

Current Issues in Food & Nutrition



Siew Sun Wong, PhD, MS, LTCL

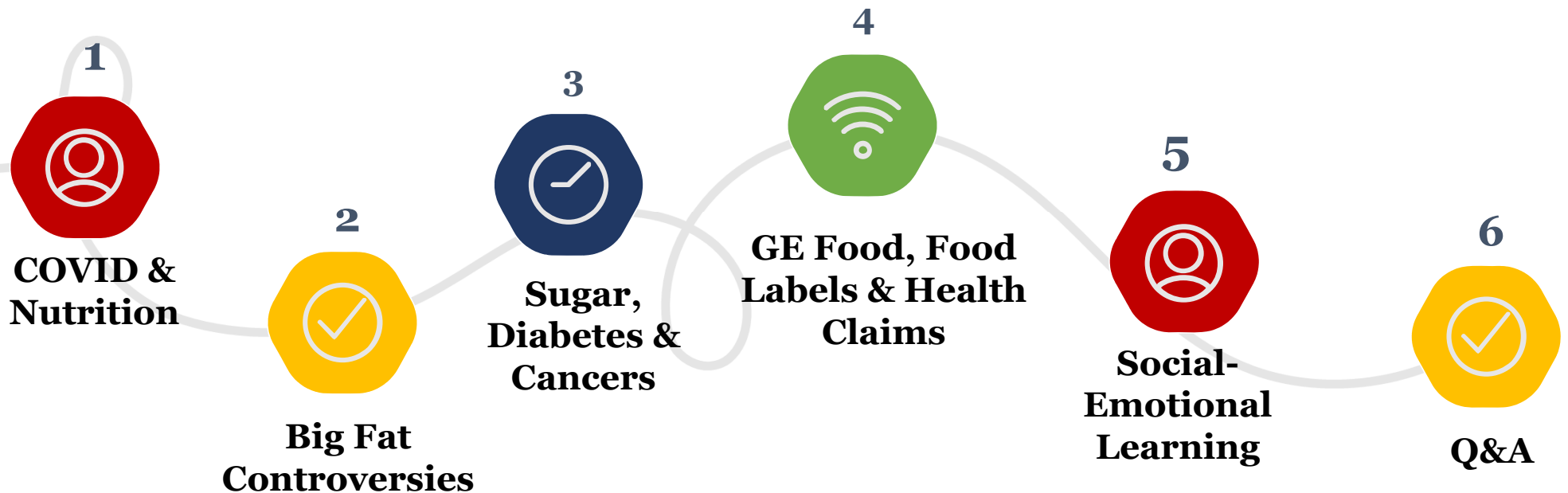
Professor, Extension Nutrition Specialist, Interim Endowed Director, Moore Family Center for Whole Grain Foods, Nutrition & Preventive Health

Learner, Individualization, Empathy, Strategic, Connectedness



Learning Objectives

1. Evaluate food & nutrition science misinformation with critical thinking.
2. Apply new research findings to nutrition education and behavior change assessments.
3. Create ways to integrate social-emotional learning in nutrition education.




Optimal Health & Wellness

Nutrition Security - Consistent access to safe, healthy & affordable food

4 Pillars

Meaningful Support

- Re-evaluate Thrifty Food Plan
- Increase SNAP benefits
- Update federal program nutrition standards
- HQ Nutrition Education 
- Promote & Support Breastfeeding

Healthy Food

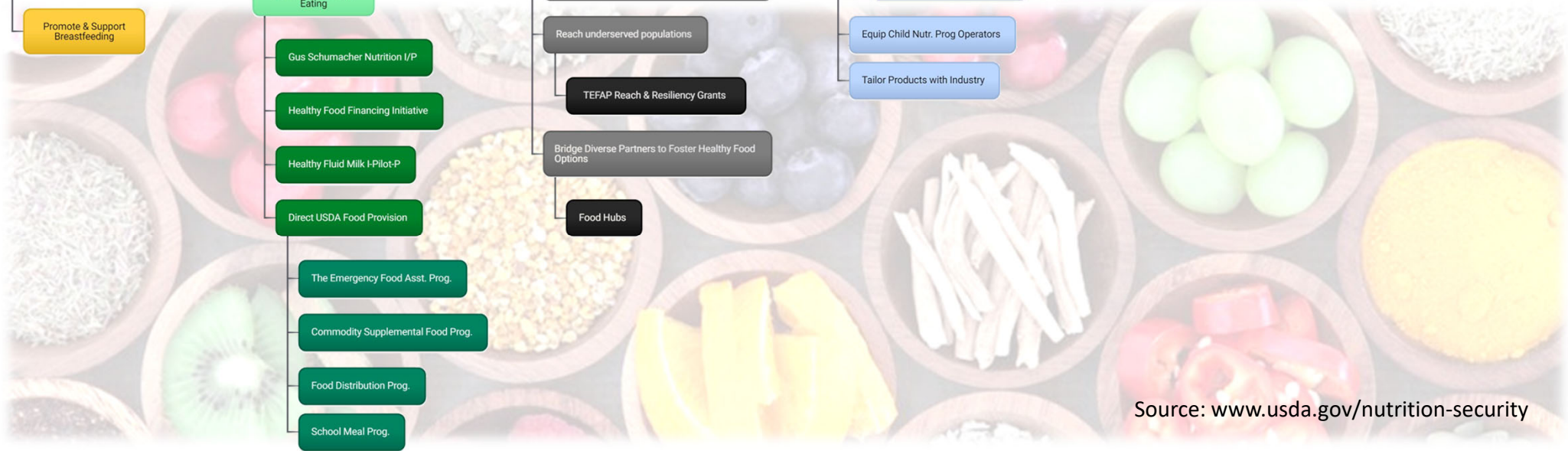
- Promote & Support Fruit & Vegetable Consumption
 - Am. Rescue Plan Act -> WIC -> FVS
 - Fresh Fruit & Vegetable Program
- Incentive Programs (I/P) to Promote Access to Healthy Eating
 - Gus Schumacher Nutrition I/P
 - Healthy Food Financing Initiative
 - Healthy Fluid Milk I-Pilot-P
 - Direct USDA Food Provision
 - The Emergency Food Asst. Prog.
 - Commodity Supplemental Food Prog.
 - Food Distribution Prog.
 - School Meal Prog.

