

THE GRAPEVINE

TEACHERS COLLEGE, COLUMBIA UNIVERSITY



Photo: <https://www.look-beautiful.de/en/beauty-news/food/summer-cocktails>

Dry January May Become Dry 2020

By Jamie Gershel

If you logged onto any form of social media in January, pictures of mocktails, seltzer, sober activities, and trendy non-alcoholic beers likely inundated your timeline and newsfeed. People commonly abstain from alcohol in January, not because they feel they have a drinking problem, but as a challenge and way to reset after the holidays (the fact that you have to reset after drinking alcohol says something). Dry January or “Dryuary” began in the United Kingdom in 2013 - with the help of social media, the movement has jumped the pond. While seemingly contradictory, alcohol companies have embraced the sober curious movement. The

sober curious abstain from alcohol not because they are struggling with addiction, but rather because they either do not want to feel hungover or do not enjoy the act of drinking. In response, Heineken launched Heineken 0.0, Athletic Brewing Company became one of the first non-alcohol “beer” companies, and alcohol-free wine from Sutter Home and Ariel has exploded onto the market.

As your friends brag about 31 days sober, we must ask, “what does alcohol do to our bodies?” In excess, alcohol impairs cognition, decreases balance, and leads to vitamin and mineral malabsorption.

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LETTER FROM THE EDITOR

Dear Students, Faculty, Alumni, and Staff,

Nutrition research often relies on self-reporting and recall. Although observational studies attempt to reduce or eliminate bias and confounding factors, distinguishing causation from correlation, and extrapolating from the study sample to the general population remain problematic. These, along with financial sponsorship by industry, are some of the factors resulting in skepticism about the findings from nutrition research. Red meat consumption once was bad for us; now it's good. Alcohol is an antioxidant! No, it's a carcinogen!

In *Analysis of Current Literature*, Dr. Wolf teaches nutrition students to understand and critically analyze nutrition studies and how they are reported in the lay press. Students learn to sift through the facts and figures, make sense of data, find what is reported accurately and inaccurately, which conclusions are valid and generalizable, and which are not. We also learn to write our own news briefs in a way that engages the reader while correctly representing a study's findings and limitations. Most importantly, we learn how to question study design, data, and interpretation, and to form our own opinions based on independent assessment.

This Winter's issue, the first of 2020, focuses on some of nutrition's hot topics. As you read, take note of the controversy. As more people understand and appreciate the importance of nutrition to health and well-being, the greater the interest in nutrition research. This creates an opportunity and responsibility. I look forward to seeing my classmate's names atop many influential studies!



Sincerely,

Caroline Markowitz

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The Grapevine is written by the students in the Teachers College Program in Nutrition. I encourage all of you to get involved. Send your ideas to me at cfm2139@tc.columbia.edu. Thanks to all of the students who volunteered to write for this issue!

Fresh Off the Vine: Events and Announcements

The Program in Nutrition faculty and Health Nuts are hosting a Game Changers movie night and discussion on April 4 accompanied by Dr. Karen Dolins. Email healthnutsevents@gmail.com for further details and questions.

Right (from left to right): Molly, Fei and Valerie smile with TC professors Randi, Pam and Isobel after winning the Health Nuts cookie baking contest!



NEW STUDENT NOTES - WELCOME TO TC!

On behalf of The Grapevine and the Program in Nutrition, we would like to extend a warm welcome to the new students who began the program in the Spring 2019 semester.

Marcela Barillas: Originally from Guatemala, Marcela attended Francisco Marroquin University where she earned an undergraduate degree in Clinical Nutrition. She is enrolled in the Nutrition Education program. Marcela is an avid runner and hopes to one day run the NYC Marathon. She is interested in non-communicable chronic diseases, pediatric nutrition, and strategies to encourage healthy behavior change. mb4720@tc.columbia.edu

Wanqi Jing: Originally from Shenzhen, Guangdong, China, Wanqi attended Pepperdine University where she earned an undergraduate degree in Nutrition Science, and Teachers College where she earned a Masters in Health Education. She is enrolled in the Community Nutrition Education program. Wanqi is interested in public health nutrition, preventative care, and pregnancy nutrition. wj2286@tc.columbia.edu

