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Recent and Upcoming Events

Endowed Awards Ceremony
February 3, 2021

DNS Virtual Applicant Visit
February 22-26, 2021

Experimental Biology Meeting
April 27-30, 2021

ACES Funk Awards Ceremony
May 10, 2021

NSGSA Nutrition Symposium
April 21, 2021

ACES Spring Commencement
May 15, 2021
Urbana, IL

American Society for Nutrition Meeting
June 7-10, 2021

External Advisory Committee Meeting
September 2021

The campus-wide Personalized Nutrition Initiative was established in July 2020 as a partnership between the Carl R. Woese Institute for Genomic Biology and the College of ACES. The Director of the initiative is Sharon Donovan, professor and Melissa M. Noel Endowed Chair in Nutrition and Health at University of Illinois (Illinois).

Donovan's research, administration, internal and external interdisciplinary collaborations, and industry relations experiences brings significant value to the Personalized Nutrition Initiative in achieving its goal of coordinating transdisciplinary research, education, outreach, and entrepreneurship. An internationally recognized leader in nutrition who has extensive leadership experience both on- and off-campus, Donovan served as director of the Division of Nutritional Sciences (DNS) from 1999-2009. She also served as president of the American Society of Nutrition and on the 2020-2025 Dietary Guidelines for Americans Advisory Committee of the USDA and HHS. She was elected to the National Academy of Medicine in 2017.



Precision or personalized nutrition was identified as a key area for strategic investment in Illinois' The Next 150 2018-2023 Strategic Plan, and more recently it was highlighted as a keystone of the new NIH 2020-2030 Strategic Plan for Nutrition. Illinois is uniquely positioned to more rapidly advance the field of personalized nutrition.

"Personalized nutrition offers a way to optimize human health and the quality of life by tailoring recommendations based not only on diet history

and phenotype, but also on an individual's genetics, microbiome, metabolome, and exposome" Donovan explains. "It encompasses almost all known aspects of science, ranging from the genomes of humans, plants and microorganisms, to the highest levels of analytical sciences, computing, and statistics of large systems, as well as human behavior."

To meet this challenge, Donovan envisions building transdisciplinary collaborative efforts across campus to answer fundamental questions regarding how nutrition modulates health and disease across the lifespan.

For the first six months, Donovan and her team have been busy and productive meeting with campus leaders, faculty, and industry leaders. This information, together with the results of our Campus Input Survey will be used to establish the research themes and our strategic goals for the next 3-5 years.

She also worked with faculty and researchers across campus to submit two responses on behalf of the Personalized Nutrition Initiative to NIH's request for information in the areas of "Challenges and Opportunities in Precision Nutrition Research" and "Data Science Challenges and Opportunities in the Field of Precision Nutrition." See these responses on our website. Donovan is excited about organizing the Spring 2021 DNS weekly seminar series "Personalized Nutrition –Challenges and Opportunities" offered via Zoom. Donovan is now focusing on establishing our Faculty Steering Committee, putting out a call for Affiliate Faculty members, and establishing Internal and External Advisory Committees.

Written by: Anna Keck

The Edge

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University of Illinois Division
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240 Edward R. Madigan Laboratory
1201 W. Gregory Drive
Urbana, IL 61801
(217) 333-4177

DNS Employees



Dr. Elvira de Mejia
Director



Dr. Jessica Hartke
Associate Director



Dr. Anna Keck
Visiting Project
Coordinator



**Ashley
Negangard**
Office Support
Associate

Check us out on
social media!

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Note from the Director

Dear members of the Division of Nutritional Sciences-

One of the 2018-2023 UIUC strategic goals is to enrich interdisciplinary connections to enhance our campus strength in food, nutrition, energy, health sciences, and cancer. The Division of Nutritional Sciences links interdisciplinary research with robust professional development and leadership training of our students. This strategy facilitates a successful transition to leaders in academia, industry, or government. DNS students integrate scientific reasoning and advance knowledge, solve complex issues facing the highly interdisciplinary field of nutritional sciences, analyze and interpret data ethically from research and scientific literature, and disseminate scientific knowledge effectively.

