falters," she says. "But if you wait until growth falters, it's basically too late." And so the FIRST (Feeding Infants Right . . . from the STart) study was born.

Breast milk, which has immune-boosting properties, is usually considered the optimal nutrition for healthy babies. But the picture is more complicated for babies with CF, who have increased nutritional needs. Those infants have trouble absorbing breast milk's essential fatty acids, which are vital or growth. Breast milk is also low in sodium, which can lead to electrolyte imbalance because babies with CF lose so much sodium through their sweat. In severe cases, babies can die because of low blood sodium levels, a condition called hyponatremic dehydration.

But before Lai could even begin recruiting her own research cohort, she needed data. "It wasn't easy to launch this study," she notes. She began by conducting a retrospective study using a 10-year cohort (1994-2003) generated from Wisconsin's CF newborn screening program that was implemented after Farrell's cohort (1985-1994) demonstrated unequivocal nutritional benefits of early diagnosis through newborn screening. She looked at differences in growth and lung infection rates in babies who were exclusively breastfed versus those who were fed formula.

That gave her enough data to design a longitudinal observational study, which earned NIH funding, for a new birth cohort (2012-17) that continues a decade later. While it's not a randomized clinical trial, the observations of nearly 200 families who have chosen to breastfeed, use formula, or do a combination of both have led to interesting insights.

Lai had to wait until her youngest subject turned 2 in December 2019 to complete the data analysis from the primary end point of 2 years of age, and she plans to share her results at the North American Cystic Fibrosis Conference in October 2020. But her preliminary data



Assistant scientist Sangita Murali prepares a blood specimen for analysis at the Huichuan Lai Lab. As part of the ongoingFIRST study, Lai's lab staff process and measure nutrient levels in breast milk, blood, and fecal samples. Photo by Michael P. King

show that babies who were exclusively breastfed for the first six months did not grow as well during their first year as babies who were exclusively formula-fed or who received a combination of the two. Lai found that babies who were exclusively breastfed were also deficient in iron, essential fatty acids, and vitamin D.

The impact on infection rates is less clear: She found no difference between the babies who were exclusively breastfed and those who were exclusively formula-fed, but babies who had both feeding types had higher rates of infection in the first year of life. "So that's a puzzle," she notes.

Because of poor growth, two-thirds of infants with CF are prescribed fortified, calorie-dense formula by six months of age, "and then they start to catch up," Lai says. So Lai wondered whether she could predict which babies will need fortified feedings and which won't. Babies typically grow rapidly during their first month of life, but Lai found that babies who lose more weight shortly after birth tend to have more severe CF symptoms. She believes those babies are the ones who would benefit most from earlier fortified feedings."Nutritional status and pulmonary status are so closely related," she explains. "The better the nutritional status, the better the lung status."

A Dedicated Team

To recruit patients, Lai's lab works with pediatric CF centers in Madison, Milwaukee, Chicago, Indianapolis, Boston, and Salt Lake City. Recruitment is challenging because families must enroll within a baby's first two months of life, and the study requires ongoing questionnaires, food diaries, and blood and fecal samples as a child grows.

While a high attrition rate is common for such studies, more than 90% of Lai's patients have stuck with it. "We understand the burden of data collection on families, but we have a lot of families who are so dedicated," says Lai, who keeps a photo collage of smiling kids and parents from the FIRST cohort on her computer.

Those families spur her relentless search for answers. For at least a decade, she regularly clocked 80-hour workweeks. "The complexity of a longitudinal study like this is that I can't wait because these kids are growing," she explains. Now she's down to 50 to 60 hours a week, but she's just as motivated as ever. "She'll often come down to the lab, and it's usually to pilot some new idea or some new thought, and it's like, when do you sleep?" says Taiya Bach Streiffer BS'05, a clinical RD who also serves as a research dietitian in Lai's lab. "She's always got something up her sleeve. She's very dedicated to the research."

The same could be said of Lai's staff. It takes a lot of work to manage such a large national cohort: meeting with local families to go over the study; consulting with participating centers across the nation; updating a database that grows with every child's weight check-in; and processing and measuring nutrient levels in breast milk, blood, and fecal samples. They also use chest CT scans to assess lung function and whole-genome sequencing to determine whether genetic differences could play a role in how patients respond to certain CF drugs.

"One of the biggest surprises for me was what a community effort CF research is," notes Danielle Sander, another RD and research coordinator in Lai's lab. "It's not just the researchers and the families that we work with, which are of course the most important, but it's also health care providers and the other registered dietitians and the respiratory therapists and the CT technologists. We coordinate with a lot of other people to make CF clinical research happen."