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Lauren Roper: Originally from East Williston, NY, Lauren attended Loyola University where she earned an undergraduate degree in English Literature. She is enrolled in the Nutrition and Exercise Physiology program. Lauren is a career changer with professional experience in eCommerce and digital marketing. She is interested in both sports nutrition and nutrition in the context of disease prevention and management. lbr2134@tc.columbia.edu

Zhewei (Olivia) Sun: Originally from Shanghai, China, Olivia attended the University of California Davis where she earned an undergraduate degree in Economics and Statistics, and Columbia University where she earned a Masters in Enterprise Risk Management. She is enrolled in the Nutrition Education program. Olivia is a certified financial analyst, has played the cello for 15 years, and speaks several languages. Olivia is interested in expanding nutrition research beyond traditional nutrients and phytochemical to focus more on dietary patterns. zs2412@columbia.edu

Dry January (continued from cover)

Scientific studies have yielded conflicting results when it comes to alcohol's impact on our health. In 2019 the American Heart Association (AHA) stated that red wine may be an antioxidant, protecting us from free radicals, but that excessive consumption (more than 1 drink a day for women and 2 drinks a day for men) can raise triglyceride levels.

The 2015-2020 USDA Guidelines note that if you must drink any alcohol, women should drink only 1 drink a day and men 2 drinks a day. The Guidelines indicate that any alcohol use has a linear relationship with the risk of cancer development. In short, as alcohol consumption increases, so too does the risk of developing cancer. The 2018 Lancet study further reinforced this link. Some studies have shown alcohol to have a protective effect against heart disease in women, but the same studies have directly linked alcohol consumption to breast cancer.

A 2016 cohort study showed that those who drank no drinks had a 16% increase in cardiovascular disease than compared with those who drank 7 to 13 drinks weekly. Using the same data, the study showed that those who drank 7 to 13 drinks weekly had a 27% increase of developing breast cancer then compared with those who drank none (Dam et. al, 2016). Alcohol is thought to increase the risk of breast cancer because it raises the

levels of estrogen circulating in premenopausal and postmenopausal women; alcohol may increase transcription in estrogen receptor pathways, explaining the link between breast cancer and estrogen receptor positive tumors. Another reason is that alcohol may produce toxic, cancer-causing products in the breast.

Today, the average American drinks about 9.5 drinks per week; this comes to just over 1 drink daily. We are drinking more per person today than during prohibition; millennials are drinking more wine than previous generations.

The USDA is expected to release the new 2020-2025 Guidelines in December. Their website indicates that they are currently reviewing scientific literature and asks Americans to submit feedback to help improve the Guidelines' inclusiveness. It is possible we may see stricter alcohol consumption recommendations and even an endorsement for Dry January.

If you are looking to cut down on your alcohol intake (no one has to know), here are few tips:

- Purchase non-alcoholic beer, wine or spirits
- Order a seltzer with a dash of fruit juice at the bar - it looks like a mixed drink
- "No alcohol" bars are coming into vogue - find a bar that does not serve alcohol and meet like-minded people

Mountain Mojito Mocktail

Ingredients

- .5 oz lime juice
- .5 oz agave
- .5 oz blood orange puree
- 4 fresh mint leaves
- Splash of soda water

Instructions

Muddle the mint along with the lime juice and agave in a Collins glass, add ice and the rest of the ingredients, top with soda water. Garnish with fresh mint.



* This recipe & photograph come from Town & Country (<https://www.townandcountrymag.com/leisure/drinks/how-to/g785/best-mocktail-recipes/>) - they adopted this recipe from Ricardo Leyvas at The Little Nell, Aspen

