## Special Diets and **Common Food Allergens** in School Nutrition **UMES** Dietetic Interns 2022

#### **Presentation Overview**

- Food Allergies
  - Presented by Kate Barrett or Julie Schoonover
  - Common food allergies, prevent cross contact
- Special Diets
  - Presented by Andrea Peller or Katelyn Alexander
  - Background, what to include/avoid, & how to accommodate in a school setting (Kosher, Halal, Vegetarian, Vegan, Diabetes, FODMAP, GF)
- Alpha Gal Syndrome
  - Presented by Michelle Dix or Jaclyn Wahner
  - Etiology of Alpha-gal syndrome, signs and symptoms, food products to avoid and cross contamination

## Food Allergies



#### Fun Fact!



# How many students per classroom on average do you think have a food allergy?

Roughly 2 in EVERY classroom.



#### Food Allergies Overview

- 32 million people in the United States have a food allergy<sup>1</sup>
  - This equates to 1 in 10 adults and 1 in 13 children<sup>1</sup>

• Every 3 minutes, a food allergy reaction sends someone to the emergency room<sup>1</sup>



Food Allergies Overview

- The Big 8 Allergens
  - Wheat
  - Fish
  - Milk
  - Eggs
  - Peanuts
  - Soy
  - Tree Nuts
  - Shellfish / Fish
- How to Eliminate Possibilities of Cross Contact
- Resources for Training
- Recognizing and Responding to Allergic Reactions









• Affects up to 1% of children in the US<sup>1</sup>

- Celiac Disease (CD)
  - Allergy to Gluten
  - Protein found in Wheat, Barley, and Rye
  - CD affects about 0.5 1% of the population<sup>2</sup>

- Substitutions<sup>3</sup>
  - $\circ$  Rice or Corn Cereals
  - Corn Flour Tortillas
    - Products made from
       gluten free flours
       (corn, protato, rice,
       bean (pea or lentil),
       nut (almond))
  - Quinoa
  - Wheat-Free/GlutenFree Products

#### Wheat Allergy



- Food Sources<sup>1</sup>
  - White or Whole Wheat Bread
  - Pasta, orzo
  - Baked Goods
  - Cereals
  - Crackers
  - Pizza Dough
  - Flour based baking sprays
  - Processed Meats (Hamburger patties, meatballs)



#### Wheat Allergy

- On the Label<sup>1</sup>
  - Wheat
  - Bran
  - Bread Crumbs
  - o Bulgur, Farina
  - Cereal Extract
  - All purpose flour
  - Hydrolyzed vegetable protein
  - Malt / Malt extract
  - Graham flour (Graham crackers)
  - Semolina (pasta)



Amount in 45 y cereal

**INGREDIENTS:** WHOLE GRAIN WHEAT, SUGAR/GLUCOSE-FRUCTOSE, HONEY, MALTED CORN AND BARLEY SYRUP, ARTIFICIAL FLAVOUR, SALT, THAUMATIN.

**VITAMINS AND MINERALS:** THIAMINE MONONITRATE (B1), NIACINAMIDE, PYRIDOXINE HYDROCHLORIDE (B6), CALCIUM PANTOTHENATE, FOLIC ACID, IRON. BHT IS ADDED TO PACKAGE MATERIAL TO HELD MAINTAIN PRODUCT FRESHNESS. (D040I).

**CONTAINS: WHEAT & BARLEY.** 



#### Milk Allergy

- Most Common Allergen in Infants and Young Children<sup>1</sup>
  - Varies between 0.25% 4.9% of the population<sup>4</sup>



- Substitutions<sup>5</sup>
  - O Butter → Dairy Free
     Margarine
  - Yogurt, Sour Cream,
     Cheese, Cream Cheese
     → Soy based, Coconut
     based, Oat based and
     Pea based versions
  - Milk → Soy based,
     Coconut based,
     Rice Based, Nut based,
     Oat based versions

## Milk Allergy



- Food Sources<sup>1</sup>
  - MILK (All Forms)
  - Butter
  - Buttermilk
  - Cheese
  - Cream
  - Sour Cream
  - Custard / Pudding
  - Ice Cream
  - Half and Half
  - Yogurt



#### Milk Allergy



- On the Label<sup>1</sup>
  - Contains Milk
  - Casein
  - Whey
  - Lactose
  - Lactulose
  - Lactoferrin

MADE WITH SMILES AND ENRICHED WHEAT FLOUR (FLOUR, NIACIN, REDUCED IRON, THIAMINE MONONITRATE, RIBOFLAVIN FOLIC ACID), CHEDDAR CHEESE ([CULTURED MILK, SALT, ENZYMES], ANNATTO), CANOLA AND/OR SUNFLOWER OILS OR LESS OF: SALT, YEAST, SUGAR, CONTAINS 2 PERCENT AUTOLYZED YEAST, DAKING SODA, MONOCALCIUM PHOSPHATE. APRIKA, SPICES, CELERY, ONION POWDER. CONTAINS: WHEAT, MILK. 910008005311 8547-8-14E Partially Produced with Genetic Engineering





 Affect up to 2% of Children<sup>1</sup>
 40% of Children that have a Tree Nut Allergy also have a Peanut Allergy<sup>1</sup>

- Substitutions <sup>5</sup>
  - Almond Butter
  - Pumpkin Seeds
  - Sunflower Seeds
  - Chickpeas
  - Sunflower Butter
  - Soy Butter

#### Peanut Allergy



- Food Sources<sup>1</sup>
  - Peanut Butter
  - Mixed Nuts
  - Artificial Nuts
  - Ground Nuts



#### Peanut Allergy



- On the Label<sup>1</sup>
  - Contains Nuts or Contains Peanuts
  - Arachis Oil/Peanut Oil
  - Lupin
  - Peanut Flour
  - Peanut Protein





#### Tree Nut Allergy

- 2% of Children are Allergic to Tree Nuts<sup>1</sup>
- 50% of Children that are Allergic are Allergic to Another Tree Nut<sup>1</sup>

- Substitutions<sup>7</sup>
  - $\circ$  Nuts  $\rightarrow$  Seeds
  - $\circ$  Nuts  $\rightarrow$  Beans
  - $\circ$  Nuts  $\rightarrow$  Pretzels



#### Tree Nut Allergy

- Food Sources<sup>1</sup>
  - Almond
  - Artificial Nuts
  - Beechnut
  - Brazil Nut
  - Cashew
  - Chestnut
  - Hazelnuts
  - Macadamia
  - Pecans
  - Pistachios
  - Walnuts



#### Tree Nut Allergy

- On the label<sup>1</sup>
  - May contain peanuts or tree nuts
  - Nut Distillates
  - Nut Oils
  - Nut Pastes

#### Nutrition Facts Valeur nutritive Per 1/2 cup (125 mL)

Per 1/2 cup (125 mL) pour 1/2 tasse (125 mL)

Amount Teneur ?	% Daily Value % valeur quotidienne		
Calories / Calories 120			
Fat / Lipides 3.5 g	5%		
Saturated / saturés 2 g + Trans / trans 0.1 g	11 %		
Cholesterol / Cholesté	rol 10 mg		
Sodium / Sodium 40 m	9 2%		
Carbohydrate / Glucide	15 20 g 7 %		
Fibre / Fibres 0 g	0%		
Sugars / Sucres 14 g			
Protein / Protéines 1 g			
Vitamin A / Vitamine A	4%		
Vitamin C / Vitamine C	0%		
Calcium / Calcium	4%		
Iron / Fer	0%		

INGREDIENTS: LIGHT ICE CREAM: MODIFIED MILK INGREDIENTS, FRESH CREAM, SUGAR, GLUCOSE, PURE GROUND VANILLA BEANS, NATURAL FLAVOUR, MONO AND DIGLYCERIDES, GUAR GUM, CAROB BEAN GUM, CARRAGEENAN, NATURAL COLOUR.