Equitable Systems

- Strengthen Native Am./Tribal School Food Prog. Support
 - Indigenous Sovereignty Initiative
- Expand Online Shopping for SNAP/WIC
- Bridge Language Barriers to Nutrition Education Resources & Recipes
- Reach underserved populations
 - TEFAP Reach & Resiliency Grants
- Bridge Diverse Partners to Foster Healthy Food Options
 - Food Hubs

Collaborative Action

- Update & Build Dietary Guidance
 - Understand diversity of nutritional needs & health
 - Translate DGAs to Consumer Friendly Info
 - Toolkit: Shop Simple, MyPlate
- Equip Child Nutr. Prog Operators
- Tailor Products with Industry



Source: www.usda.gov/nutrition-security



7 Trends to Watch from the “Fringes” of Medicine

1.
Deep
Learning

3.
Gero-
Therapeutics

5.
Longevity
Medicine

2.
Tech with
Practical
Applications

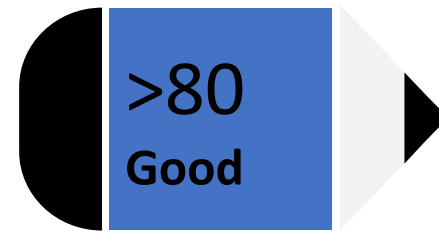
4.
Anti-Aging
Drugs

6.
Non-Invasive
Neuro-
Modulation

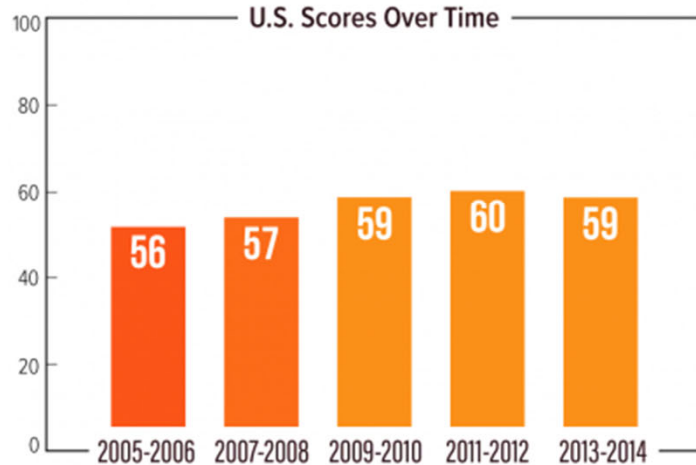
7.
Ultrasound
Beyond
Diagnostic



Visionary Keynote Speaker:
Jane Metcalfe, Founder, Editor-in-Chief, and CEO, NEO.LIFE
(March 17, 2022 HIMSS)

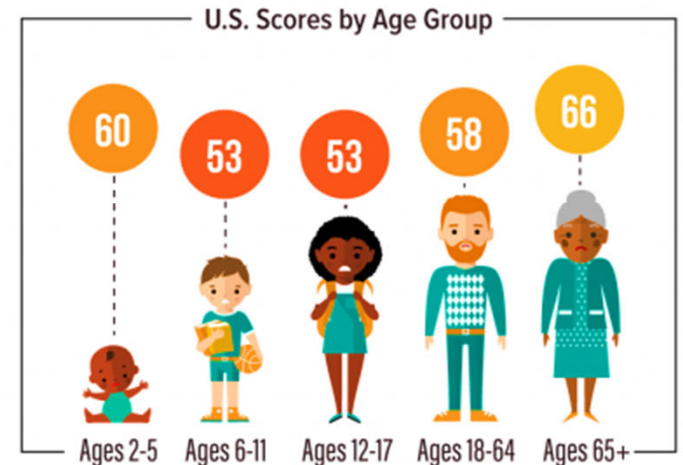


How Healthy Is the American Diet?



The Healthy Eating Index Score

shows that Americans do not align their eating choices with the Dietary Guidelines.
(on a scale from 0-100)



Data source for Healthy Eating Index scores: What We Eat in America, National Health and Nutrition Examination Survey (undated data are from 2013-2014).

1



COVID &
Nutrition

1. Vitamin D
2. Sulforaphane
3. Obesity

1. Vitamin D

“A patient’s history of vitamin D deficiency is a predictive risk factor associated with poorer COVID-19 clinical disease course and mortality.”

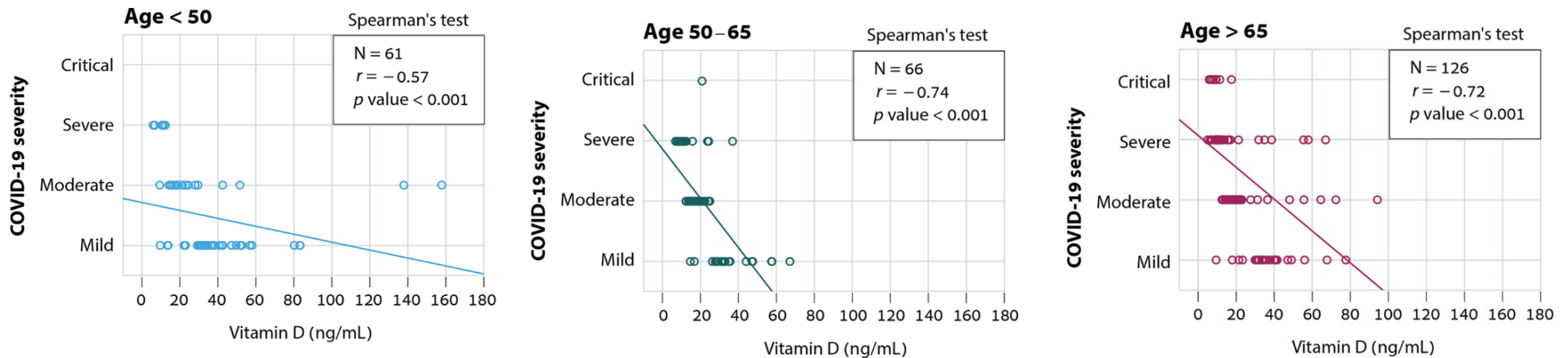


Fig 3. Correlation between pre-infection vitamin D deficiency status and COVID-19 disease severity stratified by three different groups of age (<50, 50–64, ≥65).