Resources

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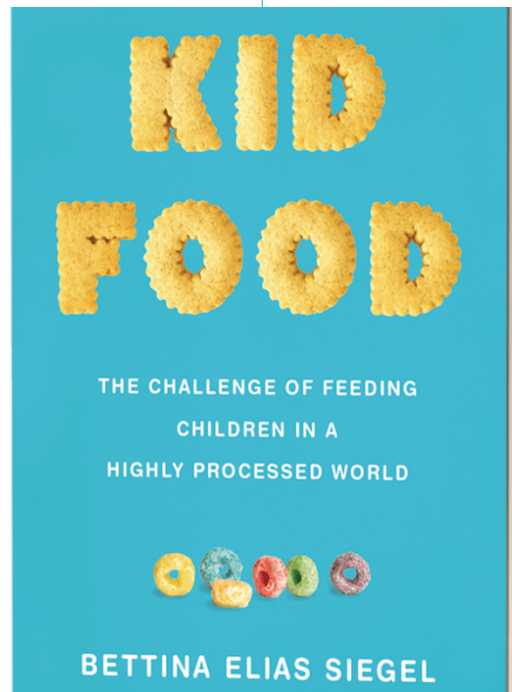
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Bettina Siegel’s new book, *Kid Food: The Challenge of Feeding Children in a Highly Processed World*, prompted a panel discussion at Hunter College in November with Siegel, Marion Nestle, Emerita Professor of NYU, and our own Dr. Pam Koch. The three panelists discussed highly processed food marketing and the school system’s progress in providing healthier options.

“Highly processed food” is a broad term; NOVA system defines these as, “foods and drinks industrially produced, contain at least five ingredients, and typically contain industrial additives not commonly found in our kitchens.” The NOVA system is a food classification that categorizes foods according to the extent and purpose of food processing, not in terms of nutrients. In her book, Siegel writes, “In more than half the ZIP codes in America in which the median annual income is under \$25,000, there isn’t a single supermarket nearby” (pg. 33). Koch echoed the importance of ensuring a larger variety of food is available in low-income communities; everyone should have access to healthy choices. This is easier said than done.

It is difficult to minimize the presence of highly processed foods. Throughout the day, parents, teachers, coaches, and others offer children processed food; these well-intentioned treats add up. Koch explained that children may struggle to advocate for themselves. In school many students think, “I have to do what I’m told.” Children may feel pressure to eat more sweets than they know their parents would allow (more on this in Siegel’s chapter, “Just One Treat”).

While it may seem obvious to target the Department of Education (DOE) in rallying for healthier school food options, the United States Department of Agriculture (USDA) actually controls school kitchens and food. Nestle discussed that in her experience, an enthusiastic



cafeteria staff leads children to respond positively and eat more healthy options. In contrast, an indifferent or disinterested cafeteria staff leads children to eat more unhealthfully and leave more food waste. According to Koch, public schools in the Bronx are effectively piloting a scratch cooking program where home cooked meals, such as dumplings, peach barbecue chicken on the bone, and stuffed shells, are served. While there are salad bars in some public schools in low-income communities, often only the tall students can reach them. Providing healthier, accessible lunches must be prioritized.

Not only are processed snacks and foods omnipresent in schools, they are even more so in grocery stores. These products (i.e. sugary cereals, Doritos, Lunchables) are strategically marketed to entice kids and make it hard for parents to say “no.” In her book, Siegel writes how advertising executives admit, “*Children are much easier to reach with advertising. They pick up on it fast and quite often we can exploit that relationship and get them pestering their parents*” (pg. 71). The UK, Taiwan, Norway, Mexico, Canada, Chile, Ireland, and France, passed legislation that prohibits junk and processed food packaging printed with cartoon characters, replacing these cartoons with health warnings. In some of these countries, obesity rates and fast food expenditures have declined.

How else can we help children eat well in a highly processed world? Nestle suggested that parents get involved at school and the community, as opportunities abound. Koch suggested that we “help kids develop a good relationship with food,” and Siegel said we should “run for office!” As more people take small (or big) steps toward change, a future scant in highly processed foods will seem more realistic.

Siegel, B.E. (2019). *Kid Food: The Challenge of Feeding Children in a Highly Processed World*. NY, NY: Oxford University Press.

THE RED MEAT DEBACLE EXPLAINED

By Amanda Wahlstedt

This past October, *Annals of Internal Medicine* published the controversial study, “Unprocessed Red Meat and Processed Meat Consumption: Dietary Guideline Recommendations From the Nutritional Recommendations (NutriRECS) Consortium.” Major news publications quickly criticized the review, led by researcher Bradley Johnston, for its contentious questioning of the relationship between red meat and adverse health outcomes. Contrary to the growing consensus in the scientific community that limiting red meat is linked to better health, this study encouraged readers to maintain their meat-eating habits. As headlines such as “The Red Meat Rethink” hit the stands, public distrust and confusion surged, sparking a battle between plant-based advocates and the NutriRECS panel.