#### CONTAINS MILK. MAY CONTAIN PEANUTS AND TREE NUTS.

INGRÉDIENTS : CRÈME GLACÉE LÉGÈRE : SUBSTANCES LAITIÈRES MODIFIÉES, CRÈME FRAICHE, SUCRE, GLUCOSE, GOUSSES DE VANILLE PURE MOULUES, ARÔME NATUREL, MONO ET DIGLYCÉRIDES, GOMME DE GUAR, GOMME DE CAROUBE, CARRAGHÉNINE, COLORANT NATUREL.

CONTIENT DU LAIT. PEUT CONTENIR DES ARACHIDES ET DES FRUITS À COQUE.



#### Soy Allergy

- 0.6% of all U.S. adults have a soy allergy<sup>8</sup>
- Substitutes
  - Soy sauce: balsamic vinegar, olive brine, soy-free miso<sup>11</sup>
  - Miso: non-soy variations made from beans and rice
  - Soy milk: plant-based milks like cashew milk, oat milk, almond milk, rice milk, pea milk
  - Soy protein meat alternatives: seitan, legumes<sup>12</sup>



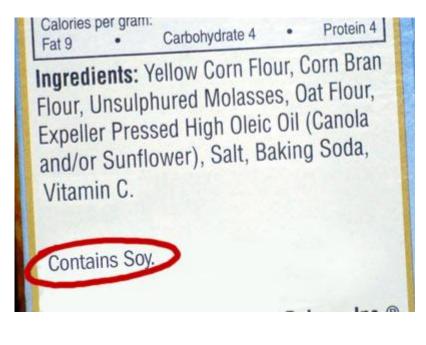
#### Soy Allergy

- In our diet:
  - Edamame, Tofu
  - Soymilk
  - Tempeh, Miso
  - Soy sauce (includes teriyaki, tamari, & shoyu sauces)
  - Soy flour
  - Meat alternatives that contain soy protein
  - Soy nuts
  - Soybean oil
  - Margarine<sup>9</sup>



#### Soy Allergy

- On the food label:
  - Hydrolyzed soy protein
  - Natto
  - Textured vegetable protein
     (TVP)<sup>10</sup>





## Fish Allergy

• 0.9% of all U.S. adults have a fish allergy<sup>8</sup>

- Substitutes<sup>1</sup>
  - Fish-based sauce: soy sauce, Tabasco sauce



#### Fish Allergy

Food Sources:<sup>1</sup>

- Fish sticks
- Caesar salad dressing, bouillabaisse, anchovy sauce
- Worchestire sauce
- Caponata
- All fish, including:
  - Bass, catfish, cod
  - Flounder, grouper, haddock
  - Hake, halibut, herring
  - Mahi mahi, perch, pike
  - Pollock, salmon, snapper
  - Swordfish, tilapia, trout, tuna



#### Fish Allergy

- On the food label:<sup>1</sup>
  - Fish flavoring
  - Fish gelatin
  - Fish oil





#### Shellfish Allergy

 2.9% of all U.S. adults have a shellfish allergy<sup>8</sup>

- Substitutions
  - Replace shellfish in dishes with fin fish



#### Shellfish Allergy

- Food Sources:<sup>1</sup>
  - Barnacle, crab, crawfish, krill, lobster, shrimp, prawns
  - May need to avoid: mollusks, including clams, mussels, octopus, oysters, scallops, snails, squid
  - Shellfish may be found in Bouillabaisse, fish stock, crab or clam extract in seafood flavorings, fish sauce



#### Shellfish Allergy

- On the Label:<sup>1</sup>
  - Contains Shellfish
  - Crab, shrimp, lobster

			%DV*
	14%		2%
Sat. Fat 2.5g	13%	Dietary Fiber 0g	0%
Trans Fat 0g			
Cholesterol 50m	ng <b>17</b> %	Incl. 0g Added Sug	ars 0%
Sodium 220mg	10%	Protein 20g	
Vitamin D 0% • Ca	lcium 2%	• Iron 30% • Potass	sium 2%
OCCASIONA WARNING: CO	LLY SHELL	FRAGMENTS MAY BE PRE his product can expose you t	SENT. o chemical
	Amount/Serving Total Fat 11g Sat. Fat 2.5g <i>Trans</i> Fat 0g Cholesterol 50m Sodium 220mg Vitamin D 0% • Ca CAUTION: IN OCCASIONAL WARNING: Ca	Amount/Serving       %DV*         Total Fat 11g       14%         Sat. Fat 2.5g       13%         Trans Fat 0g       10%         Cholesterol 50mg 17%       50dium 220mg         Sodium 220mg       10%         Vitamin D 0% • Calcium 2%       CAUTION: IN SPITE OF OCCASIONALLY SHELL         WARNING: Consuming the second sec	Amount/Serving%DV*Amount/ServingTotal Fat 11g14%Total Carb. 5gSat. Fat 2.5g13%Dietary Fiber 0gTrans Fat 0gTotal Sugars 0gCholesterol 50mg 17%Incl. 0g Added Sug



Egg Allergy

• 0.8% of U.S. adults have an egg allergy<sup>8</sup>



- Substitutions
  - In baking, eggs can be replaced by applesauce, mashed banana, yogurt or buttermilk, and soy lecithin<sup>13</sup>
  - Egg substitutes in grocery stores are designed for cholesterol monitoring, not those with egg allergies. They often still contain egg and should not be used.<sup>14</sup>

### Egg Allergy

- Food Sources:<sup>1</sup>
  - Eggs, egg white, eggnog, mayonnaise, meringue
  - Baked goods, breakfast foods (French Toast, Waffles)
  - Breads
  - Cake frosting
  - Chips, crackers, pretzels
  - Hollandaise sauce, salad dressings
  - Ice cream, custard, sorbet
  - Lecithin
  - Marzipan, marshmallows, nougat
  - Pasta, souffle, tortillas
  - Quiche
  - Tartar Sauce



#### Egg Allergy

- On the food label:<sup>1</sup>
  - ° Albumin
  - ° Apovitellin
  - ° Avidin globulin
  - ° Lysozyme
  - Ovalbumin, ovomucoid, ovomucin, ovovitellin
  - ° Surimi
  - ° Vitellin