Source: Dror et al, 2022 (<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0263069>)

RESEARCH ARTICLE

Pre-infection 25-hydroxyvitamin D3 levels and association with severity of COVID-19 illness

Amiel A. Dror^{1,2*}, Nicole Morozov³, Amani Daoud^{1,2}, Yoav Namir², Oriy Yakir⁴, Yair Shachar¹, Mark Lifshitz², Ella Segal^{1,2}, Lior Fisher^{1,2}, Matti Mizrahi^{1,2}, Netanel Eisenbach^{1,2}, Doaa Rayan^{1,2}, Maayan Gruber^{1,2}, Amir Bashkim^{2,4}, Edward Kaykov^{2,7}, Masad Barhoum⁴, Michael Edelman¹, Eyal Sela^{1,2}

¹ Department of Otolaryngology, Head and Neck Surgery, Galilee Medical Center, Nahariya, Israel, ² Azrieli Faculty of Medicine, Bar-Ilan University, Safed, Israel, ³ Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv, Israel, ⁴ Statistical Analysis Division, Galilee Medical Center, Nahariya, Israel, ⁵ Computer Data Division, Galilee Medical Center, Nahariya, Israel, ⁶ Endocrinology Unit, Galilee Medical Center, Nahariya, Israel, ⁷ Geriatric Medicine Department, Galilee Medical Center, Nahariya, Israel, ⁸ Galilee Medical Center, Nahariya, Israel

Life Stage	IOM: Dietary Reference Intakes			Vitamin D Council	Endocrine Society
	Adequate Intake	Estimated Average Requirement	Recommended Dietary Allowance	Recommended Daily Intake	Recommended Intake
Infants: 0 to 12 months	400 IU			1,000 IU	400-1,000 IU
Children: 1 to 8 years		400 IU	600 IU	1,000 IU/25 lbs	600-1,000 IU
Adolescents: 9 to 18 years		400 IU	600 IU	1,000 IU/25 lbs	600-1,000 IU
Adults: 19 to 70 years		400 IU	600 IU	5,000 IU	1,500-2,000 IU
Adults: 70+ years		400 IU	800 IU	5,000 IU	1,500-2,000 IU
Pregnancy/lactation		400 IU	600 IU	5,000 IU	1,500-2,000 IU

Food	Serving Size	Approximate IU/Serving
Cod liver oil	1 Tbsp	1,360
Raw maitake mushrooms, diced	1 cup	786
Swordfish, cooked	3 oz	706
Salmon, sockeye, cooked	3 oz	447
Fortified soy milk	1 cup	300
Fortified skim milk	1 cup	120
Fortified orange juice	1 cup	100
Whole Grain TOTAL cereal	3/4 cup	100
Fortified nonfat yogurt with fruit	6 oz	88
Tuna, canned in water, drained	3 oz	68
Fortified margarine	1 Tbsp	64
Egg, chicken, whole, scrambled	1	44

Source:
<https://lemondnutrition.com/articles/the-abcs-of-vitamin-d>

communications biology

ARTICLE

<https://doi.org/10.1038/s42003-022-03189-z>

OPEN

Check for updates

Sulforaphane exhibits antiviral activity against pandemic SARS-CoV-2 and seasonal HCoV-OC43 coronaviruses in vitro and in mice

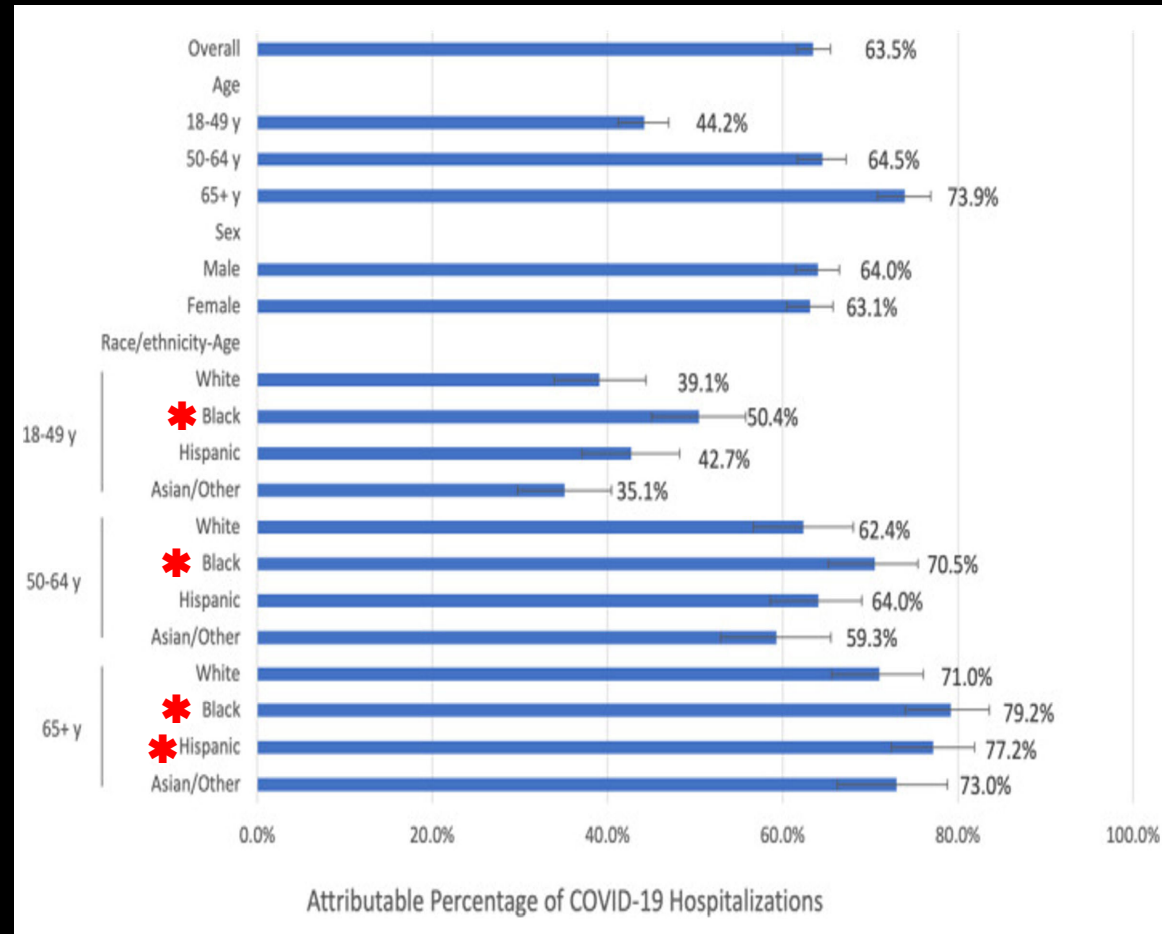
Alvaro A. Ordonez^{1,2}, C. Korin Bullen^{2,3}, Andres F. Villabona-Rueda⁴, Elizabeth A. Thompson^{5,6}, Mitchell L. Turner^{1,2}, Vanessa F. Merino⁷, Yu Yan⁷, John Kim², Stephanie L. Davis^{2,3}, Oliver Komm^{2,3}, Jonathan D. Powell^{5,6}, Franco R. D'Alessio⁴, Robert H. Yolken⁸, Sanjay K. Jain^{1,2} & Lorraine Jones-Brando⁸

