# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frozen Meals Program</td>
<td>3</td>
</tr>
<tr>
<td>Awards &amp; Acknowledgements</td>
<td>5</td>
</tr>
<tr>
<td>Feature Story</td>
<td>10</td>
</tr>
<tr>
<td>DNC Update</td>
<td>12</td>
</tr>
<tr>
<td>Undergraduate Highlight</td>
<td>14</td>
</tr>
<tr>
<td>Food &amp; Identity FIG</td>
<td>15</td>
</tr>
<tr>
<td>Alumni Highlight</td>
<td>19</td>
</tr>
<tr>
<td>Gut Mycobiome Discovery</td>
<td>23</td>
</tr>
<tr>
<td>New Faculty Profile</td>
<td>25</td>
</tr>
<tr>
<td>Student Recipe</td>
<td>26</td>
</tr>
<tr>
<td>STEM Diversity Conferences</td>
<td>27</td>
</tr>
<tr>
<td>Instructor Highlight: Nutri Sci 132</td>
<td>29</td>
</tr>
<tr>
<td>Staff Highlights</td>
<td>32</td>
</tr>
<tr>
<td>Alumni and Friends Giving</td>
<td>35</td>
</tr>
<tr>
<td>Foodie Trivia</td>
<td>37</td>
</tr>
</tbody>
</table>
UW Frozen Meals is a grant-funded university program established in 2019 that packages unserved, untouched dining hall food into individual meals that are frozen properly. Members distribute the microwavable individual meals at no cost to four satellite locations that they collaborate with, which are the Crossing, Pres House, First Congregational, and UW Hillel.

Yifan Jia, Current Director

Can you briefly introduce yourself and your current roles within Frozen Meals Program at UW-Madison?

My name is Yifan and I am a senior pursuing a major in Dietetics and Global Health, along with a certificate in Entrepreneurship. I’m the student director of UW Frozen Meals Program. I learned about this program through an announcement posted by the Nutritional Sciences Community of Practice. At that time, UW FMP was hiring their new student assistant director. Given my junior status at the time and my keen interest in the program’s mission, I decided to apply for the position without hesitation.
Could you describe the process of how unserved dining hall food is transformed into frozen meals?

Every week, unserved foods from dining halls on campus will be collected and gathered at Gordons. To ensure that the redistributed meals are not only abundant but also nutritionally balanced, our student dietitian meticulously crafts a menu based on the unserved food items received that week. Each meal will have a label including the ingredients and allergens, which will be labeled during meal packaging. The student assistant director and I would facilitate the meal packaging session, and together with the help of Badger Volunteers, we will package the food into individual meals following food safety guidelines. After packaging, we will freeze the meals at Gordon’s freezer. Our driver will deliver the meals to the four satellite locations, where students can come and pick up the meals.

What types of meals are typically included in these frozen packages?

Are there any popular favorites?

There are a variety of meals included. Typically, we will ensure the meals contain at least a portion of carbohydrates (white/brown rice or pasta), proteins (pork/beef/chicken/tempeh), and mixed veggies. Some popular menu item examples are Beef Meatballs, Veggies, Whole Grain Penne with Homemade Alfredo Sauce; Roasted Pork Loin, Veggies, Parboiled White Rice; Oven Roasted Potato Wedges, Beef Sirloin Steak, Veggies. Considering students’ dietary restrictions and preferences, we included meals that are all plant-based. For example, we have Whole Grain Penne with Marinara Sauce, Veggie Meatballs, and Veggies. Sometimes there are also soups supplied, such as Tomato soup and Indian Lentil Soup.

Are there any plans to expand the program or introduce new features in the future?

Certainly, both our Student Assistant Director, James Liu, and I are actively brainstorming ways to expand and enhance our program’s impact. Our vision includes fostering collaboration with other campus food recovery initiatives, like Slow Food, to collectively address issues of food waste and insecurity. Additionally, we are committed to gathering valuable feedback from students to gain insights into areas where we can make improvements and continue evolving in the future.

“Our mission is to create a sustainable framework to fight food insecurity while simultaneously reducing food waste across campus by providing frozen meals to students during self-identified times of need.”

How can students get involved in the Frozen Meals Program if they’re interested?

As for right now, we don’t hire volunteers directly, but we do partner with Badger volunteers. If students are interested in our packaging session, they are welcome to sign up through Badger Volunteers. Also, our satellite locations such as the Crossing or Pres House need volunteers to help stock and distribute the meals. Interested students can reach out to these locations to get involved!
Awards & Acknowledgements

Jake Hermanson

Jake is a 4th year N&M student who won an F31 Award from the National Health Institute. He is a grad student in Dr. Vanessa Leone's lab and he studies nonalcoholic fatty liver disease. Jake is currently investigating the role of dietary cholesterol in the development and progression of Non-Alcoholic Steatohepatitis (NASH) through the actions of gut microbiota.

Lauren Clark

Lauren, a fourth-year doctoral candidate in the Nutritional Sciences Ph.D. program and a member of the Attie Lab, has been awarded a F31 grant from the National Health Institute. This prestigious grant not only recognizes her outstanding contributions but also provides crucial support for her research endeavors and stipend. Through this F31 grant, Lauren Clark will delve into the exploration of genetic drivers influencing insulin secretion.
Awards & Acknowledgements

Faith Morissey

Faith is a recipient of the Hellen M. Linkwiler Scholarship this year. She is a junior studying Nutritional Sciences and Dietetics with a certificate in Environmental Studies. Faith conducts research in Dr. Tanumihardjo’s lab studying vitamin A, and she is an active member in many campus groups such as The Future of Health and Wellness and A Moment of Magic. Following graduation, she will be joining the Peace Corps and then going on to pursue a doctorate in physical therapy.

Crystal Qing

Crystal is another recipient of the Linkwiler Scholarship. Crystal is a second-year PhD student in the Nutrition and Metabolism Graduate Program. In undergrad, she pursued a double major in Nutritional Sciences and Biochemistry. Crystal currently works as a researcher in Dr. Jing Fan’s Lab, where she focuses on neutrophil heterogeneity and immune cells metabolism. She is interested in finding clinical markers in patients with inflammatory diseases.
Awards & Acknowledgements

Madeline Bosco

Madeline, a graduate student finishing up her last semester in the Masters of Clinical Nutrition Program, is another recipient of the Linkwiler Scholarship. Madeline’s background is primarily in acute care but she transitioned into the home infusion setting last year as a nutrition support RD. She also recently sat for the CNSC exam!