In this study, Johnston et al. conducted a meta-analysis of five systematic reviews examining the relationship between meat consumption and health outcomes such as cardiovascular disease, type II diabetes, and all-cause mortality. Researchers used GRADE criteria, an approach to develop evidence-based recommendations from systematic reviews primarily focusing on controlled experiments, to assess the evidence. Within the GRADE approach, randomized control trials (RCTs) are considered “high-quality” for intervention effects, while observational studies tend to be viewed as “low-quality” due to potential confounding factors. The growing body of evidence that links meat consumption with adverse health effects are primarily observational studies. Therefore, when Johnston et al. decided to use GRADE to conduct a review on this collection of research, it was as if they immediately discredited the studies; under this criteria, all of these studies findings are seen as inferior, right off the bat.

Issues with the study’s methodology do not stop here. Dr. Frank Hu, chairman of the Nutrition Department at Harvard's School of Public Health, stated that Johnston et al. based their conclusions on a three servings of meat weekly

exposure (more than one third of all Americans consume at least one serving of red meat daily). If the authors adjusted for this increased daily meat consumption, the statistical and clinical significance of reducing red/processed meat intake for improved health would dramatically increase. Despite three of the five review articles yielding statistically significant relationships between this meat consumption and adverse health outcomes, the unit of exposure and GRADE criteria led researchers to question the relationship’s plausibility.

The fourth systematic review, based on RCTs, included the Women's Health Initiative, which evaluated fat, not red meat, intake. The fifth was merely a narrative review examining values and preferences for meat consumption. The validity of NutriRECS's conclusions led to skepticism due to the questionable selection of studies and evaluation criteria.

Soon after publication, it came to light that Johnston led another controversial study. The study, which analyzed sugar intake, also used a GRADE criteria; as a result, they concluded that added sugar had no effect on adverse health outcomes. Moreover, Johnston failed to acknowledge a conflict of interest – Coca Cola and Nestlé finance the International Life Science Institute, which funded the study. It was unsurprising when questions emerged about the funding for Johnston’s red-meat review. Johnston, along with the majority of the study’s authors, founded and/or participate in NutriRECS, an organization with the mission to produce nutritional guidelines free from “institutional constrains and conflicts of interest.” AgriLife Research, a branch of Texas A&M University, funds NutriRECS. The beef industry partially funds research at Texas A&M – 44 farms have established an endowment to support their International Beef Cattle Academy program.

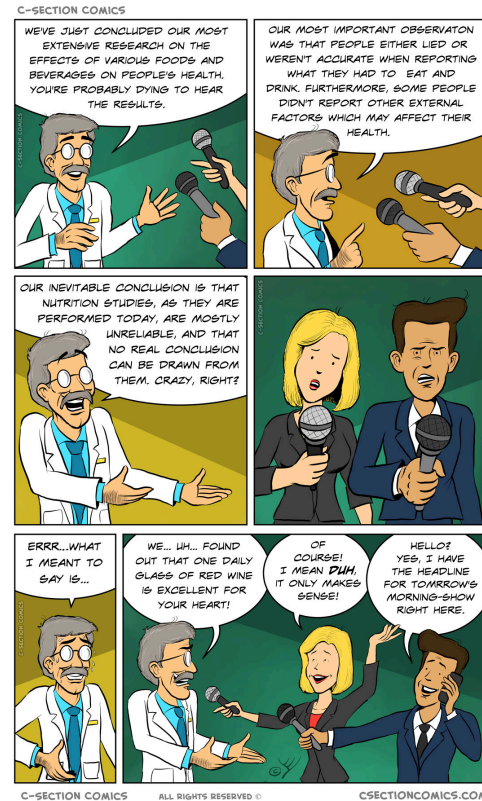
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The Red Meat Debacle Explained (cont.)