Scientists at Johns Hopkins University found **sulforaphane** (a phytochemical with anti-cancer effects) could provide protection from COVID-19 and other common colds.

COLOUR	PHYTOCHEMICAL (Class)	FOOD	POTENTIAL HEALTH BENEFITS
Red	Lycopene (carotenoid)	Strawberries, cranberries, raspberries, tomatoes, cherries, apples, beets, watermelon, red grapes, red peppers, red onions [4]	Potent antioxidant; protects against CVD*, diabetes and cancer [2]
Orange/ yellow	Beta-cryptoxanthin (carotenoid)	Butternut squash, pumpkin, persimmons, tangerines, papaya, red bell pepper, carrots, kumquats, sweetcorn, oranges, peaches [5]	Protects against cancer and osteoporosis; may support immune function and eye health [5]
Green	Sulforaphane (isocyanate)	Cruciferous veg (e.g. broccoli, broccoli sprouts, Brussels sprouts, cabbage, cauliflower, kale, spinach) [6]	Strong cancer protection; also protective against diabetes, CVD and neurodegenerative diseases [6]
	Lutein (carotenoid)	Dark, leafy greens (e.g. spinach, kale, collard greens, chard, rocket)	Protects against diabetes, cataract, macular degeneration, cognitive decline, CVD [2,7]
Blue/ purple/ black	Anthocyanins (flavonoids)	Blueberries, blackberries, elderberries, Concord grapes, raisins, aubergine, plums, prunes, figs, lavender, red cabbage [4]	Powerful antioxidants; protect against CVD [2]
	Resveratrol (stilbene)	Red and white wine, grape juice, grapes, peanuts, pistachios, cocoa powder, dark chocolate, blueberries, cranberries, strawberries	Protects against CVD, obesity, diabetes, cancer, aging, Alzheimer's disease [2]
White	Allicin (organosulfur compounds)	Onion family: chives, garlic, leeks, onions, shallots, spring onions	Protects against CVD, obesity, aging [2]

*CVD: Cardiovascular disease.

Obesity is linked to impaired immune function. Having obesity may triple the risk of hospitalization due to a COVID-19 infection. Estimated 30.2% adult COVID-19 hospitalization in the US were attributed to obesity. (CDC 2022)

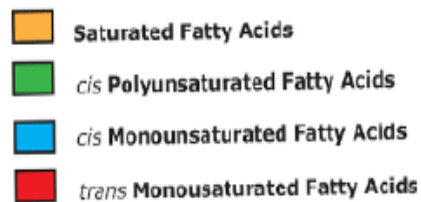


Source: <https://www.cdc.gov/obesity/data/obesity-and-covid-19.html>

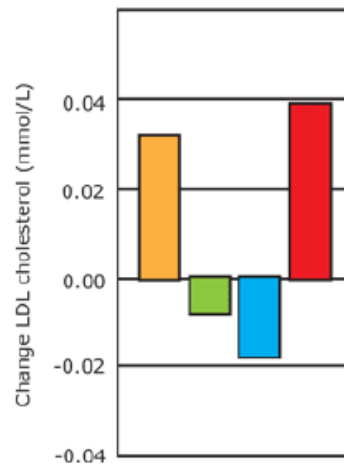




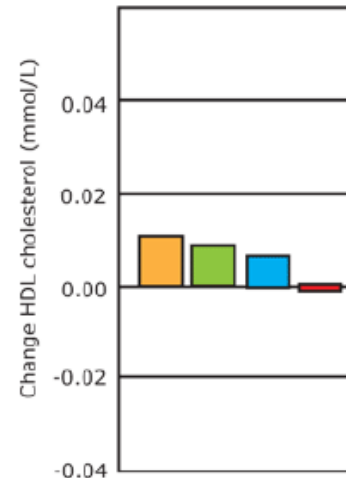
The Villainous Saturated Fat



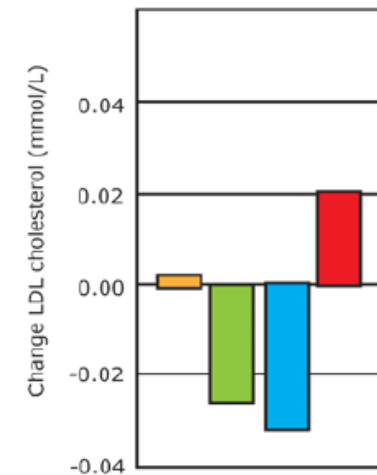
Bad Cholesterol / LDL



Good Cholesterol / HDL



Total:HDL Ratio



A more sensitive
& specific
predictor

FIG. 2 Effects of fatty acids on LDL and HDL cholesterol.