Megan Labine

Megan is one of the recipients of the Hellen M. Linkswiler Scholarship this year! Megan is a graduate student pursuing a Masters in Clinical Nutrition. She has been working as a full-time dietician in both inpatient and outpatient settings for the past three years, and is passionate about providing nutritional support for individuals with gastrointestinal disorders.
Judy Simcox

Judy Simcox, PhD, is a N&M faculty trainer who won the American Society for Biochemistry and Molecular Biology's 2024 Walter A. Shaw Young Investigator Award in Lipids. Simcox is an assistant professor of biochemistry at the University of Wisconsin–Madison and a Howard Hughes Medical Institute Freeman Hrabowski scholar. As a postdoctoral fellow, she discovered that acylcarnitines are necessary for maintaining body temperature during cold exposure. The Simcox Lab studies inter-organ communication through lipid derived metabolites.

In a recent interview conducted by Poornima Sankar, Simcox discussed her collaboration with organizations like the Society for the Advancement of Chicanos and Native Americans in Science, the American Indian Science and Engineering Society, and the Native American Center for Health Professionals. She understands that having access to higher education can bring about concerns like the fear of failure, especially when you don’t relate to the people around you. She aims to address this by creating a supportive environment for Indigenous students.

“It is really hard to fail when everybody's watching you. That makes it harder for people to be brave. But don't be afraid to fail; the most important lessons for my life have come from failure.”

To read more, click HERE
Awards & Acknowledgements

Sophia Vitas
Sophia is an alumna of the UW-Madison Nutritional Sciences Department, earning a BS in Nutrition Science in 2016. We are pleased to acknowledge her remarkable achievements as a rower for Team USA. Sophia secured a bronze medal in the women’s double sculls race with her partner Kristina Wagner in Belgrade, Serbia. This accomplishment marks a significant milestone for Team USA, as it is the first medal in this event since 2018. Their outstanding performance has earned Team USA a spot in the boat class for the Paris 2024 Olympic games!

Alicia Monson
Alicia, a BS Nutrition and Dietetics alumna, placed fifth in the 10k meters at the track and field world championships in Budapest on August 19th, 2023. She had a time of 31 minutes and 32.29 seconds. Monson’s journey to this prestigious event has been marked by consistent excellence. In July, she set a new United States 5K record, and earlier this year, she established the American record for the indoor 3K race. Her dedication and hard work are commendable.
“We like to say a calorie is not just a calorie,” says Dudley Lamming, a professor and metabolism researcher at the University of Wisconsin School of Medicine and Public Health. “Different components of your diet have value and impact beyond their function as a calorie, and we’ve been digging in on one component that many people may be eating too much of.”

Lamming is the lead author of a new study in mice, published recently in the journal Cell Metabolism, showing that cutting down the amount of a single amino acid called isoleucine can, among other benefits, extend their lifespan, make them leaner and less frail as they age and reduce cancer and prostate problems, all while the mice ate more calories.

Amino acids are the molecular building blocks of proteins, and Lamming and his colleagues are interested in their connection to healthy aging.

In earlier research, data from UW–Madison’s Survey of the Health of Wisconsin showed the scientists that Wisconsinites with higher body mass index measurements (higher is more overweight or obese) tend to consume more isoleucine, an essential amino acid everyone needs to eat. Isoleucine is plentiful in foods including eggs, dairy, soy protein and many kinds of meat.

To better understand its health effects, Lamming and collaborators from across disciplines at UW–Madison fed genetically diverse mice either a balanced control diet, a version of the balanced diet that was low in a group of about 20 amino acids, or a diet formulated to cut out two-thirds of the diet’s isoleucine. The mice, which began the study at about 6 months of age (equivalent to a 30-year-old person) got to eat as much as they wanted.
Mice on the low-isoleucine diet lived longer — on average 33% longer for males and 7% longer for females. And, based on 26 measures of health, including assessments ranging from muscle strength and endurance to tail use and even hair loss, the low-isoleucine mice were in much better shape during their extended lives.

“Previous research has shown lifespan increase with low-calorie and low-protein or low-amino-acid diets starting in very young mice,” says Lamming, whose work is supported by the National Institutes of Health. We started with mice that were already getting older. It’s interesting and encouraging to think a dietary change could still make such a big difference in lifespan and what we call ‘healthspan,’ even when it started closer to mid-life.”

The mice on the low-isoleucine diets chowed down, eating significantly more calories than their study counterparts — probably to try to make up for getting less isoleucine, according to Lamming. But they also burned far more calories, losing and then maintaining leaner body weights simply through adjustments in metabolism, not by getting more exercise.

At the same time, Lamming says, they maintained steadier blood sugar levels and male mice experienced less age-related prostate enlargement. And while cancer is the leading cause of death for the diverse strain of mice in the study, the low-isoleucine males were less likely to develop a tumor.

Dietary amino acids are linked to a gene called mTOR that appears to be a lever on the aging process in mice and other animals as well as to a hormone that manages the body’s response to cold and has been considered a potential diabetes drug candidate for human patients. But the mechanism behind the stark benefits of low-isoleucine intake is not well understood. Lamming thinks the new study’s results may help future research pick apart causes.

“That we see less benefit for female mice than male mice is something we may be able to use to get to that mechanism,” he says.

While the results are promising, humans do need isoleucine to live. And winnowing a significant amount of isoleucine out of a diet that hasn’t been preformulated by a mouse chow company is not an easy task.

“We can’t just switch everyone to a low-isoleucine diet,” Lamming says. “But narrowing these benefits down to a single amino acid gets us closer to understanding the biological processes and maybe potential interventions for humans, like an isoleucine-blocking drug.”

The Survey of the Health of Wisconsin showed that people vary in isoleucine intake, with leaner participants tending to eat a diet lower in isoleucine. Other data from Lamming’s lab suggest that overweight and obese Americans may be eating more isoleucine than they need.