DNS congratulates all graduates and welcomes twelve new students from the U.S. and international institutions, bringing our enrollment to 58 students from twelve different countries and 23% from underrepresented groups. Students in DNS continue to excel, as demonstrated by their scientific discoveries, invitations to deliver scientific presentations, and received awards. DNS acknowledges the remarkable contributions from faculty members who provide DNS students new knowledge, a positive and supportive educational environment, and advise them on professional ethics. All these are contributing to their professional development.

NSGSA has been working proactively to organize their 2021 symposium with an impressive list of speakers and poster presentations. DNS recognizes their efforts and enthusiasm, bringing together many scholars and private sector representatives for a promising April virtual event. DNS students are making a significant visible societal impact.

DNS had a well-attended virtual Endowed Awards ceremony. It provided us the opportunity to recognize students for their outstanding contributions and for conceptualizing, executing, and publishing high-quality research. We want to reward excellence!

DNS students have also contributed to the UI System's commitment to more diverse and inclusive academic communities, as President Tim Killeen demonstrated when launching the Illinois Mexican/Mexican American Student (I-MMÁS) initiative.

I appreciate and value your comments and suggestions. Please do not hesitate to contact me at any time (edemejia@illinois.edu; 217-244-3196).

I thank Dr. Jessica Hartke, Dr. Anna Keck, and Ms. Ashley Negangard for preparing the newsletter and for all their contributions and constant support to the program.

Elvira de Mejia, Director

Disparities in Nutrition Presentation and Discussion

Frontiers in Nutritional Sciences Seminar

On December 2, 2020, over 100 people from across campus and surrounding areas engaged with community experts on the topic Toward Nutrition Justice in Champaign County: Learning from Community Partners. The seminar was led by Janet Liechty, a faculty member in Division of Nutritional Sciences, School of Social Work, and Carle-Illinois College of Medicine; as part of the fall 2020 Frontiers in Nutrition seminar series.

Dr. Liechty opened the seminar with a definition of nutrition equity, data on nutrition disparities, and a social-ecological conceptual framework for understanding social determinants of nutrition equity. This was followed by presentations from four innovative local leaders who are addressing nutrition justice in Champaign County (see page 3); and a moderated panel discussion and Q&A.

- continued on pg. 3

Introduction to nutrition justice and equity. Nutrition justice is the fair and equitable distribution and access to affordable, nutritious food and diet-relevant resources that influence health status among population groups. It includes but is not limited to ensuring food sufficiency and food security – freedom from hunger or worry about the next meal for you or your children. According to Feeding America, in 2016 and 2017, 15.7% and 15.0% of the population in Champaign County reported food insecurity within the past year (16.6 and 15.4% among children, respectively). Through local efforts, by 2018 the percent of food insecure adults decreased to 11% (12.8% among children). Nutrition equity goes beyond absence of hunger. It reduces disparities in diet quality, and increases access to affordable fresh produce regardless of income or zip code, thus increasing opportunities for all Americans to meet dietary guidelines.

Recent literature shows that achieving nutrition equity requires far more than individual dietary choices – we must address the social determinants of health and nutrition at every level (e.g., family, community, built environment, and policy). This includes affordable housing, healthcare, and a living wage that enables healthy dietary choices. Having basic needs met lessens survival level stressors such as choosing between buying medicines or food for your children. Ultimately, community-based solutions are needed to bring about nutrition equity.

Presentations by community experts: Presentations by panelists featured an array of local initiatives to increase access to fresh produce and improve dietary health. **Sola Gratia** is 10-acre non-profit vegetable farm in southeast Urbana that donates at least 10 percent of their produce to hunger assistance programs in East Central Illinois and provides outreach education on nutrition and sustainable farming. The **Community Nutrition Program** at Champaign-Urbana Public Health Department hosts many programs focused on food justice and equity for the community such as a community garden, breastfeeding support, and free summer lunches for school-aged kids.

The **Cunningham Township Supervisor's Office** distributes locally grown fresh produce and provides a safety net for low-income households in Urbana; and the **Wesley Food Pantry** uses a “client choice” model in which recipients shop for food in the free pantry to align with their culinary preferences, and they offer healthy meal planning education.

Moderated panel discussion highlights.