(Left) Saturated and trans fats increase the serum levels of LDL, or "bad," cholesterol.

(Center) Saturated and unsaturated fatty acids increase HDL, or "good," cholesterol.

(Right) Unsaturated fats decrease the ratio of total cholesterol to HDL, indicating a reduction in heart disease risk. Trans fats increase this ratio, while saturated fats do not substantially increase or decrease the ratio.

Credit: Gerald McNeill, prepared from data in Mensink, R. P., et al., "Effects of dietary fatty acids and carbohydrates on the ratio of serum total to HDL cholesterol and on serum lipids and apolipoproteins: a meta-analysis of 60 controlled trials." *Am. J. Clin. Nutr.* 77:1146-1155, 2003.

**Can the villainous Saturated Fat be innocent?
What if human physiology is adaptive?**

Table 6 Meta-analyses of studies of the effect of foods containing high saturated fat on cardiovascular health

Reference	Food product(s)	Main finding(s)
Soedamah-Muthu and de Goede (2018) ⁹⁶	Total dairy	Not associated with incidence of CHD
	Milk	Not associated with incidence of CHD and inversely associated with stroke
Guo et al (2017) ⁹⁷	High-fat dairy	Not associated with mortality, CVD, or CHD
Chen et al (2017) ⁹⁸	Cheese	Significantly associated with lower risk of CVD
Pimpin et al (2016) ⁹⁹	Butter	Not significantly associated with any CVD, CHD, or stroke
Alexander et al (2016) ¹⁰⁰	Eggs	Not associated with CHD and a reduced risk of stroke
O'Connor et al (2017) ¹⁰¹	Red meat	Does not negatively impact lipoprotein profiles or blood pressure
Wang et al (2015) ⁹⁴	Unprocessed red meat	Not associated with total mortality, CVD, or CHD
Khaw et al (2018) ⁹⁵	Coconut oil	Lowered LDL-c compared with butter; no difference in lipids compared with olive oil

Abbreviations: CHD, coronary heart disease; CVD, cardiovascular disease, LDL-c, low-density lipoprotein cholesterol.

Source: Heileson (2022), Nutrition Reviews



Take 30 seconds
to write down
a few keywords or a
teaching idea about

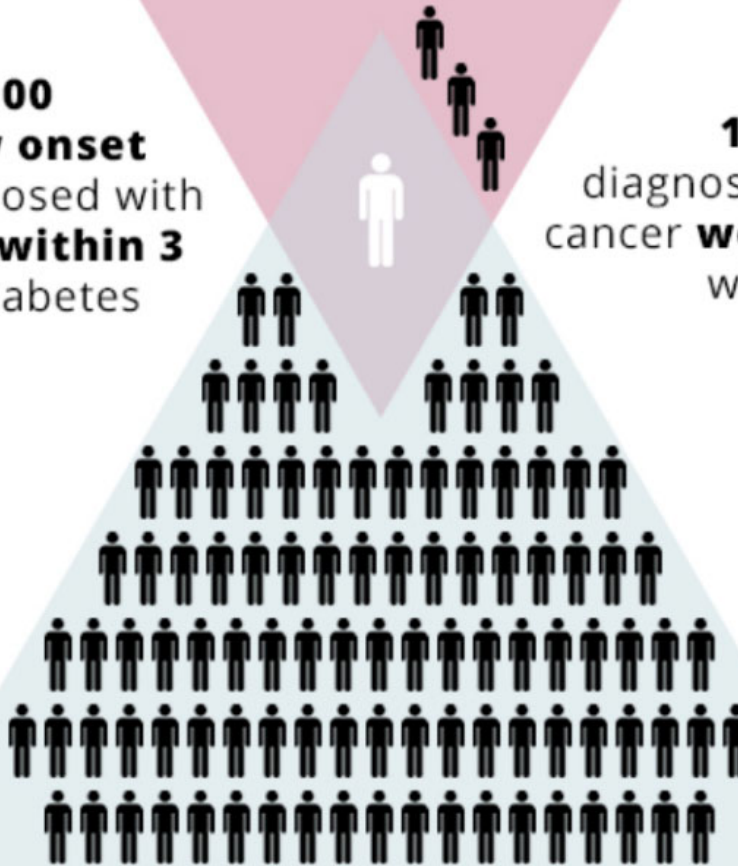
Saturated Fat



About **1 in 100** people with **new onset diabetes** are diagnosed with pancreatic cancer **within 3 years** of their diabetes diagnosis

PANCREATIC CANCER

1 in 4 people diagnosed with pancreatic cancer **were first diagnosed** with **diabetes**



Sugar & Cancers

1. To date, there are no randomized controlled trials showing sugar causes cancer. There is, however, an indirect link between sugar and cancer.
2. Eating a lot of high sugar foods such as cakes, cookies, and sweetened beverages can contribute to excess caloric intake. This may lead to weight gain and excess body fat.
3. Research has shown that being overweight or obese increases the risk of 11 types of cancers including colorectal, postmenopausal breast, ovarian, and pancreatic cancer.

Can Fasting Work?