“It could be that by choosing healthier foods and healthier eating in general, we might be able to lower isoleucine enough to make a difference,” Lamming says.
My name is Alyssa Kickbush and I am the current president of the Dietetics and Nutrition Club at UW-Madison. This is my first semester in this position and I am so excited to help run this organization! I initially became involved with the Dietetics and Nutrition club to reaffirm my interest in pursuing a Nutrition major after taking an introductory class. Hearing from professionals within the sphere and meeting students within the major were huge contributors to declaring a major in Dietetics. This club has been incredibly fulfilling for me as a member, assistant treasurer, and president. I have met so many people with similar interests and classes, so it has been a great way to make friends. We have biweekly meetings on Mondays at 7:45 PM. Additionally, we invite guest speakers to discuss different topics throughout the semester. So far, we have heard from our club’s advisor Amber Haroldson, Erika Anna, and Grace Payne, a sports dietician. Some events we’ve had so far include a Farmer’s market social, a walk to Trader Joe’s, and volunteering at River Food Pantry. Additionally, we had a social with staff member Scott Anderson on November 14th, where we learned about coconuts and how to make our own coconut milk! We also try to attend at least one fitness social a semester so this Fall we went to a cycling class at the Nic.
We hosted a crafts social where we made our own trail mix and hand turkeys as well! Our executive board has been working really hard to make these events happen and I am so excited to share these experiences with members of the club.

I am looking forward to a new opportunity for our club at a nearby nonprofit center where we will be hosting a nutrition education night for parents and children. The director of this program has expressed a lot of enthusiasm about this event as many of their members are food insecure, and we are passionate about fighting hunger in our community. We will be demoing a healthier alternative to a typical fast food meal and serving it to everyone, as well as a separate healthy snack activity for the kids. We will also be designing a nutrition education reminder magnet for families to bring home to put on their fridge. I am very passionate about this first time event and hope to do it again in the future!

Prospective members can feel free to join our email list by either DMing our Instagram (@dnc_uwb) or sending an email to us at wisc.dnc@gmail.com. We are open to any and all UW Madison students interested in joining, even to those who are not in the major! We have a balance of having informative professional speakers as well as fostering a community of students with similar interests and open minds.

My favorite memory with DNC is running the table at the fall student organization fair. I loved talking about the club to prospective members and getting to know people who were interested and what they were passionate about. It was really rewarding to see people who I had met at the fair show up at meetings and events throughout the semester.
Undergraduate Highlight
Abigail Lisi

What is your major and your current year in school?
I am a junior pursuing a degree in Nutrition and Dietetics with a certificate in Entrepreneurship.

Why did you choose UW-Madison?
UW-Madison campus encompasses everything I ever wanted in a college through its D1 sports, school spirit, beautiful campus, and amazing academics. Coming from New Jersey, I wasn’t sure what to expect when I first visited, but I immediately knew this was the place for me – and there hasn’t been a day I’ve regretted my decision since.

What sparked your interest in nutrition?
My interest in nutrition started at a young age as I was always an active kid, juggling multiple sports at a time. I first-handly experienced the effects that diet can have on performance. In high school, I decided to take a job at a healthy cafe near my hometown. I was able to get hands-on experience with healthy recipes and began to start experimenting with my own recipes at home.

Can you describe your work/research experiences?
I currently work as a Performance Nutrition Student Worker for the UW-football team aiding the team Registered Dietitian in pre/post practice fueling, hydration testing, and expense reports. I am also the Public Relations Representative for the Dietetics and Nutrition club where I maintain all the online outlets including the website and the Instagram. This year, I started weekly “Tip Tuesday” and “Suggestion Sunday” series on our Instagram where I post healthy tips and suggestions that I have learned throughout my classes at UW mixed with my own foundational knowledge.

Last year, I had the pleasure of leading a weekly interactive after-school science club for ages 4-10 at Lindbergh Elementary school. In addition, I have volunteered with UW Slow Food and the Ronald McDonald House multiple times throughout my time in Madison.

What are your career aspirations?
After graduating, I plan to take all steps necessary to become a Registered Dietitian. From there I would love to get experience working with elite athletes and eventually open my own private practice.

What do you like to do in your free time outside of school?
In my free time, I love going on walks, practicing yoga, working out, playing volleyball, and cooking. I am also always one for a cozy night in with my friends!
FIGS are clusters of three Fall-semester UW–Madison classes, linked together to explore a common theme, and open to incoming freshmen—who attend these classes together as a cohort. The purpose of our FIG is to gain awareness, knowledge, and sensitivity to the strong connection between nutrition, food, and identity, and to effectively deliver culturally responsive food and nutrition care both within communities and within the health care delivery system more broadly.

What is a FIG?

Fall Classes and Events

“NUTR SCI 377: Cultural Aspects of Food and Nutrition” was the main course taught by Erika Anna, MS, RDN, CD. The linked courses are “NUTR SCI 132: Nutrition Today”, taught by Stavroula Antonopoulos, MS, RDN, and CHEM 103: General Chemistry.” This semester, our FIG cooked Indigenous foods with President Greendeer of Ho-Chunk Nation, evaluated artifacts at the Chazen through the lens of food and culture, toured the Nations Cultural Landscapes, learned about food policy at the Capitol, and attended a Kosher Breakfast and Learn with Rabbi Judy.
For the third year in a row, President John Greendeer of the Ho-Chunk Nation, along with Ho-Chunk Nation dietitians Heather Jerzak and Alex Richeson, led class at the Fire Circle outside of Dejope Residence Hall. Weaving in important course concepts of humility, empathy, and collaboration, we discussed authentic and sustained community engagement, the importance of culturally responsive food and nutrition care, and how the Ho-Chunk Nation Nutrition Program honors food and culture within the provision of food and nutrition care. Many thanks to President Greendeer and the Ho-Chunk Nation Nutrition Program!