Three undergraduate students also work in the lab, including two freshmen. "It's a great opportunity for undergrads," says Sangita Murali, an assistant scientist with the FIRST study. "They learn about the study and about the disease, and they learn how these big studies are handled. It's a great mentoring experience for them."

Questions Beget Questions

The first phase of the study focused on nutrition, growth, and lung disease outcomes over a baby's first two years of life. Phase II extended the study to follow the children until age 6 and expanded to include more sensitive outcome measures, such as lung clearance index and chest CT.And new research questions have emerged along the way. For example: Are there microbiome differences in children with CF, and could their mix of gut bacteria affect the relationship between breastfeeding and growth and immunity? To find answers, Lai added a gut microbiome substudy to compare children with CF with their siblings without the disease and found distinct differences in the bacterial mix between the two.



FIRST study participant Veronica Brockwell undergoes a "multiple-breath washout" test, which measures her lung function, at American Family Children's Hospital. Photo by Danielle Sander

For another substudy, she examined how probiotics changed the microbiome profile and the effect on gastrointestinal symptoms and antibiotic therapy. She continues to study the effect of repeated antibiotic therapies on gut microbiome because children with CF have more infections that require antibiotics.

The CF field has also evolved over the life of the FIRST study. There are now four drugs, known as CFTR modulator therapies, which target the gene involved with the disease. Since 2012, the percentage of patients who are eligible for those therapies has grown from 5% to 90%, Lai notes. CF symptoms stem from a malfunction in a protein that controls the movement of chloride throughout the body. When chloride gets trapped in cells, it leads to the production of sticky mucus that can hinder gastrointestinal and lung functions and trap bacteria, causing malnutrition and recurring respiratory infections. CFTR modulator therapies can lower a child's abnormally high sweat chloride levels, reduce pancreatic insufficiency (low digestive enzymes), and preserve their respiratory functions. After treatment, patients may be able to reduce the dosage of pancreatic enzyme supplements that are needed to increase digestion and nutrient absorption.

The FIRST study will continue until at least 2025, but with new aims. "We want to study the postmodulator era — do those kids have better growth and disease outcomes?" Lai says. Treatment effectiveness varies, so she wants to see if there are patterns in the children who respond better to treatment. "The advantage of our study is that we have all that life history," she explains. "I think this will be the most completely studied pediatric cohort in the history of CF."

And it's possible that Lai's team will continue to follow these children into adolescence. "Phase III would be fascinating because they're entering puberty, and that's when many start to go into decline and when some start to develop CF-related diabetes," Lai notes. There are many more questions to explore, "and a lot of the CF clinicians want to find out the answers," she says.



Five-year-old Easton Kibbel, a participant in the FIRST study, has seen improvements in digestion and lung function since starting a new medication for treating cystic fibrosis in 2017. Photo courtesy of Dana Kibbel

Research for Better Lives

Lai is delighted that her work has gone beyond peerreviewed journals to influence clinical practice. "I am most proud of bringing people from different disciplines together – dietitians and nutritionists, biostatisticians, and traditional medical clinicians," she says. "I have elevated the status of dietitians and nutritionists in CF care because my research points out the importance of nutritional management, and you can only achieve good nutritional management if you have expert clinical dietitians and nutritionists on your team. And I have actually changed how providers monitor nutritional status. Now BMI [body mass index] and weight-for-length at the 50th percentile is universally used as a benchmark in the care of CF patients, and that was all because of my studies."

Then there are the families at the heart of her work. Parents will email Lai after discovering her research online or come up to her at conferences to tell her how much her work has meant to them. "Your findings answered my question about why this is happening to my baby," one mom told her. Among the grateful families are the Kibbels of Waupun, Wisconsin. This is the first time the family has participated in a research study, but they didn't hesitate to sign up after their son, Easton, was diagnosed with CF in 2014.

Thankfully, 5-year-old Easton is doing well, especially since he started one of the newer CF medications in 2017. "He's super healthy. He's pancreatic sufficient [produces enough digestive enzymes], so that makes it easier," says Easton's mom, Dana Kibbel. "His pulmonary function has significantly increased, and it's a progressive disease, so for that number to increase every time we go to the clinic is pretty amazing."

The Kibbels' oldest son, Cooper, who does not have CF, participated in the sibling study. "He thinks it's cool to be involved, too," Kibbel says. And most recently, their newborn, Krew, was also diagnosed with CF, giving them yet another reason to support research like Lai's.

"How far they've come with CF research doesn't come from researching normal kids — it's because these CF patients and families are stepping forward and wanting to be part of this," Kibbel says. "So we decided that this is what we want to do for the future of CF."