There is a myth that low-income people do not want to eat fruits and vegetables; what have you observed? Panelists were passionate about the way their participants seek out and value fresh produce and healthful food, and said the produce always runs out first. Their customers understand the importance of fresh fruit and vegetables for their health, but cannot afford it from grocery stores. One panelist described the excitement among participants when they discover that eating fresh produce makes you feel better.

What do you wish nutrition scientists, researchers, and health professionals knew about nutrition disparities and barriers among lower income individuals? Regardless of income level, client preferences matter. They want to be involved in decision-making and planning food outreach. Like everyone else, low income people also want produce that is fresh, not expired cast-offs; and they so appreciate that this produce is grown for them, with their input, based on their cooking preferences.

What Community-university collaborations are needed? Is there a problem you are trying to solve and wish the university could help? Several panelists described the challenge for busy families in preparing meals based on a box of produce just harvested from the ground. They described a need for more creative bundling and low-carbon, loose packaging of produce, so that it made it easy for families to utilize the produce and try new recipes. The Q&A showed strong interest in community initiatives to improve nutrition and equity and in continuing this conversation to strengthen community-university collaboration.

Written by: Janet Liechty

DIVISION OF NUTRITIONAL SCIENCES
Frontiers in Nutritional Sciences
NUTR 500 Seminar Series

**Toward Nutrition Justice in Champaign County:
Learning from Community Partners**



MODERATOR
Janet Liechty, PhD
School of Social Work, Carle-IL College of Medicine,
Division of Nutritional Sciences, UIUC



PANELIST
Traci Barkley
Sola Gratia CSA



PANELIST
Tomas Delgado
Cunningham Township



PANELIST
Dawn Longfellow
Wesley Food Pantry



PANELIST
Valerie Koreess
Community Nutrition Program, CUPHD



PLANNING COLLABORATOR
Katie Shumway
Community Learning Lab,
School of Social Work, UIUC



ILLINOIS
Nutritional Sciences
COLLEGE OF AGRICULTURAL, CONSUMER & ENVIRONMENTAL SCIENCES

New DNS Students

Jessica Acosta Medellin
MS Candidate
Advisor: Hans Stein

Elizabeth Gutierrez
MS Candidate
Advisor: Melissa Prescott

Jade Hamann
MS Candidate
Advisor: Nicholas Burd

Shu Kwan
PhD Candidate
Advisor: Ken Wilund

Patrick McQueen
MS Candidate
Advisor: Jaume Amengual

Sergio Miranda Junior
MS Candidate
Advisor: Maria Cattai de Godoy

Ayca Mogol
PhD Candidate
Advisor: Zeynep Madak-Erdogan

Jessica Nicanor Carreon
PhD Candidate
Advisor: Yanina Pepino

Ashleigh Oliveira
MS Candidate
Advisor: Manabu Nakamura

Danielle Opetz
PhD Candidate
Advisor: Kelly Swanson

Marahi Perez Tamayo
PhD Candidate
Advisor: Hannah Holscher

Sujiyanto
MS Candidate
Advisor: Ryan Dilger

Student Recognition

Hannah Bailey received a Spring 2021 Conference Presentation Award from the Graduate College to attend the virtual American Society for Animal Sciences Midwest Meeting in March 2021.

Olufemi Fabusoro received a Spring 2021 Conference Presentation Award from the Graduate College to attend the virtual American College of Obstetricians and Gynecologists Meeting in April 2021. He also published "Nutrition in HIV-Infected Infants and Children: Current Knowledge, Existing Challenges, and New Dietary Management Opportunities" in Advances in Nutrition with Dr. Luis Mejia.

Ana Mitchell has continued helping underrepresented students through multiple avenues including the Principal Scholar's Program teaching hand-on science lessons and editing college essay applications, the Illinois Mexican and Mexican American Students Initiative and being a guest speaker in an 8th grade science class talking about Metabolism and the Digestive System at Franklin Middle School. She has also continued her involvement on campus with the Student Advisory on Graduate Education (SAGE) Board and our department student group, NSGSA.

Ivan Pinos recently published "β-carotene and Vitamin A Delay Atherosclerosis" in the Journal of Lipid Research. His lab also designed the cover art for the issue.