“I'm very grateful that our class was able to have this amazing opportunity to experience some of the Ho-Chunk culture firsthand through President Greendeer. I was surprised by the way he first greeted us with the native Ho-Chunk language, but I really enjoyed listening to him and hearing his experiences and everything he does and his dedication for his nation. Also the food provided for us was very delicious and some of the best food that I've eaten in awhile, and knowing that it was just recently harvested makes it even better.”
- NS 377 Student
First Nations Cultural Landscapes Tour

The First Nations Cultural Landscape Tour seeks to bring awareness to the historic and contemporary Indigeneity of Teejop, the place now known as Madison, WI, through place-based learning about the Four Lakes region. Learn more about the FNCLT and book a tour UW – Madison Campus and Visitor Relations. Special thanks to Kane Funmaker and Silas Cleveland for leading the tour! One student said, “Something that was very eye opening to me during the tour today was how there are many Indigenous symbols and landmarks all around me every day and I had no idea that they were even there. I’m grateful for this experience so that I could gain some more knowledge about the history and past culture in the Madison area, especially, and now I can begin to recognize and respect Indigenous culture more.”

“The purpose of the tour was to help us better understand the history of both the land our university was built on as well as the people who lived here before colonization. We were meant to learn their stories, and know that they are a part of our history, but also understand they are still here and the choices we make now still affect them.” - NS 377 Student

Chazen Museum Objects Class

Students engaged in the social, political, and cultural aspects of food and nutrition from the lens of artists depicting scenes related to farming and other labor aspects connected to the food supply; hunger and malnutrition; and food and religion. One student shared, “The major purpose of today's class was to connect the concepts we learned about food access and food apartheid to the artwork at the Chazen Museum. It was interesting to dive deeper into the history and meaning of the artwork and to understand the artwork from the artist's perspective during historical times. Pieces that stuck out to me specifically were the basket created by the tribe that was used for making acorn soup and the picture depicting how rice was harvested in Bali. These pieces showed that food and culture are very interconnected with each other.”
Students attended a Breakfast and Learn with Rabbi Judy Greenberg and Ben Clark, UW – Hillel Culinary Program Director. While we ate, Rabbi Judy spoke about kashrut (Dietary Laws) and kosher foods, including typical foods consumed during different holidays. Sharing some of her and her family’s favorite places to eat around Madison, Rabbi Judy reminded us how important it is show up within your community.

One student shared how she could relate to Rabbi Judy’s appreciation for family and a sense of community. She states, “I could relate Rabbi Judys story about her grandmother breaking kashrut because even though the meal went against her religious beliefs, her sense of community and familial love took came first.” - NS 377 Student

Students critically examined how U.S. food policies can influence dietary choices at multiple levels, and how those dietary choices may influence the culture around food.
Tori Hohenstein - MSCN, DPD

Could you tell us about your education and professional experience?

I graduated from the University of Wisconsin-Madison with a Bachelor of Science in Nutritional Sciences in 2014. Following my undergraduate studies, I completed additional coursework to meet the requirements of the Didactic Program in Dietetics, which paved the way for me to pursue a dietetic internship and become a Registered Dietitian Nutritionist (RDN). This summer, I completed the Master of Science in Clinical Nutrition from UW-Madison. During my undergraduate years, I gained valuable experience working at the Neonatal Milk Lab at American Family Children’s Hospital where I prepared and delivered feedings to pediatric patients. I also served as a Relief Counselor at ARC Community Services, a residential treatment facility for women.

After graduating, I transitioned into my current role as a WIC Nutritionist, where I have dedicated the past four years of my professional journey. This role has been both fulfilling and transformative as it has allowed me to learn and grow daily while assisting families in achieving their health and nutrition goals. It has been a privilege to work directly with individuals and communities, making a positive impact on their lives through nutrition education and support. As part of my commitment to professional development, I had the opportunity to participate in the first year of the WIC/UW Health Dietetic Internship Partnership.
As part of my commitment to professional development, I had the opportunity to participate in the first year of the WIC/UW Health Dietetic Internship Partnership. This program allowed Wisconsin WIC Nutritionists like me to take an educational leave from their local WIC clinics and complete the dietetic internship required to become RDNs. This experience expanded my knowledge and skill set, enhancing my ability to serve the community effectively. Additionally, I am currently in the process of training to become an International Board Certified Lactation Consultant (IBCLC), a lifelong goal of mine. Furthermore, I’ve embraced the role of a preceptor for students in the UW Integrated Program in Nutrition and Dietetics during their public health rotation at Public Health Madison & Dane County WIC. This experience has been rewarding, allowing me to support future RDNs who are undergoing the same program I once completed, and contributing to their growth and development in the field.

**Why did you choose this profession/field?**

My initial interest in nutrition brought me to the Nutritional Sciences program at UW-Madison, but it was my experiences in promoting lactation-friendly spaces in the community that ignited my passion for public health. Specifically, I began volunteering with the UW-Madison Office of Child Care and Family Resources, where I helped maintain a list of lactation rooms on campus. This experience sparked my interest in public health, as I realized the vital role structural and societal support systems, like lactation rooms, play in helping parents achieve their breastfeeding goals.

Building upon this experience, in the summer after completing my undergraduate degree, I had the opportunity to intern with the Maternal Child Health Team at Public Health Madison & Dane County. Here, I expanded on my previous work by creating a comprehensive lactation map for Madison. This experience further solidified my interest in public health and motivated me to pursue a career in this field.

**How do you bridge your degree in clinical nutrition with your work in public health?**

My background in clinical nutrition has been instrumental in my role as a WIC Nutritionist. It has provided me with a comprehensive understanding of individualized nutritional needs, enabling me to better serve the diverse populations that WIC serves. This knowledge allows me to provide personalized guidance, considering the unique dietary preferences and cultural backgrounds of WIC participants. Furthermore, my clinical nutrition training emphasized evidence-based practice, which is equally important in public health. This approach ensures that the nutrition services provided through WIC are based on the latest scientific research and best practices, aligning with the core principles of public health. Additionally, my clinical nutrition education equipped me with assessment and counseling skills, crucial in my role as a WIC Nutritionist. I can conduct thorough nutritional assessments and provide individualized support to participants in meeting their nutrition goals.
Micronutrients are especially critical when supporting the diverse population that WIC serves, including pregnant or postpartum women, infants, and children who participate in the program. This course delved into the intricacies of micronutrient needs, metabolic processes, and the various factors influencing these requirements. With this knowledge, I was able to better appreciate how the WIC food package is intentionally designed to meet specific micronutrient needs, contributing to my ability to offer tailored counseling, nutrition education, and WIC food package customization. One aspect of the course that truly stood out was the opportunity to create a blog post focused on a specific micronutrient. I chose to explore sodium and water balance in infants, particularly addressing the prevention of hyponatremia resulting from water intoxication. This project allowed me to apply classroom learning in a practical and meaningful way, making it an enriching experience.