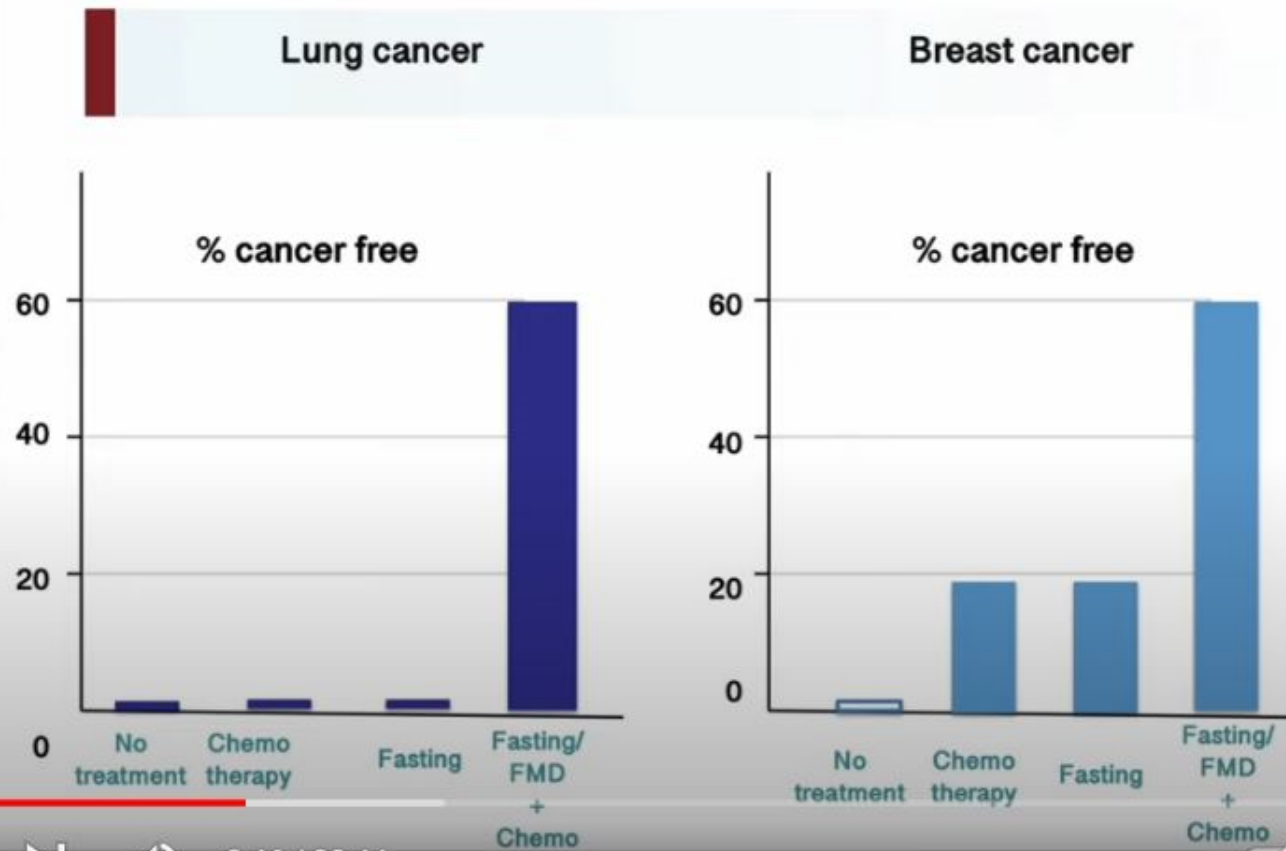


Fasting Mimicking Diet (FAD)

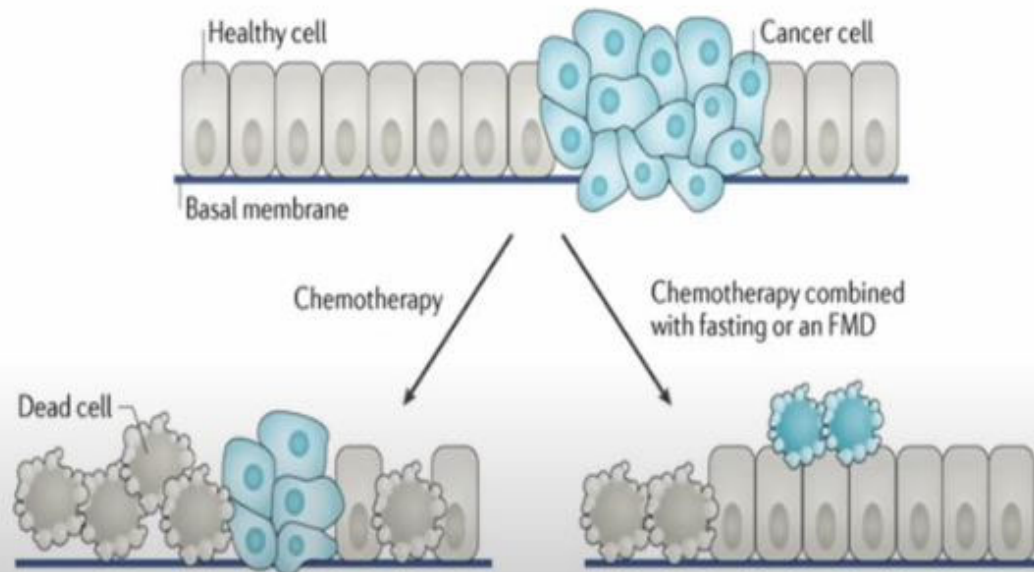
- Low calorie
- Low sugar
- Low protein
- High unsaturated fats

Research talk by Dr. Valter Longo: <https://www.youtube.com/watch?v=BZGOevHeNio>

Combination of chemotherapy and fasting promotes cancer free survival in mice



Fasting/FMD-dependent Differential Stress Resistance (DSR) and Sensitization (DSS)



Nencioli A, Longo VD *Nature Cancer Reviews* 2018



4:11 / 20:44



What about Artificial Sweeteners?

Table 2

Artificial sweeteners in common food products.

Common foodstuff	Constituent artificial sweeteners
Sugarless cookie	Acesulfame K & sucralose
Diet Coke/Coca Cola zero	Aspartame & acesulfame K
Coca Cola Life	Cane sugar + stevia
Diet Pepsi	Aspartame/sucralose
Chocolate syrup	Acesulfame K & sucralose
Sugarfree traditional Indian sweet (Halwa/Khoya Barfi/Rasgolla)	Aspartame & acesulfame K & sucralose
Chewing gum	Aspartame & acesulfame K
Pan masala	Saccharin
Sweet supari	Cyclamate-saccharin mixture
Ice candies and crushed ice	Saccharin

Source: Temps (2018) IHJ

Table 1
Artificial sweeteners commercially available.