Within 36 months of this red-meat review, AgriLife Research awarded Johnston over \$76,000 to conduct a meta-analysis on saturated fat. While this paper was separately funded, potential crossover and a conscious failure to disclose information calls into question the study's ethics. As a result, the *Annals of Internal Medicine* issued a correction, stating Johnston's unethical behavior, and amended the article to include his AgriLife grant.

Before this discovery, leading health experts were already in dismay about Johnston et al.'s conclusions. Members of THI, a well-established plant-based organization, wrote a letter to Christine Laine, editor-in-chief of *Annals of Internal Medicine*, requesting the article's retraction four days prior to publishing. THI members stated that the report would do "damage to public understanding and public health." Further, they criticized the review for its failure to include articles that yielded strong evidence for limiting red meat that met the inclusion criteria. After their request was denied, these experts took matters into their own hands, publishing articles and lectures targeting the report. Adding to the turmoil, *JAMA Internal Medicine* published "Associations of Processed Meat, Unprocessed Red Meat, Poultry, or Fish Intake With Incident Cardiovascular Disease and All-Cause Mortality" on February 3rd, which found a positive correlation between higher red meat intake and increased CVD risk and all-cause mortality.

While the red-meat debacle continues to unfold, it is clear that Johnston et al.'s conclusion is a myopic approach to a complex topic. Even if the health impacts of red-meat consumption are minimal, the failure to acknowledge animal welfare or environmental impacts when giving this recommendation leaves consumers with an incomplete picture. The red meat debacle is the perfect example for why nutrition research has a history of contention. Unfortunately, ethics of funding, study protocol and conflicts of interest play a big role in the red meat debate. The public deserves the honest truth.



C-Section Comics <https://www.csectioncomics.com/comics/nutrition-research>

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You can do it with your eyes closed.

It may be tempting to lie in bed and scroll through Instagram or stay up late watching TV rather than submit to sleep. Despite knowing the importance of sleep, many people prioritize other things, and struggle with fatigue daily. When it comes to productivity, mental health, and vitality, sleep is just as important as nutrition and exercise.

According to the National Sleep Foundation, adults ages 18 to 64 should sleep for 7 to 9 hours each night. After a poor night's sleep it's common to feel moody, hungry, lacking in libido, unable to concentrate, and sluggish. Over time, impaired sleep can lead to more pressing health issues: an increased risk of anxiety, depression, obesity, diabetes, hypertension, cardiovascular disease, and Alzheimer's disease.

Sleep is important for our memory. Deep and REM sleep occur towards the end of a night's rest, during which our brains actively detoxify, store information, and consolidate memories. Disruptions during the night and inadequate sleep compromise these vital periods of regeneration. In fact, amyloid, a protein that in excess is thought to cause Alzheimer's disease, is cleared from the brain during sleep. With poor sleep, our brain loses the time to detoxify, which may lead to accelerated cognitive decline.

Improper sleep can also take a toll on mental health. Mood disorders may lead to insomnia and poor sleep quality, which can spiral into a vicious cycle - sleep deprivation leads to low mood and anxiety the next day, perpetuating insomnia, which further exacerbates mood disorders, and so on. In adolescents, increased screen time is linked to insomnia and depression. The blue light emitted from TV, computer, tablet, and phone screens can delay the production of melatonin, the sleep-inducing hormone. This might lead to difficulty falling and staying asleep.

Some of us have no choice but to get less than 7 hours of sleep. How can we make sure that sleep is the highest quality? What you consume can have a huge impact on sleep hygiene.

Alcohol may help you fall asleep quicker, sending the body into deep sleep early in the night. However, the sleep cycle bounces back, keeping the brain in light and REM sleep for the rest of the night, and ultimately losing deep sleep time. Spicy, acidic, fatty, and/or high caloric foods may cause bedtime indigestion, making it more difficult to fall asleep,

especially for those with digestive problems or acid reflux.

Limiting caffeine, nicotine, and sugar can also help you sleep better. Caffeine and nicotine are stimulants that raise the levels of cortisol, a stress hormone that acts opposite melatonin in regulating the sleep/wake cycle, signaling your body to awaken. Cortisol can also negatively impact insulin's function of stabilizing blood sugar at night, important for sound sleep.