What was your experience like in regard to coursework and engagement with the professors and classmates?

My experience in the Clinical Nutrition Masters program at UW-Madison was incredibly positive. The professors were supportive of my learning and allowed me to focus on areas that aligned with my career goals. The coursework enhanced my ability to investigate research and apply scientific evidence to my work at WIC. Collaborating with students from diverse career backgrounds made our discussions robust and engaging, consistently providing opportunities for learning.

Did you have a favorite course, and why was that?

One of my favorite courses during my graduate studies was Micronutrients. This course had a significant impact on my role as a WIC Nutritionist, broadening my understanding of the fundamental importance of micronutrients and providing practical insights that I’ve applied to my everyday work.
Is there anything else you would like to share with us?

I would like to encourage anyone interested in nutrition to consider becoming a dietitian due to the diverse areas of practice and opportunities it offers. For those already on the path to becoming RDNs, I highly recommend the UW-Madison Clinical Nutrition program. Its flexibility, engaging nature, and interactive approach make it enjoyable for working professionals like me. It has helped me become a more competent and well-rounded dietitian, and I'm grateful for the skills and knowledge I gained during my time in the program.

What activities do you like to do outside of being a RDN?

Outside of my role as an RDN, I enjoy camping, taking walks with friends, and spending time with my husband, who I just celebrated my first wedding anniversary with. I also love cuddling with my cat, Dora. Currently, I'm focusing much of my time in training to become an International Board Certified Lactation Consultant (IBCLC), a lifelong goal of mine. Additionally, I've recently taken on the role of a preceptor for students in the UW Integrated Graduate Program in Nutrition and Dietetics during their public health rotation at Public Health Madison & Dane County WIC.
Research shows that immune epithelial cells in the intestine produce a peptide that prevents a dangerous form of fungus from flourishing in the gut while maintaining a balance with commensal fungi.

A peptide produced in the gut that was already known to control appetite also plays an important role in maintaining the balance of fungi in the digestive system of mammals, according to new research from the University of Chicago.

In a study published this week in Science, researchers found that immune cells in the small intestine called Paneth cells express a form of the peptide YY (PYY) that prevents the fungus Candida albicans from turning into its more virulent form. PYY was already known to be produced by endocrine cells in the gut as a hormone that signals satiety, or when an animal has had enough to eat. The new research shows that it also functions as an antimicrobial peptide that selectively allows commensal yeast forms of C. albicans to flourish while keeping its more dangerous forms in check.

“So little is known about what regulates these fungi in our in our microbiome. We know that they’re there, but we have no idea what keeps them in a state that provides health benefit to us,” said Eugene B. Chang, MD, Martin Boyer Professor of Medicine at UChicago and senior author of the study. “We now think that this peptide we discovered is actually important for maintaining fungal commensalism in the gut.”

Chang and his team didn’t set to explore the fungal side of the gut microbiome, or “mycobiome” as he calls it. Joseph Pierre, PhD, a former postdoctoral scholar in Chang’s lab who is now an Assistant Professor of Nutritional Sciences at the University of Wisconsin-Madison, was studying the enteroendocrine cells in mice that produce PYY when he noticed that it was also present in Paneth cells.

*Note: This is a modified version of the original news release, changed with permission from the University of Chicago Medicine, the lead institution on the project.*
These are important immune system defenders in the gut of mammals, secreting several antimicrobial compounds to prevent dangerous bacteria from flourishing. At first it didn’t make sense for what was happening, since until then PYY known only recognized as an appetite hormone—and when they tested it against a variety of bacteria, it wasn’t very good at killing them either. But when they ran a computer search for other classes of peptides with a similar structure, they discovered an antimicrobial similar to PYY called magainin, which is found on the skin of the African clawed frog. This peptide protects the frogs from infection by both bacteria and fungi, so Chang’s team thought to test PYY’s antifungal properties too. As it turns out, it is not only an effective antifungal agent, but a very specific one as well.

Candida albicans is a yeast that typically grows in small amounts in the mouth, on the skin, and in the intestines. The basic yeast form is commensal, or coexists peacefully in the body, but given the right conditions it transforms into what are called hyphae that branch out to form biofilms. When too much grows, it causes thrush, an infection in the mouth and throat, vaginal yeast infections, or more serious generalized infections in the body. When Chang’s team tested PYY against both forms of the fungus, it effectively prevented the more dangerous hyphae from growing while sparing the commensal yeast. “This is the first example of a natural molecule that one of our immune cells makes that specifically kills the virulent form of this fungi and has no effect on the on the commensal form,” Chang said.

While PYY could be useful as a tool to combat fungal infections, its newly discovered function may play a role in digestive diseases as well. Patients with Crohn’s disease of the ileum, the last portion of the small intestine, often have dysfunctional Paneth cells. Chang said it’s possible that this dysfunction, and lack of PYY, could create an environment for fungi to overgrow and trigger the onset of disease.

The full unmodified version of PYY has 36 amino acids, and when Paneth cells secrete it into the gut it’s an effective antifungal peptide. But when endocrine cells produce PYY, an enzyme clips off two amino acids to turn it into a hormone that can travel through the bloodstream and tell the brain you’re not hungry. Just like discovering its function from a frog, Chang hopes more research on this peptide will turn up more surprises. “This is an example of the wisdom and beauty of nature that has repurposed a molecule, so it has two different functions,” he said. “That’s really cool, because this is an efficient way of making the most out of things you already have.”

The study “Peptide YY: a Paneth cell antimicrobial peptide that maintains Candida gut commensalism,” was supported by the National Institutes of Health and the University of Chicago Gastrointestinal Research Foundation. Additional authors include Brian M. Peters from the University of Tennessee; Diana La Torre, Ashley M. Sidebottom, Yun Tao, Xiaorong Zhu, Candace M. Cham, Ling Wang, Amal Kambal, Julian F. Silva, Olga Zaborina, and John C. Alverdy from the University of Chicago; Katharine G. Harris from Franklin College; Herbert Herzog from the Garvan Institute of Medical Research; Suzanne M. Noble and Jessica Witchley from the University of California-San Francisco; and Vanessa A. Leone from the University of Wisconsin – Madison.
Could you tell us about your professional experience? Why did you choose this profession/field?