Sweeteners	×Sweeter than sugar	Metabolism	Brand name	Acceptable daily intake (ADI)	Possible side-effects
Saccharin	300	Nil, bitter metallic after taste	Sweet 'N low	5	Bladder cancer
Aspartame	200	Metabolized to: Phenylalanine Aspartic acid Methanol	Equal/ NutraSweet	50	Chronic fatigue, brain tumor
Acesulfame	200	Nil	Sweet one	15	Carcinogenic
Neotame	8000	By esterase	New tame	18	Neurotoxic, immunotoxic and excitotoxic
Sucralose	600	Nil	Splenda	5	Possible DNA damage, may affect insulin sensitivity
Stevia	150	Steviol glycosides are poorly absorbed in GI tract; small amounts absorbed are metabolized in liver	Truvia/ PureVia	4	-

*ADI (Acceptable Daily Intake: mg of sweetener/kg body weight/day) while EDI (The Estimated Daily Intake) is based on the amount consumed by people whose intake exceeds that of 90% of the population, in developed world this value is well below ADI).

Use artificial sweetener as a method of dietary modification to reduce add on sugar consumption.

Source: Temps (2018) IHJ



Take 30 seconds
to write down
a few keywords or a
teaching idea about

**Sugar, Diabetes
or Cancer**



Top 10 Genetically Modified Foods



Corn



Soy



Cotton



Papaya



Rice



Rapeseed (Canola)



Potatoes



Tomatoes




Dairy products



Peas

know your labels

Genetically Modified  5 digit code starting with 8 	Organic  5 digit code starting with 9 	conventionally Grown  4 digit code starting with 3 or 4 
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USDA Mandatory Labeling (started on Jan 1, 2022)

1. National Bioengineered Food Disclosure Standard established in 2018.
2. Label for food made with GMO ingredients
3. Removal of 8XXXX codes. Replaced with USDA “Bioengineered” label for GM food.



ORGANIC LABELS EXPLAINED

Organic products are labeled according to the percentage of organic ingredients they have. This chart shows what to expect from different labels.

100% Organic 

Organic 

Made with Organic 

Organic Ingredients 

✓ Organic seal allowed

✓ Organic seal allowed

✗ Organic seal NOT allowed; Must specify which ingredients are organic

✗ Organic seal NOT allowed; Product can't be described as "organic"

✓ 100% certified organic ingredients and processing aids

✓ 95 % certified organic ingredients

✓ At least 70% certified organic ingredients

✗ No specific % certified organic

✓ No GMOs

✓ No GMOs

✓ No GMOs

✗ May contain GMOs

✓ All ingredients comply with National List of Allowed and Prohibited Substances

✓ Non-organic ingredients comply with National List

✓ Non-organic ingredients comply with National List

✗ Compliance with National List not required

✓ Certification required

✓ Certification required

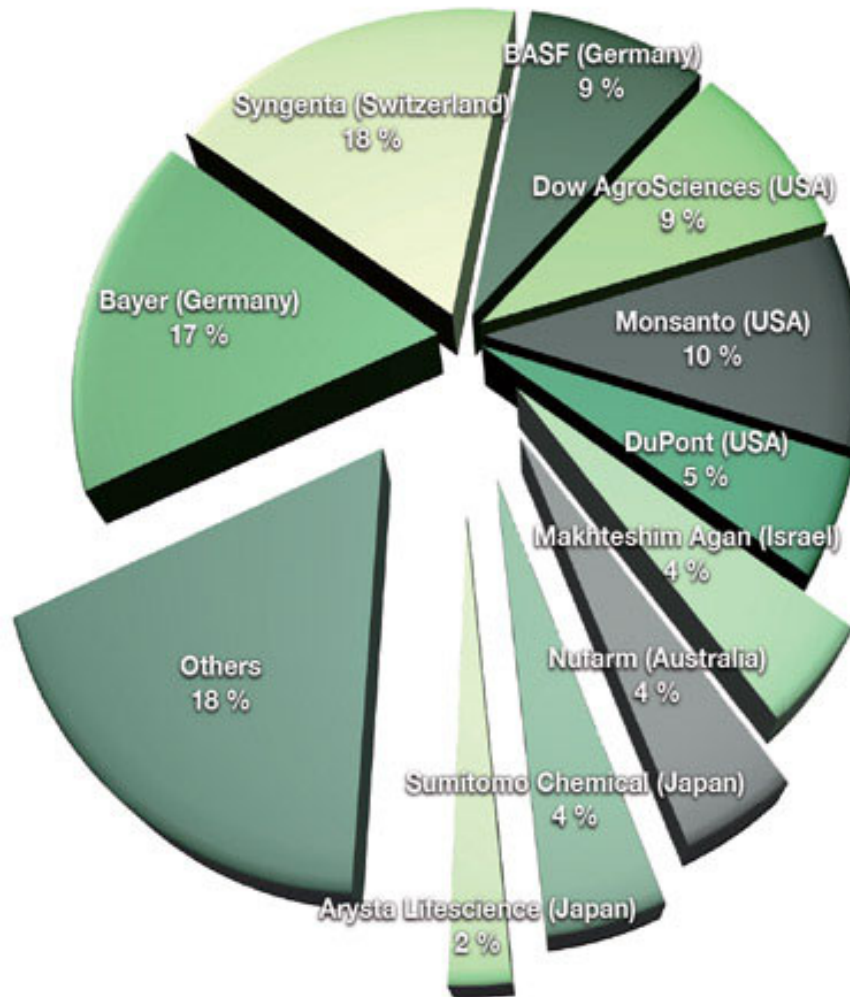
✓ Certification required

✗ Certification NOT required

Learn more about organic labels at www.ams.usda.gov/organic

Agricultural Marketing Service, April 2018
USDA is an equal opportunity provider, employer, and lender.

Top 10 corporations market share of the global pesticides market



Source: Exploring the Global Food Supply Chain, 3D

The “Big 6” Pesticide & GMO Corporations

1. BASF
2. Bayer
3. Dupont
4. Dow Chemical Company
5. Monsanto *(bought by Bayer in 2018)*
6. Syngenta

They own the world’s seed, pesticide and biotechnology industries.