#### Kellogg's® Eggo® Waffles *Cinnamon Toast*

	ition Fac 3 (Sets of 4) Waffles		lower depen	ly Values a Your daily va ding on your Calories	alues may b calorie nee 2,000	e higher or ds: 2,500
			Total Fat Sat. Fat	Less than Less than	65g 20g	80g 25g
Amount Pe	er Serving		Cholesterol Sodium	Less than Less than		300mg 2,400mg
Calories	300 Calories from F	at 100	Potassium		3,500mg	3,500mg
% Daily Value*			Total Carbohy Dietary Fiber		300g 375g 25g 30g	
Total Fa	<b>it</b> 11g	17%	Ingradiante	Enriched flou	ur (wheat flo	ur niacin
Saturate	ed Fat 3g	15%	Ingredients: Enriched flour (wheat flour, niacin, reduced iron, vitamin B <sub>1</sub> [thiamin mononitrate], vitamin B <sub>2</sub> [riboflavin], folic acid), water, sugar,			
Trans F	at Og					
Cholesterol 10mg 3%			vegetable oil (soybean, palm, and/or canola oil),			
Sodium	480mg	20%	eggs, contain			g (baking
	<b>um</b> 65mg	2%	soda, sodium			aalt
Total Ca	rbohydrate 46g	15%	monocalcium whey, soy lec			sait,
Dietary	Fiber 1g	5%	Vitamins and			onate
Sugars	17g		vitamin A pali			
Protein	5g		vitamin B12, V	vitamin B <sub>6</sub> (p	yridoxine	
Vitamin A	30% • Vitamin C	0%	hydrochloride hydrochloride			<b>`</b>
Calcium	25% • Iron	35%			•	1200
Thiamin	30% • Riboflavin	30%		NS WHE		
Niacin	30% • Vitamin B <sub>6</sub>	30%	AND	SOY ING	REDIEN	15.
Folic Acid	15% • Vitamin B12	2 30%				
Phosphorus	25%					

NLI#09133

#### How to Prevent Cross Contact of Food Allergens

- Use separate storage areas for allergen foods and allergen-free foods<sup>15</sup>
  - Use color coding or tagging to label containers as containing allergen or allergen-free foods

- Wash hands with warm soapy water before handling allergen-free foods or equipment<sup>16</sup>
  - Hand sanitizer gel is not sufficient to remove allergens



### How to Prevent Cross Contact of Food Allergens

- Dedicate a separate preparation area with separate equipment, including employee gloves or aprons, utensils, cutting boards, and other tools to handle allergen-free foods<sup>15</sup>
  - The color purple is often used to mark allergen-free equipment
  - Using the same oil for frying can cross contaminate foods (shellfish fried in oil, then frying chicken tenders)
  - Use separate equipment for allergies such as toasters and a wheat or gluten allergy
  - Clean equipment with warm soapy water after use and store separate from other equipment
- Prepare and serve allergen guests first<sup>17</sup>



#### Allergen Training Programs



- Allertrain offers a variety allergen training courses that address allergen-containing foods, protocol for preparation, and how to avoid cross contact<sup>18</sup>
- <u>https://www.allertrain.com/allertrain/allertrain-allertrain-u</u>

- ServSafe Allergens Training course includes information about proper cleaning methods, recognizing allergy symptoms, and how to handle food allergies in front of the house and back of the house operations<sup>19</sup>
- <u>https://www.servsafe.com/allergens/the-course</u>

#### Allergen Training Programs



- **FARE Training** provides access to training and resources that help make the world a safer and more inclusive place for those managing food allergies<sup>20</sup>
- <u>https://www.foodallergy.org/our-initiatives/education-programs-training/fare-tr</u>
   <u>aining</u>

- **360 Training** ANSI accredited food allergy course covers the top 8 allergens<sup>21</sup>
- <u>https://www.360training.com/course/ansi-accredited-food-allergy-training</u>

#### Handling an Allergic Reaction

- 1. Recognize Signs & Symptoms of an Allergic Reaction
  - a. Swollen Lips, Tongue, or Eyes, Rash/Hives, Trouble Breathing, Fainting, Dizziness, or Confusion



- 2. Have a care plan in place
  - a. Each student should have an individualized care plan that gets activated upon recognition of symptoms
  - b. Call the School Nurse the student should not be sent to the school nurse alone

- 3. Anaphylaxis?
  - a. Be ready and trained to administer an epipen
  - b. Call 911 All students that receive an epipen injection should be seen and monitored in an emergency care setting.<sup>22</sup>



Anyone wanna give it a shot? What allergens are present in this meal choice?

#### Lunch i w/ Meat Sauce & Garlic Breadstick Crispy Fish Sticks w/ Roll Steamed Green Beans Garden Salad w/ Tomatoes **Cool Tropics Slush Assorted Fresh Fruit**

- Wheat Allergy: Spaghetti Pasta, Breadstick, and Roll
- Fish Allergy: Crispy Fish Sticks
- Check labels/ingredients for hidden allergens!



# **Special Diets**



### Special Diets

- Diets
  - Religious (Kosher and Halal)
  - Low FODMAP
  - Vegan and Vegetarian
  - Gluten Free Celiac
  - o Gluten Free, Casein Free
  - Diabetes

- Discuss
  - Background and cause
  - What to include and

avoid

• How to accommodate in

a school setting

#### TRUE OR FALSE?

The Kosher diet avoids the consumption of pork, but Halal does not.



### Religious Dietary Practices: Kosher

• Kosher foods are based on what the Jewish dietary law allow

• The Jewish law, Halakha, decides which foods may be consumed (to be considered kosher)

• Some people may only follow certain rules



#### Kosher: What's Allowed

- Mammals (split hooves and chews cud)
  - Cows, sheep, goats and deer
- Fowl
  - Chicken, ducks, geese, & turkeys
- Fish and seafood **only** if it has fins and scales
  - Salmon, tuna, pike, flounder, carp and herring

#### Kosher: What's Not Allowed

- Mammals:
  - Pigs, rabbits, squirrels, bears, camels and horses
- Reptiles, amphibians, worms and insects
- Fish and seafoods:
  - Catfish, sturgeon, swordfish, lobster, shellfish, crabs and all water mammals (whales, dolphin)



### **Religious Dietary Practices: Halal**

- Pew Research Center approximately 3.4 million people of all ages observing Islamic faith in the U.S (2017)<sup>7</sup>
- Islamic dietary laws defined in the Quran
- Look for Halal symbols on packaged products & meats



### Halal: What's Allowed<sup>6</sup>

- Certified Halal meat and deli meat, poultry, seafood, nuts, eggs, legumes, soy
- Grains (free of alcohol/gelatin/animal fat)
- All fruits and vegetables
- Dairy (milk, yogurt, cheese, and ice cream made with bacterial culture without animal rennet)



### Halal: What's Not Allowed

- Pork and all pork products, non-certified poultry or beef, products prepared with alcohol or animal fats
- Dairy (cheese, yogurt and ice cream) made with animal rennet, vanilla extract, gelatine, pepsin, or lipase
- Fruit/vegetable dishes containing alcohol, gelatin, animal fat
- Grains containing alcohol, animal fat, gelatin



#### ODERN ABOUT MODERN ON

ne new organic line of superfinite out ution to a holistic, deliciouz, on the of the day.

entioning some of the world's healthle organic fruits and craft them with our orm selected, premium, thickor who as for a delicious blend of super cate

#### HAVE A NICE DAY.

Passe visit us @ www.modernoats.com

Way not be recyclable in certain municipalities or con Lift is not recyclable.