I started working in international public health soon after graduating from college. After a brief work experience in the corporate world, I applied to the Peace Corps and served as a Community Health Educator in Niger, West Africa from 1998-2001. I learned so much from that experience, both positive lessons about human connections and appreciation of different cultures, as well as frustrating and hard ones about poverty, disease, and illness. I knew I wanted to continue to work overseas but wasn’t sure how, until I went to Cornell for a master's degree and took a Food Systems Policy class offered by a professor in the nutrition department. Because of my experience in that course, I applied to the PhD program in Nutrition and ended up staying there for 6 years instead of 1 for the master's.

More recently, I’ve been working on a randomized trial to assess the effect of aflatoxin on child growth. The trial was conducted in Tanzania, where I was based for 3 years prior to Covid. I worked on multiple aspects of the project, including reviewing the ethics of conducting such a trial, designing the surveys, conducting training with staff, overseeing field work and performing the statistical analyses.

What do you most look forward to as a new faculty member at UW-Madison? What do you hope to achieve?

I’m honored to join the department as one of the first Research Track Professors. It’s a wonderful opportunity to learn from experienced faculty in the department and continue to be able to perform research related to maternal and child nutrition in low-income countries. UW-Madison has a long history of working in global health and the department has been a leader of research and undergraduate education. I look forward to collaborating and learning from faculty members in these areas, as well as being able to conduct my own research.
Banana Oatmeal Cookies

This simple, quick, and healthy cookie recipe is perfect for busy college students! Eat these for breakfast, dessert, or a delicious snack.

Ingredients

- 3 bananas overripe (about 1 ¼ cups mashed banana)
- 2 TBS honey (or maple syrup)
- 1 egg
- 1 tsp pure vanilla extract
- 1 ½ cup quick cooking oats
- 1 tsp ground cinnamon
- ¼ tsp fine sea salt
- ½ cup chocolate chips or other add ins like shredded coconut, dried cranberries, raisins, etc.

Directions

- Preheat oven to 350 degrees F. Line two baking sheets with parchment paper, set aside
- In a large mixing bowl, mash the bananas
- Add honey, egg and vanilla and stir to combine
- Add oats, cinnamon and sea salt and stir until combined
- If desired, add mix-ins and stir until evenly distributed
- Use a 1 tablespoon measuring spoon to measure portions of the dough, and place them on the prepared baking sheet spaced about 2” apart
- Bake in the preheated oven for 12-15 minutes, or until the tops are just set and the bottoms are very lightly browned
- Let cool on the baking sheet for 5 minutes before transferring to a wire cooling rack to cool completely

Recipe provided by
Molly Ross

Molly is a junior at UW Madison pursuing a degree in Nutritional Science and Dietetics with certificates in Global Health and Entrepreneurship. Outside of her studies, Molly is the Vice President of Dietetics and Nutrition Club and volunteers in the greater Madison area. She is an aspiring registered dietitian in the clinical setting.
Society for Advancement of Chicanos and Native Americans in Science (SACNAS), and the Annual Biomedical Research Conference for Minoritized Scientists (ABRCMS) are the two main diversity conferences for STEM and the biosciences. These are great opportunities for the program to recruit students from diverse backgrounds. At SACNAS, the programs did something new: the bioscience programs held a dinner for prospective students. It was a great opportunity for current students and faculty to build relationships with prospective students, and answer their questions.
**SACNAS:**
Portland, Oregon
October 25 - Oct 29

Hoang Bui is a third-year N&M graduate student in Andrea Galmozzi’s lab. This was his fourth time attending SACNAS!

I have made a ton of new connections and future colleagues, as well as getting to explore new places. Plus, we are able to pinpoint the correct candidates for our program and had the chance to educate potential interest in how our program fits their needs and philosophy.
- Hoang Bui

**ABRCMS:**
Phoenix, Arizona
November 15 - 19

Crystal Qing (middle) is a second year N&M graduate student in Jing Fan’s lab.

“ABCRMS is the most diverse conference I have ever attended. The time I walked in I felt like being immersed in a diverse, inclusive, and welcoming community. I was honored being one of ABCRMS judges to communicate with students from various backgrounds about their research and share the knowledge I learned in graduate school with these younger fellows! As an international student, I have been embraced by the inclusive community around me, and this time I really enjoyed the opportunity to pay it forward. This experience was inspiring and unforgettable!” - Crystal Qing
Stavroula N. Antonopoulos, MS, RDN is a registered dietitian nutritionist (RDN) and teaching faculty, instructing NUTR SCI 132: Nutrition Today. Since an impressionable age, Stavroula dreamed about being a licensed registered dietitian. After a diagnosis of "borderline obesity" (which is a term that is not used) at the age of ten from her pediatrician, Stavroula began her nutrition journey. Through mindful eating and walking, Stavroula achieved a "healthy" weight and helped friends and family do the same. In high school, she was an honor roll student, and she ran junior varsity cross-country and long-distance track. As a long-distance runner, she quickly learned the importance of nutrition to fuel athletes and lead her peers in food choices for peak performance. Stavroula received her Bachelor of Science in Nutritional Sciences with a Dietetics emphasis from the University of Arizona in Tucson, Arizona. Throughout her undergraduate career, she volunteered in Tucson’s diverse community focusing on food insecurity, health promotion, and education. Stavroula also served as an undergraduate preceptor (teaching assistant) for NSC 260: Nutrition Communication and Scientific Literacy (5 semesters) as well NSC 255: Food and Culture (4 semesters), NSC 358R: Institutional Food Management (1 semester), and NSC 358L: Institutional Food Management Lab (1 semester). Furthermore, she received Honorable mentions and Dean's List recognition. Later, she received her Master of Science in Human Nutrition with a Community Nutrition concentration from the University of Alabama in Tuscaloosa, Alabama. Then, Stavroula completed her dietetic internship program at Loyola University Chicago, where she focused on public health and food equity. After completing at least 1,100 hours of supervised practice in various settings, she passed the Registration Examination for Registered Dietitians, receiving her credential as a Registered Dietitians Nutritionist (RDN).
After her experience as an undergraduate preceptor for multiple classes at UArizona, she discovered her passion for higher education due to the ability to incorporate nutrition education and public speaking. After completing her education, she began teaching online undergraduate introductory nutrition courses (NSC 101: Introduction to Human Nutrition and NSC 170C1: Nutrition, Food, and You) for the School of Nutritional Sciences and Wellness at the University of Arizona. She loves collaborating with children and families; and she aspires to give TED Talks about the familial influence on child and adolescent nutrition.