While poor sleep can raise blood sugar levels, blood sugar levels can in turn disrupt sleep. Keeping sugar and refined carbohydrate intake low will help keep your blood sugar levels consistent, avoiding dips and spikes in energy throughout the day (which may cause you to reach for extra caffeine) and during the night (which may disrupt sleep). Managing stress and resisting pick-me-ups can lead to consistent sleep, and in turn to better energy and less fatigue the next day.

The next time you think about pulling an all-nighter, guzzling afternoon coffee, or late-night binge watching Netflix, think about the benefits of a proper night's sleep, ones that you will not just feel tomorrow, but 20 years down the line.

Tips for Improved Sleep Quality & Quantity:

- *Maintain a consistent sleep and wake pattern: go to bed and wake up at a similar time every day, including weekends*
- *Create a relaxing nighttime ritual and sleep environment (meditation, aromatherapy, cool/comfortable temperature)*
- *Avoid loud noises, electronics, and bright lights close to bedtime; wear blue light glasses*
- *Exercise daily, but avoid exercise 2 hours before bed*
- *Limit refined carbohydrate, fat, sugar, and alcohol intake, especially in the hours before bed*
- *Limit caffeine and nicotine consumption at least 6 hours or more (or not at all!) before bed*

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ALUMNI INTERVIEW: CHRISTINA BUTIGIAN

By Caroline Markowitz

Christina Butigan, MS, RD, PA, completed both her MS in Nutrition Education and Dietetic Internship (DI) at TC. After finishing her DI and taking the RD exam in 2017, Christina earned a Masters in Physician Assistant Studies at LIU Brooklyn. She is now a practicing Physician Assistant (PA) and RD.

Why did you choose to pursue a career in nutrition?

I was a little all over the place. I earned an undergraduate degree in International Studies/ Political Science. I went into undergrad thinking I wanted to practice human rights law, but after a law internship I realized it wasn't the field for me. When I was younger I was always exposed to nutrition. My mom is into plant-based diets and that was something I was exposed to. During my junior year of college when I realized I didn't want to be a lawyer or work for the UN, I knew I wanted to do something that really helps people. That's when I thought – 'I've always loved nutrition why don't I be a nutritionist.' My senior year I started taking the prerequisite courses during my senior year and after graduating I took a year to finish my prerequisites and applied to Columbia. I started there the following September. I'm very grateful that I didn't pursue a law degree. I'm not cut out to be a lawyer – I'm too kind of a person.

What did you find most valuable about your TC experience?

I think what I enjoyed the most were Lora Sporny's classes – she went into such depth, and

did a great job of teaching the paths of physiology and the treatment plans. She's also just an amazing person. I really enjoyed her courses.

I loved the diverse settings we were put in during our DI year – from clinical to outreach and teaching people. I interned and did my elective at Lenox Hill Neighborhood House. It's an incredible organization and allowed to create my own programs. I would go to different women's shelters and give talks on nutrition education; we would cook together. It was a great feeling to be able to give back to NY's community. It was an incredible team of people that worked there. I'm very grateful to TC for putting me in contact there.

What led you to pursue a PA degree?

I actually considered PA school in high school. I had an extreme fear of needles and talked myself into thinking I wasn't cut out for the medical field. I would pass out when I got my blood taken. But the more I was exposed to clinical work, I grew to like it more and became more curious. Even then I doubted if I was strong enough. I ended up getting past all of those fears – I have no problem getting my blood taken, taking other people's blood, doing different procedures on people, and being in the OR where there's lots of blood. Its funny because becoming a PA was my original thought in high school that I pushed aside because I thought I wasn't strong enough for it.

What are you doing now?

I just graduated w/ my Masters [in PA studies] in November and passed my board exam in



December. I'm from NY but just moved to Austin, TX to practice here; I'm getting my TX license at the end of the month. I've accepted a job at a family medicine practice where I interned this summer. Family medicine is the perfect setting for the combination of a RD and PA because you're dealing with people with diabetes, hypertensive patients, fatty liver disease, all of these patients that really need nutritional guidance. The doctors want me to see patients both as a RD and as a PA, which is great. I'm also possibly going to be working for a liver clinic. That's another field of medicine that they were thrilled to find out I was a RD - I honestly think that's the main reason why they gave me a second interview. Even though I'm a new PA grad, they really appreciate my nutrition background because the number one treatment for patients with fatty liver disease is diet and improving diet. The RD has been so beneficial. I'm so grateful I went for that first. That's really my passion. I'm all about preventative medicine and nutrition is key for that - there's no way getting around it.