#### What's Not Appropriate for Kosher & Halal?

Monday, October 3	Tuesday, October 4	Wednesday, October 5	Thursday, October 6	Friday, October 7
Breakfast	Breakfast	Breakfast	Breakfast	Breakfast
Asst. Bread Slices	Breakfast Bar	Blue Jay Breakfast Sandwich	Pigglestick	Asst. Muffins
Fruit & Juice Variety	Fruit & Juice Variety	Fruit & Juice Variety	Fruit & Juice Variety	Fruit & Juice Variety
Lunch	Lunch	Lunch	Lunch	Lunch
Classic Chicken Wings w/ Roll	Walking Taco	Papa John's Pizza	French Toast Sticks	Nashville Hot Chicken w/ Roll
or	or	or	w/ Sausage	or
Fish Nuggets w/ Roll	Chicken Fajita Wrap	Mandarin Orange Chicken	or	Italian Sub
Steamed Mixed Vegetables	Chipotle Bean Salad	w/ Rice	Breakfast Pizza	Potato Smiles
Cucumber Cup	Shredded Lettuce & Tomato	Steamed Broccoli	Crunchy Tator Tots	Celery Cup
Cool Pears	Cool Pears	Cucumber Cup	Baby Carrots	Appleslices
Assorted Fresh Fruit	Assorted Fresh Fruit	Frozen Fruit Cup	Chilled Orange Juice	Assorted Fresh Fruit
	NATIONAL TACO DAY	Assorted Fresh Fruit	Assorted Fresh Fruit	WORLD SMILE DAY

# Accommodations in School Setting

- Knowing the student population. Collect with student demographics
- Check the product's label or packaging to see if it is Halal certified
  - Keep in mind what is and is not Kosher!
- Having food items and products available that are allowed/Halal certified
- Some vegetarian/vegan options may be intended to accommodate.
  - Avoid cross-contamination!
- OVS (offer vs. serve)



# ANYONE WANT TO GIVE IT A SHOT?



- F
  - 0
- D
- M A
- P



## Low FODMAP

• Fermentable oligosaccharides, disaccharides, monosaccharides and polyols. Say what?

These short-chain carbohydrates (sugars) absorb poorly in the small intestine.<sup>4</sup>

- Designed to help people with irritable bowel syndrome (IBS)
- Most frequently prescribed food plan to help relieve IBS symptoms (gas, bloating, abdominal pain, altered BMs)
- Short-term diet in 3 phases

# High FODMAP Foods: What To Avoid<sup>3</sup>

- Fruits (excess fructose and/or sorbitol): apples, pears, mangos, cherries, figs, watermelon, dried fruit, blackberries, plums, peaches
- Vegetables (fructans and/or mannitol): artichoke, garlic, leek, all types of onion, mushrooms, cauliflower, snow peas
- Grains/cereals (fructans):

rye bread, muesli containing wheat, wheat products (wheat pasta, bread, crackers) • Legumes

**(galacto-oligosaccharides):** most legumes, particularly red kidney beans, split peas, baked beans, chickpeas/falafel

Nuts/seeds (fructans and galacto-oligosaccharides):
 pistachios and cashews

# High FODMAP Foods: What To Avoid<sup>3</sup>

- Meats: processed and/or marinated due common ingredients (garlic, onion)
- Dairy products/alternatives

(lactose): soft cheeses, milk, yogurt, custard, ice cream, sweetened condensed milk and Soy milk from whole soybeans  Sweeteners (fructose and sugar polyols such as sorbitol, xylitol, erythritol): honey, high fructose corn syrup (HFCS) in juice/candy

• **Condiments** that may contain garlic and/or onions (marinades, sauces)

# Low FODMAP Foods: What To Include<sup>3</sup>

- Fruits: cantaloupe, kiwis, oranges, pineapples
- Vegetables: eggplant, green beans, bok choy, carrots, green bell peppers, lettuce, potatoes, zucchini, cucumbers
- Dairy products/alternatives: almond milk, hard cheeses, few soft cheeses (feta, brie), lactose-free milk, soy milk (made from soy protein)

Nuts/seeds: macadamias, 

peanuts, pumpkin seeds/pepitas,

walnuts

Meat/protein: eggs, firm tofu, plain cooked meats/seafood/poultry, tempeh

# Low FODMAP Foods: What to Include<sup>3</sup>

- **Grains/cereals:** corn flakes, oats, quinoa/rice (brown, wild) or corn pasta, rice cakes, sourdough spelt bread, wheat/rye/barley free breads
- **Sweeteners:** dark chocolate, maple syrup
- **Condiments:** mayonnaise, soy sauce, BBQ sauce, chutney

#### What's Not Appropriate on a Low FODMAP Diet?

Monday, October 3	Tuesday, October 4	Wednesday, October 5	Thursday, October 6	Friday, October 7
Breakfast	Breakfast	Breakfast	Breakfast	Breakfast
Asst. Bread Slices	Breakfast Bar	Blue Jay Breakfast Sandwich	Pigglestick	Asst. Muffins
Fruit & Juice Variety	Fruit & Juice Variety	Fruit & Juice Variety	Fruit & Juice Variety	Fruit & Juice Variety
Lunch	Lunch	Lunch	Lunch	Lunch
Classic Chicken Wings w/ Roll	Walking Taco	Papa John's Pizza	French Toast Sticks	Nashville Hot Chicken w/ Roll
or	or	or	w/ Sausage	or
Fish Nuggets w/ Roll	Chicken Fajita Wrap	Mandarin Orange Chicken	or	Italian Sub
Steamed Mixed Vegetables	Chipotle Bean Salad	w/ Rice	Breakfast Pizza	Potato Smiles
Cucumber Cup	Shredded Lettuce & Tomato	Steamed Broccoli	Crunchy Tator Tots	Celery Cup
Cool Pears	Cool Pears	Cucumber Cup	Baby Carrots	Appleslices
Assorted Fresh Fruit	Assorted Fresh Fruit	Frozen Fruit Cup	Chilled Orange Juice	Assorted Fresh Fruit
	NATIONAL TACO DAY	Assorted Fresh Fruit	Assorted Fresh Fruit	WORLD SMILE DAY

## Accommodations in School Setting

- Offering low FODMAP choices:
  - Fruits/100% fruit juices (cantaloupe, kiwis, oranges, pineapples)
  - Vegetables (eggplant, green beans, bok choy, carrots, green bell peppers, lettuce, potatoes, zucchini, cucumbers)
  - Soymilk (made from soy protein)
  - Meat/meatless protein sources without seasonings/marinades, no heavy processing

Able to combine dietary restrictions and make one dish appropriate for all... Example - quinoa pasta with freshly made tomato basil sauce and a side of buttered green beans. This meal would be appropriate for those practicing a vegetarian, GF, Halal, and/or low FODMAP diet.