UNIQUE METABOLIC SIGNATURES ASSOCIATED WITH AUTISM SPECTRUM DISORDER (ASD) DETECT MORE THAN 50% OF INDIVIDUALS WITH ASD IN CHILDREN'S AUTISM MABOLOMEPROJECT (CAMP)

Co-authored by Nutritional Sciences Professor, Dr. Denise Ney

NEW FINDINGS FROM THE CAMP STUDY, A 1,102 SUBJECT STUDY OF THE METABOLISM OF CHILDREN WITH ASD, PUBLISHED IN AUTISM RESEARCH

Madison, WI (June 16, 2020): In a <u>paper</u> published online this week in Autism Research, scientists at NeuroPointDX, a division of Stemina Biomarker Discovery, Inc., in collaboration with researchers at the UC Davis MIND Institute and academic and clinical institutions across the country, report new findings from the Children's Autism Metabolome Project or CAMP.

Analysis of blood samples from CAMP, the largest study yet undertaken of the metabolism of children with autism spectrum disorder (ASD), has now reproducibly identified unique metabolic signatures (called metabotypes) in over 50% of the children with autism in the study. This is an important step towards the goal of developing a panel of metabolomics tests that could form the basis for a biological screen of risk for ASD. Analysis of other potential blood-based biomarkers using CAMP study samples is ongoing. Validation of additional metabotypes of ASD is expected to result in the ability to detect a still higher percentage of children at risk of ASD using this approach.

The new publication, entitled "A metabolomics approach to screening for autism risk in the Children's Autism Metabolome Project" (Autism Research: doi: 10.1002/aur.2330) was authored by researchers from the UC Davis Mind Institute, Stemina Biomarker Discovery, Inc., University of Wisconsin-Madison, and the Cleveland Clinic. "A primary goal of the CAMP study, which recruited 1,102 children ages 18 months to 48 months, was to generate a panel of validated biomarkers that, taken together, could detect a large proportion of young children at risk for ASD," said David Amaral, PhD, distinguished professor at the UC Davis MIND Institute and the Department of Psychiatry and Behavioral Sciences at UC Davis and senior author of the paper.



"Our original analyses, published in Biological Psychiatry in 2019, identified and validated a set of metabotypes based on differences in branch chain amino acid metabolism; these metabotypes represented 17% of the children with autism in CAMP. This new research builds on that effort, resulting in an optimized set of 34 newly defined metabotypes based on amino acid and energy metabolism. Taken together, the test battery now detects 53% of subjects with ASD in the CAMP study with 91% specificity."

Robert Burrier, PhD, Chief Operating Officer of Stemina and co-author points out that "Using metabolomics to detect objective biomarkers of ASD is a promising approach because metabolism is sensitive to interactions among the genome, gastrointestinal microbiome, diet, and environmental factors that all contribute to risk of ASD."

"The CAMP study is the seminal study of the metabolism of children with autism. The study was carefully designed to allow discovery and validation of subpopulations of children with ASD who share common metabolic differences from typically developing children," said Elizabeth Donley, JD, MBA, MS, NeuroPointDX Chief Executive Officer and a co-author of the publication. "We strive to discover, validate and publish peer reviewed science from this ground-breaking study with the goal of building trust in the rigor of our science and its potential to change how autism is diagnosed and treated."

"While further research is needed, given the virtual absence of effective biomarkers to detect autism risk in very young children, we are optimistic that this approach has enormous potential for identifying children as early as possible," said Dr. Amaral. "Moreover, determining that an individual child has a particular pattern of metabolic alterations may offer the possibility of new targeted and personalized therapies. These opportunities and questions require further testing in the CAMP study. Fortunately, CAMP retains a repository of blood samples from our young participants that can be used for follow-up studies. The current paper represents an important stride in the research journey toward understanding the role of metabotypes and their potential as actionable clinical tools in the detection and treatment of ASD."

"These new findings from the CAMP study represent another step in our efforts to develop a metabolomics-based screening tool for ASD," Donley added. "While biomarkers of any kind cannot provide a definitive diagnosis of ASD, combining a metabolomics-based screen with behavioral testing increases the likelihood that those at risk for ASD can be detected as early as possible."

While the published findings are based on collection of blood samples from children 18 to 48-months-old, future research will be directed at validating this metabolomics approach in children younger than one year old when current diagnostic procedures are lacking. The researchers are also exploring whether these metabolic differences can lead to insights that enable more targeted treatment options for children with ASD.

Other authors on the paper include Marvin Natowicz, MD, PhD, Professor of Pathology, Cleveland Clinic Lerner College of Medicine of Case Western Reserve University ; Physician at Cleveland Clinic; Denise Ney, PhD, Professor of Nutritional Sciences at the University of Wisconsin–Madison; and scientists from NeuroPointDX, a division of Stemina Biomarker Discovery, Inc., of Madison, Wisconsin.