How much time will you spend working as a PA versus a RD?

I will probably function as a PA more than the RD. It also depends on how many patients really need a RD. If I do take the job at the liver institute I would possibly be doing = more nutrition education. In the family medicine practice you get all different kinds of patients. I will say even as a PA I always try to integrate nutrition into my time with a patient; it's part of the conversation - what are they eating, what is their alcohol intake, are they exercising. Even if I'm not having a full hour long session with a patient just on nutrition it's something that I always bring up with every patient contact.

What are your future career goals?

I love educating patients. I always want to be involved in teaching people preventative medicine, different disease states, and empowering patients to be a part of their healing process. I want to give patients a feeling of ownership.

I do see myself probably working mostly in family medicine or internal medicine. I will always utilize nutrition education and preventative medicine in my role as a practitioner. I also love the idea of giving back to communities that are less fortunate. I don't know if I will end up working in a clinic in a more underserved area but that's something that I'd love as part of my career plan one day. We'll see!

What is your advice to TC students?

Get involved with whatever you're interested in. When I was at TC I was really interested in Celiac Disease because I have an aunt and cousins who were diagnosed. I got involved in celiac research at Columbia's Celiac Clinic. Reach out for the opportunity, whether it's research or volunteer work, in anything you have a connection to or you're curious about. TC has so many resources that are worth tapping into. You also never know, it might lead to a job. I have a friend I went to TC with who is still working within the research department of that Celiac team. Network and volunteer. I know you get bogged down by schoolwork and projects, but try to push yourself to go outside of what is required and do more because that's when you really get to know what you love and want to get involved with as a career path. There are so many career paths you can take as a dietitian. Before you know it you'll graduate and think, "Oh I could have done this...I could have made this connection, or figured out if I would have liked that setting." Push yourself a bit to go outside of your comfort zone.

Endurance athletes are constantly looking for the ultimate ergogenic aid; they will do anything to last longer and go faster. Ergogenic aids, substances used to enhance sports or athletic performance, are a hot topic in sports nutrition. They must be safe, effective and legal.



<https://www.healthline.com/nutrition/benefits-of-beets>

The scientific community has turned its attention to a natural, yet potentially effective, ergogenic aid: beetroot, especially in juice form. Why beetroot? The answer lies in nitrate, in which beetroot is especially rich. The human body oxidizes nitrate to nitrite and eventually to nitric oxide. Under normal conditions, our body makes nitric oxide in a reaction mediated by L-Arginine, an amino acid responsible for this and many other key reactions in the human body.

Nitric oxide is a powerful vasodilator, meaning it enhances the delivery of oxygenated blood to the muscles, improves oxygen transport and utilization by the cells (a process known as cellular respiration), and aids in mitochondrial biogenesis. The mitochondria is the organelle responsible for cellular respiration. All of these adaptations make nitric oxide a key component in endurance performance.

When the body lacks oxygen, which happens readily during exercise, nitric oxide formation via L-Arginine stops. Andrew Jones at the University of Exeter in the UK is one of the leading scientists researching beetroot as an ergogenic aid. In his latest review, he

concluded that nitrate supplementation via beetroot juice may provide an alternate pathway for nitric oxide formation and subsequently increase oxygenated blood delivery to exercising muscles. In effect, it may improve performance in endurance sports (Jones, 2018).

Prior to TC, I conducted a study in amateur endurance athletes who supplemented with powdered beetroot juice (~400mg Nitrate/day) for 5 days. These athletes consumed beetroot powder diluted in 250 mL of water 45 minutes before exercise. In conclusion, they showed an improvement in power, able to pedal at higher Watt values, and a decrease in time to complete a 10-km cycling time trial (Wiegandt, 2016).