In NUTR SCI 132: Nutrition Today, students can expect to learn about nutrition and its relationship to humans and their biological, social, and physical environment as well as current issues and concerns that affect the nutritional status of various population groups. Students will learn about the Dietary Guidelines, MyPlate, fad diets, social determinants of health, digestion, carbohydrates, proteins, lipids, traditional, cultural, and ethnic foods, vitamins, phytochemicals, water, minerals, fitness and sports nutrition, disordered eating patterns, lifespan nutrition, and nutrition-related disease prevention.

During her time at the University of Arizona, Stavroula was a research assistant for AZ Health Zone's Healthy Retail project for about two and a half years, where she interviewed and had customers from six corners stores complete questionnaires in Tucson, Arizona and performed qualitative and quantitative analyses of questionnaire data. After data was collected and analyzed, three corner stores were selected to implement store modifications, including increasing the visibility of produce and produce signage and providing refrigerators for yogurt parfaits near the registers. For more information on the University of Arizona's Healthy Retail project go to Healthy Retail in Arizona - Working with SNAP: Personal and environmental factors associated with fruit and vegetable purchasing among Supplemental Nutrition Assistance Program (SNAP)- Authorized stores in Tucson, Arizona (arizona.edu).

During her dietetic internship at Loyola University Chicago, she collaborated with the VeggieRx Maywood's research team to recruit VeggieRx Maywood food distribution participants, following CITI training completion. She was trained and mentored in qualitative research methods by Lena Hatchett, PhD. Then, I served as a note-taker and interpreted the notes for 2
focus groups, individual interviews, and in-depth individual interviews. Her research experience has contributed positively to her teaching, as the social determinants of health, food deserts, food equity, and food security as there was a significant emphasis on these components. Currently, Stavroula is a coauthor for three chapters in an Open Educational Resource from the School of Nutritional Sciences and Wellness that is underway. She incorporates these concepts into most if not all of her lectures, as there are many factors that impact nutrition, wellness, and health.

For more information on nutrition careers, please visit the following links: University of Wisconsin-Madison Nutritional Sciences Majors Guide About RDNs and NDTRs, Become a Registered Dietitian Nutritionist, About Accredited Programs, and Best Alternative Jobs for a Dietitian.

Regarding fascinating aspects of nutritional sciences, she has participated in seminars for Weight Inclusive Nutrition and Dietetics as well as interning for Janice Newell Bissex, MS, RDN, FAND who is also a Holistic Cannabis Practitioner and owner of Jannabis Wellness. Stavroula enjoys learning about and extensively researching controversial topics in the field of nutrition.

She believes that nutritional sciences are strongly integrated in today's society due to daily food eating patterns, prevalence of diet culture, and potential nutrition-related prevention and management of many conditions. Nutrition Today contributes to students' understanding of these issues because course content intertwines these concepts along with interactive activities and case studies. In her free time, Stavroula enjoys lifting weights, hiking, and spending time with her family, pets, and friends.

For students who are interested in pursuing a career in nutritional sciences, Stavroula encourages individuals to thoroughly research their areas of interest and be prepared for science-heavy coursework.
Staff Highlight: Aniya Schwoerer

Could you provide an overview of your responsibilities as an Animal Care Technician at NutriSci?

As an Animal Care Technician, it is my job to make sure the animals are all happy and healthy. A normal day for me may look like checking on the health of the animals, supplying them with sufficient food, water, and housing materials, and doing additional cleaning tasks around the facility. We recently have hired many new student workers, so I may assist with training as well and helping them feel comfortable in their new roles.

Have there been any notable achievements or milestones in your role that you would like to share?

I originally began as a student worker in the spring of 2022. After graduation, I was hired on as an Animal Care Technician. Since then, Scott, Lauren, and Chris have provided me with as many opportunities as possible to help grow my skill set for my future career. This includes things such as sitting in on interviews, learning how to order supplies and equipment, etc. Doing so also gave me more confidence in my abilities in this role and a deeper connection to the department.

Could you tell us more about the Fulbright program? What is the focus of your research?

For all of 2024, I will be working as an English Teaching Assistant (ETA) in South Korea. While attending the University of Wisconsin-Madison, I received my certificate in TESOL (Teaching English to Speakers of Other Languages). Since then, in addition to my work within the Nutritional Sciences Department, I have served as an English instructor at the Literacy Network, a nonprofit organization that focuses on improving literacy for adults in our community. In my case, providing English literacy resources to immigrants and refugees in the area. My students are a major part of what inspired me to apply to the Fulbright program.
I felt it would be an opportunity to better understand some of their lived experiences. That is, what it is like to live and work in a country where you only have a basic understanding of the language and culture. It is my hope that I can bring back the cultural knowledge and experiences I acquire in order to not only improve myself as an educator, but to better connect with my students.

What is your favorite part about South Korea? Do you have any memorable moments you would like to share?

I have been to South Korea one other time. In the summer of 2022, I traveled there for a three-month study abroad program where I completed a language intensive course at 고려대학교 (Korea University). Through this program, I bonded with classmates from all over the world through our shared experience of struggling with daily life in a new country. I miss most how simple it was to find activities to do with these new friends. Some of my favorites included exploring the many unique themed cafes and restaurants, walking along the rivers and through city forests, attending studio classes for things such as designing our own perfume, and eating late night meals at the convenience stores that seemed to litter every street corner.

What are your future aspirations? Are there any specific areas you are looking to explore or continue?