Funding for the CAMP study was provided by a grant from the National Institutes of Mental Health (Grant No. 5R44MH107124-03), the Nancy Lurie Marks Family Foundation, and the Robert E. and Donna Landreth Family Fund.

About NeuroPointDXNeuroPointDX, a business unit of Stemina Biomarker Discovery, is bringing a precision medicine approach to the diagnosis and treatment of neurological disorders through the application of world-class metabolomics. The company's current focus is autism spectrum disorder (ASD). NeuroPointDX has developed and is commercializing testing panels to aid in the early diagnosis of ASD through its CLIA-certified laboratory. For more information, please visit our website at https://neuropointdx.com/.

CELEBRATING NATIVE FOODWAYS, RESILIENCE, AND INGENUITY

November is Native American Heritage Month, a month dedicated to celebrating the rich and diverse culture, history, and contributions of First Nations Peoples. During Native November, Nutritional Sciences had the opportunity to learn about Native foodways, health, resilience, and ingenuity. Sponsored by the Wisconsin Academy of Nutrition and Dietetics (WAND), faculty, staff, students, and alum screened and discussed Gather, a film celebrating the growing movement among Native Americans to reclaim spiritual, political and cultural identities through Food Sovereignty.

Gather, co-produced by Illumine Film and First Nations Development Institute, outlines the revitalization and recreation of Native food systems in North America. The film takes viewers to tribal communities where members are actively working on Food Sovereignty issues, including the creation of a restaurant of traditional food offerings out of a converted deserted gas station, traditional foraging, hunting and fishing. In the film, Chef Nephi Craig (White Mountain Apache) says:

"Our ancestors saw the world end once. That whole lifeway is gone. Now, we're on the other side of the apocalypse, but we are still very much in resistance today... Maintaining our foodways is our own battle to fight for our human rights. We still hold dear these traditions of food and agriculture, and the generosity attached to those practices, so I feel that we are experiencing a profound, wonderful, and amazing return to those concepts and ideals."

Nutritional Sciences staff, students, and alum joined virtually from across the state, and nation for a post-screening guided discussion focusing on Native ingenuity and resilience, and practical steps for moving towards authentic relationships and informed action surrounding Native foodways and health.

Gather is available on iTunes, Amazon and Vimeo on Demand.

As we move into a new year, Nutritional Sciences looks forward to actively seeking opportunities to cultivate authentic and reciprocal relationships with the 12 American Indian Nations of Wisconsin. For a greater awareness of issues surrounding Native foodways and health, Nutritional Sciences encourages faculty, staff, students, and alum to use the following resources as a starting point—or a continuation within the journey—to honor and celebrate Native American ingenuity and resilience all year long.

Learn about Land Acknowledgement, Traditional Lands, and Treaties

Do you know what a land acknowledgement is, and why it is important and how to incorporate the practice into your own life? The Native Governance Center provides a Guide to Indigenous Land Acknowledgement. To identify ancestral land in which you professionally and personally occupy, Wisconsin First Nations website includes a map showing treaty lands (1800) and present day Tribal Lands via <u>Wisconsinfirstnations.org/map/</u>.

"Acknowledgement by itself is a small gesture. It becomes meaningful when coupled with authentic relationships and informed action. But this beginning can be an opening to greater public consciousness of Native Sovereignty and cultural rights, a step toward equitable relationships and reconciliation." - U.S. Department of Arts and Culture

Incorporate Indigenous Voices and Issues into Your Life:

Honor Native Voices, Stories, and Histories · Toasted Sister Podcast. Radio about Native American food <u>https://toastedsisterpodcast.com/</u>

Native America Calling. A live call-in program, engaging noted guests and listeners in a thought-provoking national conversation from a Native perspective. <u>https://soundcloud.com/native-america-calling</u>

Journalism and Publications \cdot First Nations Development Institute: 10 Featured Books for 2020 \cdot Native American Journalism Association \cdot Indian Country Today

Food and Drink - Consider seeking out and supporting Native-owned businesses, and producers:

- Sweetgrass Trading Co A online food market of curated delicious savory and sweet foods supporting a variety of Native-owned businesses.
- Bedré Chocolate Sweet treats shop owned and operated by the Chickasaw Nation.
- Red Lake Nation Foods Locally grown wild rice, hand harvested wild fruit jellies, jams, syrups, teas, and more, plus recipes.
- Spotted Horse Coffees Roasts fair trade and organic coffee, featuring Indigenous Women Coffee Producers, from El Salvador, Chiapas, Costa Rica, Honduras and more.
- Passamaquoddy Maple All things maple syrups, sugars, candies, and gifts.
- Native American Tea Company



Article by Erika Anna, MS, RDN, CD, Assistant Faculty Associate

Erika is a member of the CALS Equity and Diversity Committee and is the Department of Nutritional Sciences Diversity Representative. In addition, Erika also teaches <u>NS 377: Cultural</u> <u>Aspects of Food and Nutrition</u>,