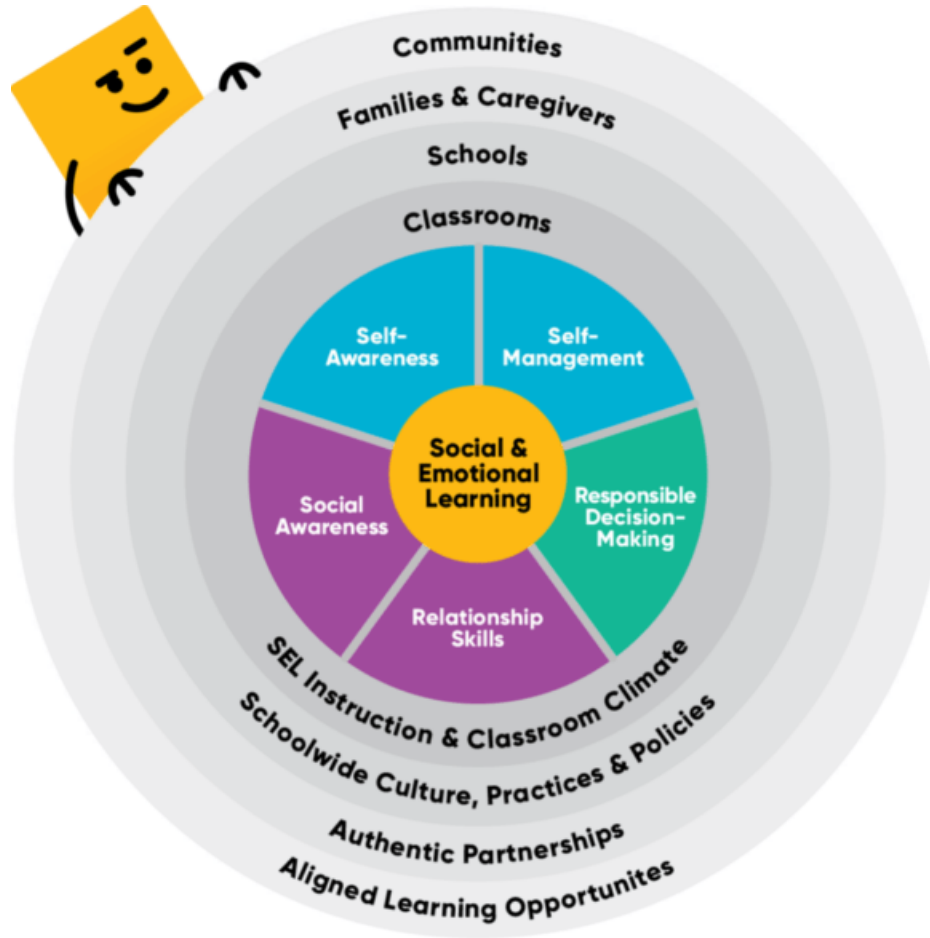
Take 30 seconds
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teaching idea about

**GE Food, Food Labels
or Health Claims**

5



Social-
Emotional
Learning



SOURCE: CASEL



Roles of Nutrition:

1. Food security
2. Hydration
3. Highly Processed Food

Take Home Messages

1. Vitamin D, phytochemicals (e.g., sulfuraphane) and obesity are associated with COVID-19 severity.
2. Saturated fat does not have causal effect on heart disease.
3. Diabetes is associated with increased risk for pancreatic cancer.
4. Use artificial sweeteners as a (temporary) diet modification to reduce sugar intake.
5. GE food remains important in fighting hunger but environmental issues increased health risk (e.g., cancer).
6. Social-Emotional Learning improves learner's well-being regardless of race, socioeconomic background or school location.



6



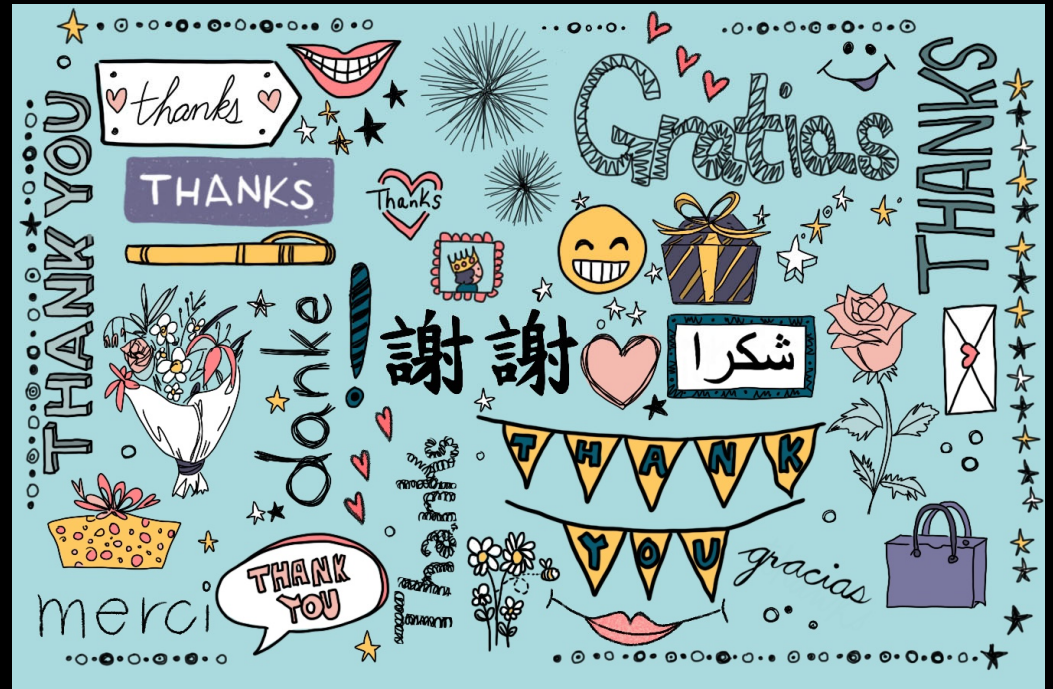
Q&A



bit.ly/Nutrition32922

Job Opportunities

1. BPHS/Nutrition
Nutrition Instructor (RD)
jobs.oregonstate.edu/postings/114931
2. Join our team!
Moore Family Center EPA2
jobs.oregonstate.edu/postings/116558
(need a Search Advocate)



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