Foremost, I want to continue teaching in some capacity. It is my true passion in life, and one of the few things I can confidently say I am skilled at. Currently, I am looking at graduate programs both here in the States and around the world. I have considered paths such as someday becoming a professor myself, or possibly opening up my own dual language (English-Korean) school. I hope that Fulbright will allow me to further explore what future opportunities await me and solidify my career aspirations.
Staff Highlight: Mary Lou Krase
Financial Specialist

Mary Lou finds beauty in the discarded and the battered. Recycling was instilled in her while working as an art student at UW-Madison making paper from rags under the guidance of Professor Walter Hamady. She rescues old window shutters and makes them movable fish; discarded hubcaps on the streets become lit up collaged stories; scraps of wood are shaped with paper and become rescued animals.

What energizes you as you consider the future of the arts in Wisconsin?
What energizes me? Wisconsin was and could be in the future a leader in the arts. I’m a glass-half full gal who believes the arts can and will emerge as an agent for change and it’s an artist’s job to inspire.

Has the Wisconsin Arts Board had an impact on your work?
WAB has had an extreme impact in making me a better artist. It provided me an opportunity to dig deep into my processes and planning and focusing on Art as a Business. WAB was extremely supportive and encouraging on my efforts to bring an art-form to schools and communities that ordinarily was not a “popular” medium nor very well understood.

It catapulted me into looking at the art-form as part of the art curriculum and pushed me into writing lesson plans for K-12 art classes. As a working artist who was part of Wisconsin Center for Paper Arts, Inc. for many years, WAB offered opportunities to apply for funding to support visiting artists to work and teach in the studio as well as funding opportunities for the studio to offer community classes, and school tours.

Where to find Mary Lou’s work:
Mary Lou is a participating artist with Fly Right Galaxy Gift & Studio, in New Orleans and creates work in her Madison studio. You can also visit: dumpstadivecreations.etsy.com.
ALUMNI AND FRIENDS GIVING

The Nutritional Sciences Department appreciates any and all funding it receives. If you are interested in helping the department and would like to donate to a particular cause the following are a few specific funds we have decided to highlight:

**A.E. Harper Graduate Program Fund**
Fund 132041328

Established to support the Nutrition & Metabolism Graduate Program. Alfred E. Harper led the founding of the Department of Nutritional Sciences and served as its first Chair from 1968-1982. A native of Lethbridge, Alberta, Harper arrived on campus in 1949. He began research on amino acids, the building Blocks of proteins, in the lab of biochemist Conrad Elvehjem. Harper served as a member of the National Academy of Sciences Food and Nutrition Board, the 1969 White House Conference on Nutrition, the United Nations Food and Agriculture Organization/World Health Organization Expert Committee on Protein and Energy, the U.S. Department of Agriculture/National Institutes of Health Committee on Dietary Allowances, and the USDA Human Nutrition Board of Scientific Counselors. During his career, Harper guided 30 students to master's degrees and another 44 to doctorates in biochemistry or nutrition.

**Karen Spector Scholarship in Dietetics Fund**
Fund 132045322

Established by Dianne and Jerome Spector on February 19, 1988 in memory of their daughter, Karen Spector. Created "to encourage and assist students in the Department who have enthusiasm, creativity and imagination similar to their daughter Karen," the recipient shall be a person who gives that extra measure of hard work that makes an impact on others and sets himself/herself apart from the crowd. The individual should be a person who makes the world a better place because they do a bit more and reflect the attitude that one person could make a difference.

**Lida A. Jamison Endowment Fund**
Fund 32041929

Established in 1994 with a gift from her estate, the Lida A. Jamison Nutritional Sciences Endowment Fund supports projects within the department. This fund is used to provide faculty startup funds for new professors. Dr. Brian Parks was able to support the purchase of a state-of-the-art animal body composition analyzer, a quantitative PCR machine, and other biomedical laboratory equipment necessary to begin research. Dr. Adam Kuchnia was also able to utilize these funds to start his lab off in the right direction by purchasing cutting-edge imaging equipment needed to conduct his research in body composition and muscle metabolism.
Hellen M. Linkswiler Graduate Student Award Fund  
Fund 3204282

The friends and colleagues of the late Dr. Hellen M. Linkswiler and the Department of Nutritional Sciences, College of Agricultural and Life Sciences set up this fund. Dr. Linkswiler received her MS in Foods and Nutrition and her Ph.D. in Nutrition and Physiology from Madison, and was a Professor of Nutritional Sciences at UW-Madison from 1960 until her retirement in 1981. This fund supports an annual scholarship to a student enrolled in the Master of Science in Clinical Nutrition.

Elmer Martin Billings and Jean Hood Billings Professorship in Nutrition Fund  
Fund 132042840

Supports the needs of the professorship, including but not limited to books, research assistants, travel and other enhancements of teaching and scholarly activity.

Dorothy J. Pringle Nutritional Sciences Fund  
Fund 32040173

Established on December 31, 1986 by Dr. Julie P. Thurlow to honor Dr. Dorothy J. Pringle. This fund provides support for undergraduates in dietetics and nontenure track faculty for travel and other educational experience, and expenses. Often, instructors have benefited from the Pringle Fund by attending meetings and purchasing technology they otherwise would not be able to. Dr. Pringle was an Emeritus Nutritional Sciences faculty member, the first director of the Coordinated Undergraduate Program, and was the donor’s undergraduate advisor. Dr. Pringle was at the UW from 1949 until her retirement in 1985 and continued to be involved with the department until her passing at 97 years young in 2016.
FOODIE Trivia

In which country was the sandwich invented?

A) France  
B) Italy  
C) Greece  
D) England

Which country is famous for its spicy and flavorful cuisine known as Szechuan?

A) Japan  
B) China  
C) Thailand  
D) Korea

Which tropical fruit is often referred to as the "king of fruits," has a strong and distinctive odor?

A) Mango  
B) Durian  
C) Pineapple  
D) Lychee

Which cooking oil has the highest smoke point?

A) Olive oil  
B) Coconut oil  
C) Avocado oil  
D) Flaxseed oil
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

Name __________________________________________________________________

Address ________________________________________________________________

City _____________________________ State ________ 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       [ ] Discover

Card Number ___________________________________________ Expiration Date ________________

Cardholder name (please print) ________________________________________________

Cardholder signature _________________________________________________________

Foodie Trivia Answer Key:

1. D
2. B
3. B
4. C