THE IMPORTANCE AND HISTORY OF BLACK BREASTFEEDING WEEK

BY ERIKA SWANT (B.S. NUTRITIONAL SCIENCES, '19), PUBLISHED ON LINKEDIN

Why do we need this, you ask? Black Breastfeeding Week (BBW) is needed because of the longstanding racial disparities seen in breastfeeding rates. CDC data shows that 86.7% of white women versus 73.7% of black women have ever breastfed.(1) The BBW website states, "the fact that racial disparity in initiation and even bigger one for duration has lingered for so long is reason enough to take 7 days to focus on the issue." Additionally, a study published by the American Academy of Pediatrics states that black newborns were much more likely to be fed formula than newborns of white mothers, not explained by higher rates of breastfeeding intent of white mothers, and commonly documented in hospitals serving black communities.(3) The importance of breastfeeding stems from its unmatched tailored nutritional benefits, its ability to decrease the infant's risk of asthma, obesity, type 1 diabetes, SIDS and more, on top of its benefits for the mother.(2)

History Behind Black Breastfeeding: It is important to keep in mind black women have only been able to parent their children for about 155 years since the abolishment of slavery. The research of author, historian, and UC Berkeley Professor, Stephanie Jones-Rogers reveals the importance of not forgetting about the reproductive maternal violence white women perpetrated against enslaved wet nurses.(4,5) Black women were good enough to give bodily fluids to white babies, but not good enough to be treated as human beings, which has led to transgenerational traumas that revolve around breastfeeding practices.(3) Some of the feelings surrounding these traumas are depicted in the gut-wrenching poem (below) written by black feminist author, Hess Love.(6)

So, what can we do? These factors and other mediated demographic factors have contributed to decreased breastfeeding rates in black moms. We must do more to create supportive and safe environments for mothers who choose to breastfeed, create more diversity in the fields of lactation, nutrition, doulas and other related practices, and decrease unique cultural barriers amongst black women.

(Black Breastfeeding Week is held annually the last week of August)

^{1.} CDC. "Facts." Centers for Disease Control and Prevention, Centers for Disease Control and Prevention, 11 Aug. 2020, www.cdc.gov/breastfeeding/data/facts.html.

^{2.} CDC. "Why It Matters." Centers for Disease Control and Prevention, Centers for Disease Control and Prevention, 4 Nov. 2019, www.cdc.gov/breastfeeding/about-breastfeeding/why-it-matters.html.

^{3.} Chelsea, McKinney O, et al. "Racial and Ethnic Differences in Breastfeeding." Pediatrics: Official Journal of the American Academy of Pediatrics, 11 May 2016, pediatrics.aappublications.org/content/pediatrics/early/2016/07/11/peds.2015-2388.full.pdf.

^{4.} Slavery Facts. "Breastfeeding Master's Babies: The Wet Nurse Slave." Welcome To SlaveryFacts.org the Whole Truth about Enslaved Africans Then and Now. Black History for Home Schooled Kids., 7 July 2019, www.slaveryfacts.org/classroom/breastfeeding-master-s-babies-the-wet-nurse-slave

^{5.} Jones-Rogers, Stephanie E.. "[S]he could ... spare one ample breast for the profit of her owner': white mothers and enslaved wet nurses' invisible labor in American slave markets." Slavery & Abolition 38 (2017): 337 - 355.

^{6. @}hess2love. I wish I dried up. Instagram, Aug 25 2020, www.instagram.com/p/CESFn9CH7vZ/



Cole Adam earned his degree in nutritional sciences from the University of Wisconsin-Madison ('09), completed his dietetic internship in Arizona, and for the past six years (and counting) have worked as a clinical dietitian in a hospital setting. Cole also has a blog at <u>http://eatwildgreens.com/</u>

INTERVIEW WITH AN ALUM COLE ADAM, RD.

Why did you decide to study nutrition?

I started college not knowing what I wanted study. I chose a wide variety of courses my freshman year hoping that something would spark my interest. Sure enough, I took an introductory nutrition course that was fascinating, despite the incomprehensibly early class time for a college freshman (7:45 a.m.). That class provided the spark I was looking for. Upon further consideration, the idea of studying nutrition grew on me. I liked that it's a practical science (everyone eats, and we're often trying to eat healthier). I like that it has a foundation in life sciences like anatomy, physiology, and biochemistry. And I figured with the current health status in the United States, job security wouldn't be an issue. So, I chose to major in nutritional science and began my journey to become a registered dietitian.

What was your favorite part of attending UW-Madison?