#### ACCEPTABLE?

This breakfast option is appropriate on a vegan diet. T or F?



Vegetarian / Vegan What's the Difference?

### Vegan

- No animal products

   (dairy, eggs, meat, seafood/fish, honey, by-products of slaughter,
   i.e. gelatin/stock/fat)
- Anything that comes from an animal is avoided



## Vegetarian / Vegan What's the Difference?

#### Vegetarian

 No meat consumption (poultry, beef, pork, seafood, and by-products of animal slaughter, i.e. gelatin/stock/fat)

 May branch into less restrictive diets (ovo, lacto, lacto-ovo, pescatarian, flexitarian)



# Vegetarian / Vegan: Read the Label

- Label reading is essential, especially with vegetarian/vegan diets
- Meat, meat by-products, milk, and eggs tend to be hidden in a lot of unexpected items
- Such as: condiments, sauces, ready-to-eat prepared dishes



# Vegetarian/Vegan: What to Include?

### Vegan

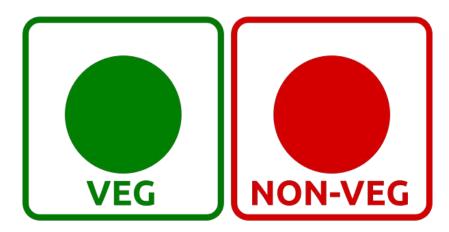
- Abundance of fruits and vegetables + appropriately fruit/veg prepared dishes (no animal fat/stock)
- Grains (pasta, rice, bread)
- Nuts and seeds
- Legumes (beans, lentils, and peas)



# Vegetarian/Vegan: What to Include

#### Vegetarian

- Depends on the type of vegetarian!
- Abundance of fruits and vegetables
   + appropriately prepared fruit/veg
   dishes (no animal fat/stock)
- Grains (pasta, rice, bread)
- Nuts and seeds
- Legumes (beans, lentils, and peas)









#### What's Not Appropriate on a Vegetarian Diet?

Monday, October 3	Tuesday, October 4	Wednesday, October 5	Thursday, October 6	Friday, October 7
Breakfast	Breakfast	Breakfast	Breakfast	Breakfast
Asst. Bread Slices	Breakfast Bar	Blue Jay Breakfast Sandwich	Pigglestick	Asst. Muffins
Fruit & Juice Variety	Fruit & Juice Variety	Fruit & Juice Variety	Fruit & Juice Variety	Fruit & Juice Variety
Lunch	Lunch	Lunch	Lunch	Lunch
Classic Chicken Wings w/ Roll	Walking Taco	Papa John's Pizza	French Toast Sticks	Nashville Hot Chicken w/ Roll
or	or	or	w/ Sausage	or
Fish Nuggets w/ Roll	Chicken Fajita Wrap	Mandarin Orange Chicken	or	Italian Sub
Steamed Mixed Vegetables	Chipotle Bean Salad	w/ Rice	Breakfast Pizza	Potato Smiles
Cucumber Cup	Shredded Lettuce & Tomato	Steamed Broccoli	Crunchy Tator Tots	Celery Cup
Cool Pears	Cool Pears	Cucumber Cup	Baby Carrots	Appleslices
Assorted Fresh Fruit	Assorted Fresh Fruit	Frozen Fruit Cup	Chilled Orange Juice	Assorted Fresh Fruit
	NATIONAL TACO DAY	Assorted Fresh Fruit	Assorted Fresh Fruit	WORLD SMILE DAY

#### What's Not Appropriate on a Vegan Diet?

Monday, October 3	Tuesday, October 4	Wednesday, October 5	Thursday, October 6	Friday, October 7
Breakfast	Breakfast	Breakfast	Breakfast	Breakfast
Asst. Bread Slices	Breakfast Bar	Blue Jay Breakfast Sandwich	Pigglestick	Asst. Muffins
Fruit & Juice Variety	Fruit & Juice Variety	Fruit & Juice Variety	Fruit & Juice Variety	Fruit & Juice Variety
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Classic Chicken Wings w/ Roll	Walking Taco	Papa John's Pizza	French Toast Sticks	Nashville Hot Chicken w/ Roll
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	NATIONAL TACO DAY	Assorted Fresh Fruit	Assorted Fresh Fruit	WORLD SMILE DAY

# Accommodations in School Setting

- Knowing the student population. A questionnaire or survey, collecting student demographics
- Offering a daily vegetarian/vegan entree (Meatless Mondays)
- Alterations of recipes
- OVS (offer vs. serve)



# Meat Alternatives: OVS<sup>1</sup>

- Cheese (1 oz equivalent)
- Yogurt ( $\frac{1}{2}$  c = 1 oz equivalent)
- Soy yogurt ( $\frac{1}{2}$  c = 4 oz equivalent)
- Canned beans/legumes (<sup>1</sup>/<sub>4</sub> c cooked = 1 oz equivalent)
- Whole eggs (1 large egg = 2oz)
- Tofu (1 oz equivalent)
- Tempeh (1 oz equivalent)
- Peanut butter or other nut or seed butters
   (2 3 tbsp = 1 1<sup>1</sup>/<sub>2</sub> oz equivalent)
- Nuts and seeds (2 tbsp = 1 oz equivalent)



Required	Daily Minimum Requirements for Each Grade Level				
Food Component	K-5	6-8	K-8	9-12	
Vegetables	¾ cup	¾ cup	¾ cup	1 cup	
Fruits	1/2 cup	1/2 cup	1/2 cup	1 cup	
Grains	1 oz eq	1 oz eq	1 oz eq	2 oz eq	
Meats/Meat Alternates	1 oz eq	1 oz eq	1 oz eq	2 oz eq	
Fluid Milk*	1 cup	1 cup	1 cup	1 cup	

OVS is required for lunches served in high schools, but is optional in middle and elementary schools. OVS is not required for meals offered as part of field trips or for any other meals served away from the school campus.<sup>2</sup>

#### TREATMENT FOR CELIAC DISEASE

Fill in the blank

A \_\_\_\_\_ is the only possible treatment for Celiac disease.