Leila Shinn published a first-author publication in October 2020 in The Journal of Nutrition that was featured as February's Editor's Choice and in a December 2020 commentary by Dr. Cara L. Frankenfield. Leila was also recently nominated as the Student Representative for the American Society for Nutrition's Medical Nutrition Council.



Ivan Pinos, Johana Coronel (FSHN student), and Dr. Jaume Amengual.

NSGSA 2021 Nutrition Symposium

December 2020 Graduates

April 21, 2021

Keynote Speaker

Catherine J. Field, PhD, RD
Department of Agricultural, Food and
Nutritional Science, Faculty of Agriculture,
Life and Environmental Science,
University of Alberta

Mini-Symposium

"Personalized Nutrition:
Putting the "U" in Nutrition"

Faculty Presenters:

Manabu Nakamura, PhD, DVM
Margarita Teran-Garcia, MD, PhD, FTOS
Yuan-Xiang Pan, MS, PhD

Celeste Alexander, PhD
Advisor: Kelly Swanson

Erin Davis, PhD
Advisor: Sharon Donovan

Kaylee Hahn, MS
Advisor: Ryan Dilger

Jacky Lin, MS
Advisor: Bo Wang

Katie Ranard, PhD
Advisor: John Erdman



Research Spotlight

DNS faculty member Dr. Aditi Das led a study of modified lipids that target the body's endocannabinoid system, which is involved in regulating pain and inflammation.

When modified using a process known as epoxidation, two naturally occurring lipids are converted into potent agents that target multiple cannabinoid receptors in neurons, interrupting pathways that promote pain and inflammation, researchers report. These modified compounds, called epo-NA5HT and epo-NADA, have much more powerful effects than the molecules from which they are derived, which also regulate pain and inflammation.

Reported in the journal *Nature Communications*, the study opens a new avenue of research in the effort to find alternatives to potentially addictive opioid pain killers, researchers say.

The work is part of a long-term effort to understand the potentially therapeutic byproducts of lipid metabolism, a largely neglected area of research, said University of Illinois Urbana-Champaign comparative biosciences professor Aditi Das, who led the study. While many people appreciate the role of dietary lipids such as omega-3 and omega-6 fatty acids in promoting health, the body converts these fat-based nutrients into other forms, some of which also play a role in the healthy function of cells, tissues and organ systems.

"Our bodies use a lot of genes for lipid metabolism, and people don't know what these lipids do," said Das, also an affiliate of the Beckman Institute for Advanced Science and Technology and of the Cancer Center at Illinois. "When we consume things like polyunsaturated fatty acids, within a few hours they are transformed into lipid metabolites in the body."

Scientists tend to think of these molecules as metabolic byproducts, "but the body is using them for signaling processes," Das said. "I want to know the identity of those metabolites and figure out what they are doing."

She and her colleagues focused on the endocannabinoid system, as cannabinoid receptors on cells throughout the body play a role in regulating pain.

When activated, cannabinoid receptors 1 and 2 tend to reduce pain and inflammation, while a third receptor, TRPV1, promotes the sensation of pain and contributes to inflammation. These receptors work together to modulate the body's responses to injury or disease.

"Understanding pain regulation in the body is important because we know we have an opioid crisis," Das said. "We're looking for lipid-based alternatives to opioids that can interact with the cannabinoid receptors and in the future be used to design therapeutics to reduce pain."

Previous research identified two lipid molecules, known as NA5HT and NADA, that naturally suppress pain and inflammation. Das and her colleagues discovered that brain cells possess the molecular machinery to epoxidize NA5HT and NADA, converting them to epo-NA5HT and epo-NADA. Further experiments revealed that these two epoxidized lipids are many times more potent than the precursor molecules in their interactions with the cannabinoid receptors.

"For example, we found that epo-NA5HT is a 30-fold stronger antagonist of TRPV1 than NA5HT and displays a significantly stronger inhibition of TRPV1-mediated responses in neurons," Das said. It inhibits pathways associated with pain and inflammation, and promotes anti-inflammatory pathways.