Evidence also suggests that nitrate supplementation via beetroot juice may lower blood pressure, making it not only a performance enhancing substance but also a safe and natural way to lower blood pressure and prevent the onset of hypertension (Jones, 2014).

Most studies in the field have used concentrated beetroot juice supplements like Beet it!® which delivers approximately 400 mg of natural nitrate. This is equivalent to the amount of nitrate present in about two beets. While these findings seem promising, limitations exist, including a failure to control subjects' diets, small sample sizes and protocol adherence. Regardless, this round, purple, root vegetable may prove an effective endurance aid.

References

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Wiegandt, A. and Leon, A. (2016). Efecto de la suplementación con nitratos a través de betabel en polvo, en deportistas de resistencia sobre el tiempo que se requiere para recorrer 10 kilómetros en bicicleta. (Unpublished B.S. Thesis) Universidad Iberoamericana, Mexico City, Mexico.

Considering the large portion size, I love to share this dish with my roommates during weekends as a treat. I think sharing food with people I care about is the most beautiful way to express gratitude. I hope you enjoy this recipe!
- Cindy (Luyue) Zheng



Stewed Beef Brisket & Tendon w/ Tomato

Ingredients

- 2 lbs beef brisket
- 1 lb beef tendon
- 2 medium tomatoes cut into small wedges
- 1/2 can whole peeled tomatoes
- 3 ginger slices
- 2 star anise
- 5 g cinnamon sticks
- 5 g Sichuan pepper
- 2 bay leaves
- 2 tsp salt
- 3 tbsp oil
- Water as needed

Directions

1. Prepare brisket & tendon, set it in a pot. Fill w/ cold water until covered. Add ginger, star anise, cinnamon stick, Sichuan pepper and bay leaves. Immediately wash and drain
2. Transfer brisket to a pressure cooker. Fill w/ 2 cups cold water. Cook at high pressure for 30 mins. Save the broth because it's quite flavorful.
3. Pat brisket and tendon dry. Heat 2 tbsp cooking oil in large frying pan. Brown both sides beef brisket and tendon until fragrant. Cut brisket and tendon into small pieces.
4. Heat 1 tbsp cooking oil over medium heat, sauté tomato wedges for 1 min. Pour 1/2 can whole peeled tomato, add beef brisket and tendon. Reduce to medium-low heat. Add water, simmer for desired thickness (I add 1/2 cup water and cover mixture cook for 15 min).
5. Add 2 tsp salt. Taste and adjust seasoning as needed. Add tomato and beef to a serving bowl; garnish with green onion. You can serve the stew with noodle or rice. Enjoy-

Thai-Inspired Spaghetti Squash

Ingredients

1 medium spaghetti squash
1 medium bunch bok choy
1 cup snow peas
1 bunch green onions
Red pepper flakes
Peanut sauce ingredients:
1/4 cup peanut butter
3 tbsp coconut aminos or gluten free soy sauce
1 clove garlic
Ginger to taste
Juice of 1/2 small lime
3/4 cup canned coconut milk

Directions

1. Cut spaghetti squash in half length wise, remove and discard seeds.
2. Place spaghetti squash, cut half down, on a baking dish - cook at 400 degrees for 45-60 mins or until softened and you can remove the "spaghetti" with a fork.

3. Once finished, remove spaghetti squash from oven and allow to cool.
4. Cut bok choy into medium-sized pieces. Heat the snow peas and bok choy in a frying pan and cook until softened.
5. Remove spaghetti squash with a fork and place in pan with bok choy and snow peas.
6. In a small blender or food processor, add the peanut sauce ingredients. Note: canned coconut milk is used because it is creamier than boxed coconut milk.
7. Blend until evenly mixed. Add the peanut sauce to the pan with the spaghetti squash, snow peas, and bok choy - mix to distribute evenly.
8. Place a serving of Thai-inspired peanut spaghetti squash on a plate (~ half the pan).
9. Cut green onions and add to top of dish. Sprinkle crushed red pepper flakes to taste.

Celebrate the winter season by picking up a spaghetti squash from your local farmers market! Use the spaghetti squash to make this Thai-inspired recipe. It tastes like takeout, but is gluten free, dairy free, and full of veggies!

- Mel Spinella