# Gluten Free (Celiac Diet)<sup>8</sup>

Eating gluten causes a reaction that leads to damage in the small intestine for people with celiac disease



 The lining of the small intestine becomes damaged and prevents it from absorbing important nutrients of foods

### What to Avoid

#### "BROW"

- Barely
- Rye
- Oats
- Wheat



- Oats are usually gluten free, but are excluded from diet because usually contaminated
- Varieties of wheat
  - Durum, einkorn, emmer, kamut, spelt

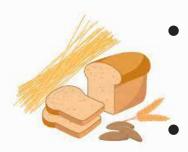
### Safe Foods to Eat

- Allowed starches are **C**orn, **P**otatoes, and **R**ice
  - Acronym: **CPR**
  - Other grains, starches and flours included: amaranth, buckwheat, flax, millet, quinoa, sorghum, soy, tapioca, teff
- Example of gluten free flours:
  - Rice, soy, corn, potato, bean
- Naturally gluten free foods:
  - Fruits and vegetables
  - Eggs, non processed poultry, meat and fish
  - Most low-fat dairy products
  - $\circ$  Beans, seeds, legumes, nuts <sup>10</sup>

### How to Accommodate in School<sup>9</sup>

- 1. Have gluten-free options for foods such as bread, pasta, pizza and breaded foods
- 2. Be aware of cross-contamination while preparing and serving
- 3. Read nutrition labels on processed foods, powdered mixes, seasoning and snacks
- 4. Be willing to talk with students about their diet





# Gluten free -Casein free<sup>12</sup>

This diet is used for children with Autism Spectrum Disorder (ASD)

People who propose this diet believe autism can cause a "leaky gut", which would allow gluten and casein into the bloodstream. This could lead to autism or intensify the symptoms

Scientific research has not proven this is true and does not support the use of these diets



• ASD can affect people's eating habits and food choices because they often repeat behaviors or have restricted interests.

### What to Avoid and Include<sup>11</sup>

Avoid

- Casein
  - Milks, butters, cheeses, ice-cream, pudding, yogurt, cream cheese, sour cream
- Gluten

Barely, rye, oats, wheat
 Include

- Chicken, fish, meat
- Fruits and vegetables
- Potatoes, rice
- Cereal and pasta that is labeled "gluten-free"



### What to Substitute<sup>11</sup>

#### Substitutes

- Milk substitutes:
  - Almond milk, rice milk, soy milk
- Butter substitutes:
   (1 cup of margarine or butter is equal to <sup>3</sup>/<sub>4</sub> c of):
   Capola oil
  - Canola oil
  - Coconut oil
  - Olive oil
  - Safflower oil
  - Sunflower oil

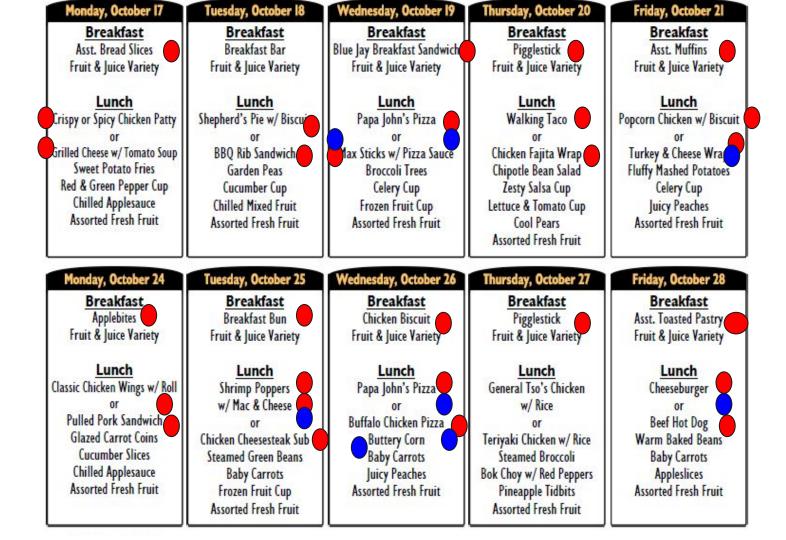


### How to Accommodate at School

Similar to gluten-free for celiac disease:

- 1. Offer gluten and casein free foods
- 2. Provide menus and nutrition labels
- 3. Be aware of cross-contamination







On average, children diagnosed with Type 1 or Type 2 diabetes are 13-14 years old, but a diagnosis for Type 1 can be much earlier. Schedule an appointment with your child's pediatrician if they have any of the following symptoms:

- Belly (abdominal) pain
- Blurry vision
- Cuts or bruises that heal slowly
- Extreme fatigue
- Feeling hungry despite eating
- Frequent urination (including bed wetting by potty-trained kids)
- Fruity smelling breath
- Increased thirst

- Irritability or behavior changes
- Nausea
- Tingling, pain or numbness in the hands or feet
- Very dry skin
- Weight loss without trying



#### Did you know?

210,000 children and adolescents younger than age 20 year (or 25 per 10,000 US youths) have been diagnosed with diabetes.

This includes 187,000 with type 1 diabetes (National Diabetes Statistics Report CDC, 2020).

# Diet for Diabetes<sup>13</sup>

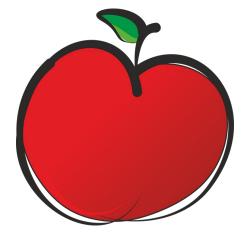


- If someone has diabetes, it means their blood glucose (sugar) is too high, but can also drop low
- Glucose comes from the foods we eat and the hormone insulin is produced in the body to lower and maintain blood glucose
- Maintaining healthy blood glucose levels is important for managing diabetes

# Carbohydrates<sup>14</sup>

- Carbohydrates are the body's preferred source of energy
- The Nutrition Facts Label lists the exact amount of grams
- The 3 types of carbs are: starches, sugars, and dietary fiber

 1 serving of carbohydrates is equal to 15 grams of carbohydrate



# Diabetes Meal Planning Tips<sup>13</sup>

- People with diabetes need an individual meal plan, but understanding serving sizes in relation to amount of carbohydrates is important
- Keep a variety of foods from each food group everyday!
- Aim for half of the plate being vegetables and fruits
  - Try more non starchy vegetables like leafy greens and carrots
  - Choose whole fruit more than fruit juices
- Other suggestions
  - Avoid skipping meals
  - Limit distractions while eating
  - Watch portion sizes by reading nutrition labels

### Foods to Include<sup>13</sup>

- Food examples:
  - Fruit and vegetables
  - Whole grains
    - Whole wheat, brown rice, barely, quinoa and oats
  - Protein
    - Lean meats, chicken, turkey, fish, eggs, nuts, beans, lentils, tofu
  - Non-fat or low-fat dairy products
    - Milk, yogurt, cheese



## Foods to Limit<sup>13</sup>



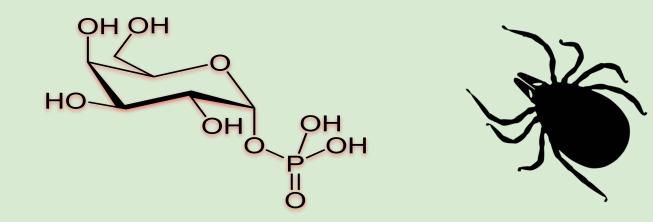
- Fat
  - Go for lean meats, poultry and fish
  - O Instead of frying → bake, broil, roast, grill, boil or steam foods
  - Try low-fat or fat-free dairy products
  - Swap out some meats for lentils or tofu
- Salt
  - Instead of salt, try using more pepper, herbs and seasonings