My favorite part of attending UW-Madison was the work/play balance. Memories of my time on campus range from long hours of studying at Wendt Library (now Wendt Commons), to long hours spent hanging out with friends at the Memorial Union Terrace and the many fine establishments along State Street.

Can you explain your job and what inspired you to write a cookbook?

I'm currently working as a dietitian in an outpatient cardiac rehab clinic. Our team works with patients who have recently had a cardiac event or surgery and are now in the recovery phase. We offer exercise and stress management classes, as well as nutrition education, which is where I come in. I meet with patients individually and hold group classes where we discuss diet changes for improving heart health. A main focus of my education is encouraging patients to eat more plants—a recommendation based on the overall weight of evidence when it comes to diet and human health, as diets rich in plants offer protection from some of our most common chronic diseases, including heart disease. In addition to cardiac rehab, I recently co-authored a cookbook titled The Whole Health Cookbook: A Delicious Guide to Healthy Plant-Based Eating. I partnered with a chef and nutritionist who work at a local gym with an on-site, plant-based kitchen. Using their kitchen as our testing site, we pooled together recipes from our 15+ years of combined plant-based eating experience, then narrowed it down to our absolute favorites. The recipes that made the cut are featured in our book.



THE WHOLE HEALTH COOKBOOK

COLE ADAM, RD • CHEF KAYLA GRANTHAM • AUSTIN JOSEPH



The Whole Health Cookbook: A Delicious Guide to Healthy Plant-Based Eating by Kayla Grantham (Author), Cole Adam (Author), Austin Joseph (Author)

CONTINUED...

What advice would you give to students who are graduating/looking for a job during COVID-19?

Be flexible. This holds true even if we weren't in the middle of a pandemic. Your first job may not be your dream job and that's okay. Many jobs require a few years of experience, so be flexible and opportunistic. Don't be afraid to take an entry-level job. You have to start somewhere.

What makes your book stand out from others?

What makes our cookbook unique is that it's a hybrid between a cookbook and a nutrition book. Our goal was to not only provide healthy and delicious plant-based recipes, but to also explain why these recipes are good for you. In addition to 70+ recipes, we include sections addressing many common nutrition issues/questions about plant-based eating. For example, we discuss where to get nutrients like protein, calcium, and iron. We also have sections on how plant-based eating can promote longevity, while helping to prevent or treat chronic diseases like type-2 diabetes and heart disease.

Any other advice you have for current students about pursuing their passions?

I've always liked Lao Tzu's quote, "A journey of a thousand miles begins with a single step." This is applicable to any major goal but also holds true for pursuing one's passion. Finding or creating a job that you're passionate about can seem overwhelming, so start small, do your research, make a plan. Set small goals that move you in the right direction. And if it's something you're truly passionate about, go for it! Because, as Lewis Carroll noted, "In the end, we only regret the chances we didn't take."

ALUMNI AND FRIENDS GIVING

The Nutritional Sciences Department greatly appreciates any and all funding it receives. If you are interested in helping the department and would like to donate, please consider a donation to the <u>Nutritional Sciences Department</u> <u>Fund (Fund 32040034)</u>. This fund is essential to the operation of the department and aids in keeping the department amongst the elite nutrition departments in the country. Established in 1985 with gifts from the estates of Dorothy L. Miller and Irene DeNoyer, the Nutritional Sciences Department Funds seeks to support the greatest needs of the Department of Nutritional Sciences.

New Grad Student Highlight: CACIOUS BLACK PHIRI

Cacious Phiri holds a Master of Science in Food Science and Human Nutrition (majoring in Human Nutrition) and Bachelor of Science in Agriculture (majoring in Nutrition and Food Science) both obtained from the University of Malawi, Bunda College of Agriculture. Currently, Cacious works with the University of Malawi, Chancellor College as a Lecturer in Nutrition in the Department of Human Ecology. Previously, Cacious worked



with the Government of Malawi under the Department of Nutrition, HIV and AIDS as a Nutrition Officer. Together, with other learning institutions, he has conducted Standardised Monitoring and Assessment for Relief and Transition (SMART) surveys with financial support from UNICEF. Currently, he is working on UNICEF Afikepo Project as a Lead Researcher in management of community behavior data tracking system. Cacious is a member of the National Nutrition Committee and National Food and Nutrition Research Team. Cacious is married and is blessed with a son.

New Grad Student Placements

Congratulations to all new graduate students in the Nutritional Sciences Department! We are very happy to announce final placements for rotations for these students:

- Sierra Strebe-Grim to Jan Peter van Pijkeren's lab
- Mark Heggen to Jan Peter van Pijkeren's lab
- Jake Hermanson to Vanessa Leone's lab
- Lauren Clark to Alan Attie's lab
- Eric McGregor to Rozalyn Anderson's lab



'TIS THE SEASON FOR HOT CHOCOLATE! QUIZ AND RECIPE

Ever wonder how hot chocolate came to be a staple of the cold, winter season? Grab a mug of your favorite hot chocolate, and test your knowledge surrounding how the popular beverage came to be.