The team was unable to determine whether neurons naturally epoxidate NA5HT and NADA in the brain, but the findings hold promise for the future development of lipid compounds that can combat pain and inflammation without the dangerous side effects associated with opioids, Das said.

The Das research group collaborated with Hongzhen Hu, a pain and itch researcher and professor of anesthesiology at Washington University in St. Louis, and with U. of I. biochemistry professor Emad Tajkhorshid, who helped simulate how the lipids are metabolized by enzymes known as cytochrome P450s.

Dr. Das received her undergraduate degree in Chemistry from Indian Institute of Technology (I.I.T.) Kanpur . She received her Ph.D. in Chemistry at Princeton University. She did her postdoctoral research with Prof. Stephen Sligar at Beckman Institute at University of Illinois Urbana Champaign. Her laboratory is focused on the biochemical mechanism of cytochrome P450s mediated metabolism of omega-3 and omega-6 fatty acids and on the pharmacological evaluation of the anti-inflammatory action of the lipid epoxides in neuro-inflammation model. Her laboratory has been funded by several grants from American Heart Association (AHA), National Institute of Health, Multiple Sclerosis Society and other private fundings.

Written by: Diana Yates

2020-2021 DNS Executive Committee

Aditi Das

Associate Professor
Dept. of Comparative Biosciences
College of Veterinary Medicine

Ryan Dilger

Associate Professor
Dept. of Animal Sciences
College of ACES

Sharon Donovan

Professor and Melissa M. Noel Endowed Chair in Nutrition and Health
Dept. of Food Science and Human Nutrition
College of ACES

John Erdman

Professor Emeritus
Dept. of Food Science and Human Nutrition
College of ACES

Hannah Holscher

Assistant Professor
Dept. of Food Science and Human Nutrition
College of ACES

Naiman Khan

Assistant Professor
Dept. of Kinesiology and Community Health
College of Applied Health Sciences

Yuan-Xiang Pan

Associate Professor
Dept. of Food Science and Human Nutrition
College of ACES

Kelly Swanson

Professor of Animal and Nutritional Sciences
Dept. of Animal Sciences
College of ACES

Margarita Teran-Garcia

Research Assistant Professor
Dept. of Biomedical and Translational Sciences

Ana Mitchell

Nutritional Sciences Graduate Student

Faculty Updates

New Faculty in DNS



Jacob Allen, PhD, is an Assistant Professor in the Department of Kinesiology and Community Health. His research program concentrates on understanding how specific environmental interventions and conditions- 1. Exercise 2. Stress and 3. Nutrition interact to influence gut microbial communities (i.e. gut microbiota) during both homeostatic and pathological disease states. Dr. Allen's lab applies research methods spanning in vitro organoid systems, pre-clinical animal models and human studies to study these effects. The Allen lab is particularly interested in understanding how gut microbes interact with the immune systems of the gut and brain to shape our physiology.

Dr. Kelly Swanson gave a webinar on "Dietary Modulation of the Canine and Feline Gastrointestinal Microbiome" during the Petcare Innovation Summit on Pet Health and the Microbiome: Mother Nature Knows Best on December 10th, 2020.

Dr. Sharon Donovan served as a Member of the 2020-2025 Dietary Guidelines for Americans Advisory Committee, completed 7 years of service as an Associate Editor of Nutrition Reviews and is currently serving on the BEGIN (Breastmilk Ecology: Genesis of Infant Nutrition) Project Expert Committee, which is a partnership between US government agencies and others such as the Gates Foundation, American Academy of Pediatrics, Academy of Nutrition and Dietetics and the Human Milk Banking Association of North America. Sharon was also named as 1 of 7 new Center for Advanced Study Professors, one of the highest forms of campus recognition.

DNS Faculty Featured in the News Gazette's "100 Masked Illini" series



Alumni Updates

Brian Berg (PhD 2004) was promoted to Associate Director, Field Medical at Rhythm Pharmaceuticals in 2020.

Lauren Killian (PhD 2019) welcomed a baby boy, Aaron Michael Killian on September 3, 2020.

Henna Muzaffar (PhD 2012) was recognized as a Fellow of the Academy of Nutrition and Dietetics in April 2020.

Claudia Luevano Contreras (PhD 2013) was appointed as Director of the Department of Medical Sciences at the University of Guanajuato, Leon Mexico.