### How to Accommodate in School<sup>15,16</sup>

- 1. Provide menus, recipes, and product labels
- 2. Have planned portion sizes for menu items
- 3. The student's parents and health care providers should communicate with the school nurse to determine which foods they can have and if any portion sizes need to be changed for them



# Alpha Gal Syndrome





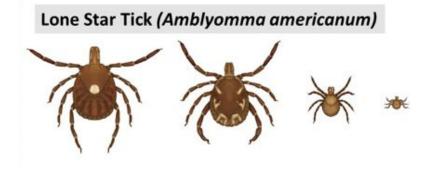
# Objectives

- Etiology of Alpha-gal syndrome
- Signs and symptoms
- Food products to avoid
- Cross contamination

### Alpha Gal Syndrome (AGS) 7



A food allergy of a sugar molecule (galactose-alpha-1,3-galactose) that is found in mammals and other mammal products



### Etiology 7

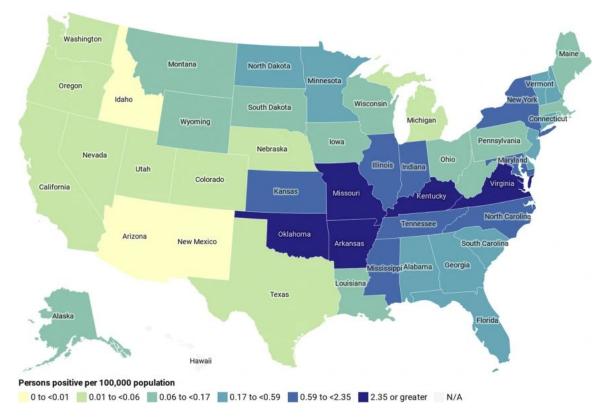
- Caused from the bite of a lone star tick
- Researchers believe they carry this molecule from the animals they typically bite like cows, lambs, sheep, etc. and inject it into humans<sup>7</sup>



#### Map of Lone Star Tick



#### Map of positive antibodies for Alpha Gal



This map shows the number of people per 100,000 population in each state testing positive for antibodies to alpha-gal.

### Signs and Symptoms<sup>2</sup>



- Hives or a rash
- Nausea or vomiting
- Diarrhea
- Heartburn
- Swelling of lips, thorat, tongue or eye lids
- Coughing, shortness of breath

### Signs and Symptoms<sup>2</sup>

- Symptoms commonly appear 2
   6 hours after eating meat or dairy products, or after exposure to products containing alpha-gal
- Reactions can be different from person-to-person, ranging from mild to severe or even life-threatening anaphylaxis

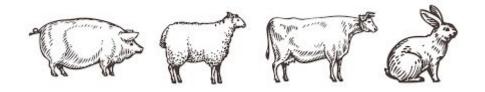


# What foods can I not eat?



### Foods and products to avoid <sup>3</sup>

- Most healthcare providers recommend patients with AGS stop eating mammalian meat such as beef, pork, lamb, venison, rabbit, etc.
- Depending on sensitivity and severity of the allergic reaction, may also suggest to avoid other foods and ingredients which may contain alpha-gal such as cow's milk, milk-products, and gelatin



### Foods and products to avoid <sup>3</sup>

Some people with AGS may also be sensitive to alpha-gal found in: • Gelatin made from beef or pork (hamburger, bacon, sausage)

- Products made from or cooked with mammalian fat (such as lard, tallow, or suet)
- Meat broth, bouillon, stock, and gravy



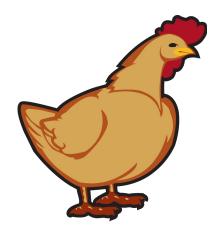
### Foods that do <u>NOT</u> contain Alpha-gal<sup>2</sup>

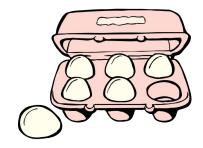
- Poultry, such as chicken, turkey, duck, or quail
- Eggs

 $\cap$ 

- Fish and seafood, such as shrimp
- Fruits and vegetables
- Nuts and seeds
  - Dairy alternatives (soy, almond based)







### Reducing Cross-Contamination In schools

- Keep utensils used for beef or pork separated from this students meals
- Label kitchen equipment designated for these students with this allergy
- Avoid using wooden or plastic kitchen utensils
- Use a different sponge for kitchen ware that is hand washed
- Thoroughly clean kitchen equipment, surfaces, deli slicer, deep fryer etc. to minimize cross contamination

Tuesday, October 18	Wednesday, October 19	Thursday, October 20	Friday, October 21
Breakfast	Breakfast	Breakfast	Breakfast
12 20 10 10 10 10 10 10 10 10 10 10 10 10 10			Asst. Muffins
	rruit & juice variety	Fruit & Juice Variety	Fruit & Juice Variety
Lunch	Lunch	Lunch	Lunch
Shepherd's Pie w/ Biscu t	Papa John's Pizza	Walking Taco	Popcorn Chicken w/ Biscuit
OF RRO Rib Sandwich	Or Max Sticks w/ Pizza Sauch	Or Chicken Faiita Wran	or Turkey & Cheese Wrap
			Fluffy Mashed Potatoes
			Celery Cup
Chilled Mixed Fruit	Frozen Fruit Cup		Juicy Peaches
Assorted Fresh Fruit	Assorted Fresh Fruit	Cool Pears	Assorted Fresh Fruit
	Breakfast Breakfast Bar Fruit & Juice Variety Lunch Shepherd's Pie w/ Biscu t or BBQ Rib Sandwich Garden Peas Cucumber Cup Chilled Mixed Fruit	Breakfast Breakfast Bar Fruit & Juice VarietyBreakfast Blue Jay Breakfast Sandwich Fruit & Juice VarietyLunch Shepherd's Pie w/ Biscut orLunch Papa John's Pizza orBBQ Rib Sandwich Garden Peas Cucumber Cup Chilled Mixed FruitMax Sticks w/ Pizza Sauce Cleery Cup Frozen Fruit Cup	Breakfast Breakfast Bar Fruit & Juice VarietyBreakfast Blue Jay Breakfast Sandwich Fruit & Juice VarietyBreakfast Pigglestick Fruit & Juice VarietyLunch Shepherd's Pie w/ Biscu orLunch Papa John's Pizza orLunch Walking Taco orBBQ Rib Sandwich Garden Peas Cucumber Cup Chilled Mixed FruitMax Sticks w/ Pizza Sauce Broccoli Trees Celery Cup Frozen Fruit CupBreakfast Pigglestick Fruit & Juice Variety