- T/F. The earliest known (c. 1200 to 400 B.C.E.) major Mexican civilization, the Olmec, learned the magic of fermenting and crushing the cacao bean to make a thick, fatty beverage.
- The _____ honed the practice, drinking ground cacao beans hot or cold, with vanilla, chilles, and annatto seeds, for color and flavor.
- As a stimulant with food value, the cacao bean was valued for its _____ and _____ content.
- T/F. The unsweetened drink of the Maya has little in common with modern-day popular hot chocolate as we know it.

T/F. In a process established in the nineteenth century, the cocoa butter and cocoa powder are separated, with the cocoa butter mainly used in solid confectionary, not in drinking chocolate, differentiating between hot chocolate (the sweet insipid milk chocolate popular today), and hot cocoa.



Yield: 8 servings Ingredients:

- · 1-quart whole milk
- \cdot ¹/₄ cup heavy cream
- · 1 cup light brown sugar
- \cdot 2 sticks whole cinnamon
- \cdot 2 pieces whole star anise
- \cdot ¹/₂ teaspoon powdered chipotle morita
- \cdot 1 vanilla bean, split and scraped
- \cdot 7 ounces dark chocolate, roughly chopped

Preparation:

Combine the milk, cream, sugar, spices, and the vanilla bean in a medium sauce pan and bring to a boil over medium heat. Reduce heat to low and hold at a bare simmer, stirring occasionally, for five minutes.

Whisk in the chopped chocolate and continue to simmer an additional five minutes. Remove the vanilla bean and the whole spices. Blend well with an immersion blender to create a froth and serve immediately.

Credit: Tom Nealon, Quiz. Food Fights and Culture Wars: A Secret History of Taste, Cacao & Conflict Chapter. Answers on final page

MSCN Alumni in the Workplace

Sara Muench



What would you tell others who are considering applying for the program?

The hardest part is taking the initial step of starting the program. Once you get past that, you will find it to be manageable, intellectually stimulating, and overall fulfilling in helping you reach your career goals. Everyone in the program wants to see you succeed.



Why did you choose the MS-Clinical Nutrition program? I chose the MS-Clinical Nutrition program because it was a great way to build off my internship and increase the depth of knowledge I had as a new dietitian. I liked the focus in clinical nutrition due to this being the primary area I wanted to work, but I thought it was a well-rounded program applicable to various positions a dietitian could find themselves in.

How did the program support you and your goals? This program was both structurally sound in its curriculum and flexible allowing me to work full-time and reach my goal of obtaining a Master's degree. In my career, this program prepared me to provide evidence-based care with a higher level of critical thinking. Knowing the "why" and "how" behind nutrition interventions and care allowed me to grow as a dietitian.

As a recent graduate, can you reflect on how the program has impacted your career? This program has helped me grow as a dietitian, and it has been a great talking point in interviews as a newer dietitian. I was able to learn in-depth details ofnutrition in a structured environment while developing my professional skills. I am happy to say the final semester of this program, I applied and received my dream job working inpatient at a large hospital with cardiothoracic, transplantand cardiac surgical/medical patients.

MSCN Alumni in the Workplace

Rachel Fenske



Why did you choose the MS-Clinical Nutrition program? I chose the MS-Clinical Nutrition program to bolster my clinical nutrition knowledge. The program's distinguished faculty and reputation were among the reasons that I chose UW's MSCN. The program was individualized to my knowledge deficits and the faculty were responsive and engaged.

How did the program support you and your goals? The program provided me with the necessary nutrition coursework to build on my previous knowledge and prepare me for a career in clinical nutrition research. The MSCN faculty were incredibly supportive and helpful in helping me navigate a nontraditional career path.

What would you tell others who are considering applying for the program?

UW Madison's MSCN is the program for you if you're looking to increase your clinical nutrition knowledge from a research and evidenced-based perspective. The program's coursework and workload is flexible to meet your needs. The faculty are compassionate and knowledgeable. As a recent graduate, can you reflect on how the program has impacted your career? Completing UW Madison's MSCN provided me with the necessary knowledge and skills to be a marketable candidate for a career in clinical nutrition research.



UW RESEARCHERS HONORED AS INVENTORS

MADISON - Three University of Wisconsin-Madison professors - Charles Mistretta, Denise Ney and Ann Palmenberg - have been named fellows of the <u>National Academy of Inventors.</u>

NAI fellowship honors academic inventors who have "demonstrated a spirit of innovation in creating or facilitating outstanding inventions that have made a tangible impact on quality of life, economic development and the welfare of society," according to the academy.