Guest Lecturers Support new DNS Courses

Introduction to US Food Regulations Course

Karleigh Bacon, Kraft Heinz

Robbie Burns, formerly Grocery Manufacturers Association

Jessica Campbell, General Mills

Bryan Endres, University of Illinois, Urbana

Bridget Hannon, Abbott Nutrition

Kristin Harris, PepsiCo

Guy Johnson, Johnson Nutrition Solutions LLC

Peter Lu, Mars Food North America

Michael McBurney, formerly DSM Nutritional Products

Luis Mejia, University of Illinois, Urbana

Ross Peterson, Abbott Nutrition

Translating Science and Communication Course

Nancy Z. Farrell Allen, Rosalind Franklin University of Medicine and Science, Germanna Community College

Melissa Edwards, Executive Director, Strategic Research Communications, Office of the Vice Chancellor for Research, University of Illinois, Urbana

Mike Wilson, Director of Content and Executive Editor, Farm Futures magazine, a Farm Progress/Informa brand

Sharyl Sauer, Global Business Platforms Communications leader, Corteva Agriscience

Sean H. Adams
Scientific Director
UC Davis Center for Alimentary and Metabolic Science

Vice Chair Basic Research
Department of Surgery
UC Davis College of Medicine

Cindy Davis
Director of Grants and Extramural Activities
Office of Dietary Supplements
National Institutes of Health

Ratna Mukherjea
Director
Global Nutrition
DuPont Nutrition & Health

Christine Pelkman
Principal
Pelkman NSci Consulting

Christina Sherry
Director
Global Nutrition Sciences, PepsiCo

Amanda Young
Vice President Research & Development
Shared Development, Cost Engineering, Nutrition, & Business Processes
The Kraft Heinz Company

Mike Zora
Vice-President
Archer Daniels Midland Company



Support DNS

We are very thankful to the faculty, students, alumni and friends who have supported DNS through contributions to the Endowment Fund, the Annual Fund, and the Margin of Excellence Fund. Contributions of all amounts are greatly appreciated. DNS would like to ask that you consider taking this opportunity to help secure our brilliant future by making a new contribution or an additional contribution to your alma mater.

50 years
DNS

2020-2021 Fellowship Recipients

USDA National Institute of Food and Agricultural Fellowship:
Sharon Thompson

National Science Foundation Graduate Research Fellowship:
Ana Mitchell

CONACyT Fellowship:
Jessica Nicanor
Marahi Perez Tamayo

Ann E. Radcliff Tudor Research Scholarship:
Ashleigh Oliveira

Robert Wood Johnson Foundation Health Scholar Fellowship:
Christian Maino Vieytes

NIH T32 Tissue Microenvrionment Predoctoral Fellowship:
Ashlie Santaliz-Casiano

Jonathan Baldwin Turner Fellowship:
Colleen McKenna
Leila Shinn

The Kraft Heinz Company Human Nutrition Fellowship:
Elizabeth Gutierrez

2021 Endowed Student Award Winners

David H. Baker Nutrition Scholar Award Fund
Lindsey Ly

James L. Robinson Nutrition Impact Award Fund
Leila Shinn

Toshiro Nishida Research Award Fund
Ashleigh Oliveira

William C. Rose Endowment Award
Justin Kim
Carly Rundle
Clara Salame

Frank W. Kari Endowed Memorial Award Fund
Asma'a Albakri
Angela Dean
Ana Mitchell



- **Mary Frances Picciano Endowment Fund (#11336465):** In recognition of Mary Frances Picciano, this fund provides support for DNS students on a competitive basis.
- **Nutritional Sciences Margin of Excellence Fund (#339154):** Provides conference travel grants and research seed-grant funding to DNS students on a competitive basis.
- **DNS Excellence Endowment Fund (#773001):** Provides permanent funding for the recruitment and retention of the best graduate students and enhanced research and professional development experiences for all DNS students.
- **DNS Annual Fund (#332984):** Provides unrestricted support for DNS.
- **Frontiers in Nutritional Sciences Fund (#339153):** Supports the weekly DNS seminar series for University of Illinois faculty and students.