#### Food Allergies Resources

- 1. Homepage. Foodallergy.org. Accessed October 10, 2022. https://www.foodallergy.org/
- 2. Isa HM, Farid E, Makhlooq JJ, et al. Celiac disease in children: Increasing prevalence and changing clinical presentations. Clin Exp Pediatr. 2021;64(6):301-309. doi:10.3345/cep.2020.00304
- 3. Wheat Free Diet. Chla.org. Accessed October 10, 2022. https://www.chla.org/sites/default/files/atoms/files/CHLA-Wheat-Free-Diet-2016.pdf
- 4. Cow's milk allergy in children. Worldallergy.org. Accessed October 10, 2022. https://www.worldallergy.org/education-and-programs/education/allergic-disease-resource-center/professionals/cows-milk-allergy-in-c hildren
- 5. Kids with food allergies. Kidswithfoodallergies.org. Accessed October 10, 2022. https://www.kidswithfoodallergies.org/
- 6. Peanut. Foodallergy.org. Accessed October 10, 2022. https://www.foodallergy.org/living-food-allergies/food-allergy-essentials/common-allergens/peanut
- 7. Tasty alternatives for common food allergies. Canopy Health. Published May 17, 2018. Accessed October 10, 2022. https://www.canopyhealth.com/tasty-alternatives-for-common-food-allergies/
- 8. Gupta MD MPH R, Warren CM, Smith BM. Prevalence and Severity of Food Allergies Among US Adults. Jamanetwork.com. doi:10.1001/jamanetworkopen.2018.5630
- 9. A Guide to Foods Rich in Soy. ucsfhealth.org. https://www.ucsfhealth.org/education/a-guide-to-foods-rich-in-soy. Published 2022. Accessed October 10, 2022.
- 10. Soy Allergy Diet. Hopkinsmedicine.org. https://www.hopkinsmedicine.org/health/wellness-and-prevention/soy-allergy-diet. Published 2022. Accessed October 10, 2022.
- 11. Allergic to soy sauce? here are 5 alternatives to try. Food24. https://www.food24.com/allergic-to-soy-here-are-5-alternatives-to-try/. Published July 23, 2021. Accessed October 10, 2022.
- 12. Food substitutes for soy allergy: Sauce, oils and paste. WebMD. https://www.webmd.com/allergies/food-substitutes-soy-allergy. Accessed October 10, 2022.

#### Food Allergies Resources Continued

13. Person. 13 effective substitutes for eggs. Healthline. https://www.healthline.com/nutrition/egg-substitutes#TOC\_TITLE\_HDR\_15. Published May 9, 2022. Accessed October 10, 2022.

14. Kids with food allergies. Egg Allergy? How to Substitute Egg in Recipes.

https://www.kidswithfoodallergies.org/egg-allergy-recipe-substitutions.aspx. Accessed October 10, 2022.

15. Appendix 9: Allergen Cross-contact Prevention - Food and drug ... https://www.fda.gov/media/129670/download. Accessed October 10, 2022.

 Food Allergy & Anaphylaxis: Cross-contact: Cross-contact. Food Allergy & Anaphylaxis | Cross-Contact | Cross-Contact. https://www.foodallergyawareness.org/food-allergy-and-anaphylaxis/cross-contact/cross-contact/. Accessed October 10, 2022.
 Begun CR. Preventing cross-contact at home. EatRight.

https://www.eatright.org/homefoodsafety/four-steps/separate/preventing-cross-contact-at-home. Accessed October 10, 2022. 18. Food allergy: Comprehensive Training for Food Service Professionals. AllerTrain.

https://www.allertrain.com/allertrain/allertrain-allertrain-u. Published July 28, 2022. Accessed October 10, 2022.

19. ServSafe. https://www.servsafe.com/ServSafe-Allergens/The-Course. Accessed October 10, 2022.

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21.\$17.99 ANSI-accredited food allergy training certificate. 360training.

https://www.360training.com/course/ansi-accredited-food-allergy-training. Accessed October 10, 2022.

22. Food allergies. Centers for Disease Control and Prevention. https://www.cdc.gov/healthyschools/foodallergies/index.htm. Published August 23, 2022. Accessed October 10, 2022.

#### **Special Diets Resources**

https://www.fns.usda.gov/tn/offering-meats-and-meat-alternates-school-breakfast<sup>1</sup>

https://www.fns.usda.gov/tn/offer-vs-serve-lunch-program-tip-sheet<sup>2</sup>

https://www.mayoclinic.org/healthy-lifestyle/nutrition-and-healthy-eating/in-depth/vegetarian-diet/art-20046446

https://www.monashfodmap.com/about-fodmap-and-ibs/high-and-low-fodmap-foods/<sup>3</sup>

https://www.hopkinsmedicine.org/health/wellness-and-prevention/fodmap-diet-what-you-need-to-know<sup>4</sup>

https://www.whyislam.org/faqs/diet/

https://www.gfs.com/en-us/ideas/eating-according-religious-practices-kosher-and-halal<sup>6</sup>

https://www.pewresearch.org/fact-tank/2018/01/03/new-estimates-show-u-s-muslim-population-continues-to-grow/

#### Special Diets Resources Continued

<u>https://www.eatright.org/health/diseases-and-conditions/celiac-disease/celiac-disease-an-introduction</u>
 <u>https://www.eatright.org/health/allergies-and-intolerances/food-allergies/school-food-options-for-kids-with-food-allergies</u>

https://www.mayoclinic.org/healthy-lifestyle/nutrition-and-healthy-eating/in-depth/gluten-free-diet/art-20048530
 https://www.childrensmn.org/educationmaterials/childrensmn/article/15864/gluten-free-casein-free-diet-for-autism-s
 pectrum-disorder/

12.<u>https://www.eatright.org/health/diseases-and-conditions/autism/nutrition-for-your-child-with-autism-spectrum-disor</u> <u>der-asd</u>

13. https://medlineplus.gov/diabeticdiet.html

14. https://www.eatright.org/health/diseases-and-conditions/diabetes/carbohydrates-part-of-a-healthful-diabetes-diet

15. https://dpi.wi.gov/sites/default/files/imce/school-nutrition/pdf/snt-mail-031915.pdf

16..<u>https://www.eatright.org/health/diseases-and-conditions/diabetes/healthful-eating-with-diabetes#:~:text=Brown%2</u>

Orice%2C%20buckwheat%2C%20oatmeal%2C,steam%20foods%20instead%20of%20frying.

#### Alpha Gal Syndrome Resources

- 1. <u>https://www.cdc.gov/ticks/alpha-gal/index.html#:~:text=Alpha%2Dgal%20syndrome%20(AGS),ot</u> <u>her%20products%20containing%20alpha%2Dgal</u>.
- 2. <u>https://www.mayoclinic.org/diseases-conditions/alpha-gal-syndrome/symptoms-causes/syc-204</u> 28608
- 3. <u>https://www.cdc.gov/ticks/alpha-gal/products.html</u>
- 4. https://www.cdc.gov/ticks/geographic\_distribution.html
- 5. <u>https://www.cdc.gov/ticks/alpha-gal/</u>
- 6. <u>https://www.today.com/health/lone-star-tick-bites-cause-more-red-meat-allergy-cases-t131896</u>
- 7. <u>https://www.hhs.gov/ash/advisory-committees/tickbornedisease/reports/alpha-gal-subcomm-20</u> 20/index.html





# Questions?