UW-Madison's newest trio of fellows are responsible for scores of patents, and bring the university's total academy membership to 10.

Mistretta, an emeritus professor of medical physics, radiology and biomedical engineering, invented digital subtraction angiography, a medical imaging technique that reveals flow (or lack thereof) through blood vessels. The technology is a workhorse of cardiac and neurology clinics, guiding the use of minimally invasive treatments like the placement of stents in blood vessels. He also made important improvements in magnetic resonance imaging techniques serving millions of patients each year, inventing ways to speed up the imaging process, improve resolution and measure the velocity of blood moving in the body.

Ney, the Billings-Bascom Professor of Nutritional Sciences, invented a way to use GMP, a whey protein produced during cheesemaking, as a safe source of protein for children suffering from a genetic disorder, phenylketonuria (or PKU), that keeps them from safely metabolizing an essential amino acid present in almost all protein-laden foods. Before Ney's GMP work, kids with PKU were largely restricted to expensive synthetic dietary supplements that tasted awful. They would often cheat, eating forbidden foods and risking brain damage. Now, GMP-rich foods are made by three companies for PKU patients around the world, and Ney has gone on to show that GMP can also reduce skeletal fragility in women and help with weight loss.

Palmenberg, the Roland Rueckert Professor of Biochemistry, first described a way to use genetic material called recombinant complementary DNA to make new types of live virus vaccines. Her discovery and application of viral internal ribosome entry sites, called IRES, is the basis for nearly all pharmaceutical drug production using living cells (like yeast) as protein factories - including insulin, human growth hormone, interferon and synthetic antibodies. By studying the genomes of viruses and their physical structures, Palmenberg has helped develop panels of new antivirals, vaccines and highly sought-after research reagents used in thousands of labs around the world.

The 2020 fellows class includes 175 inventors from 115 universities and governmental and non-profit researcher institutes around the world. They will be inducted during a ceremony at the academy's annual meeting in Tampa in June.

- Chris Barncard, barncard@wisc.edu



ROOM 290 RENOVATION

2020 hasn't been all bad news, over the summer the university completed a renovation of room 290. Used not only by the Department of Nutritional Sciences, but for numerous courses around campus, it was a much needed upgrade.

While we were sad to see some of the nostalgia disappear, we are beyond excited to welcome students back when it is safe to build new memories. We know you're all going to miss those hard plastic chairs!

We look forward to continuing the tradition of hosting seminars, courses, pizza socials, and many other department activities in the room.

WHAT'S NEW?

New Desks New Carpet New IT Wiring Removed the Back Podium More Access for Students with Disabilities



Department of Nutritional Sciences University of Wisconsin-Madison 1415 Linden Drive Madison, WI 53706-1571

Nonprofit Org. U.S. Postage PAID Permit No. 658 Madison, WI

Nutritional Sciences Digest Dept. of Nutritional Sciences 1415 Linden Drive Madison, WI 53706-1571 phone: 608.262.2727 fax: 608.262.5860 ns-office@nutrisci.wisc.edu

We welcome any questions or comments, please direct them to: Maya Muschitz, editor student-staff@nutrisci.wisc.edu

> Please consider making a tax-deductible gift to the University of Wisconsin Foundation put toward the Department of Nutritional Sciences.

To make a gift online, visit www.supportuw.org/giveto/nutrisci, under "Make a Gift" type in the Department of Nutritional Sciences. Or, make a check payable to the University of Wisconsin Foundation and mail it with this completed form to: University of Wisconsin Foundation; U.S. Bank Lockbox, Box 78807, Milwaukee, WI 53278-0807.

I/we wish to support ongoing programs for educational excellence at the University of Wisconsin-Madison with my/our gift of \$

A matching gift program can double or even triple your gift.

If you wish to have your gift matched by your employer, please X one of the [boxes]: [] Printed form enclosed [] I will initiate this match on my company's website Company's name I/we wish to designate my/our gift to: The Department of Nutritional Sciences

i/we wish to designate my/our	gin to. The	e Department of Nutritio	nai Sciences	b
Name				
Address				
City		St	ate	Zip
Phone: [] Home (Landline) []Work []	Cell		
E-mail				
Job Title				
Company Name				
Company Address				
City			State	Zip
[] Check here if this is a new	address			
Credit Card Information				
Please charge \$		to my credit card.		
[] MasterCard	[] Visa	[] American Express	[] Disco	over
Card Number	Expiration Date			Date
Cardholder name (please prin	nt)			
Cardholder signature				

Quiz Answers:

- 1. True
- 2. Mayans
- 3. Caffeine and Fat
- 4. True
- 5. True



uwmadisonnutrisci

UW-Madison Department o
Nutritional Sciences