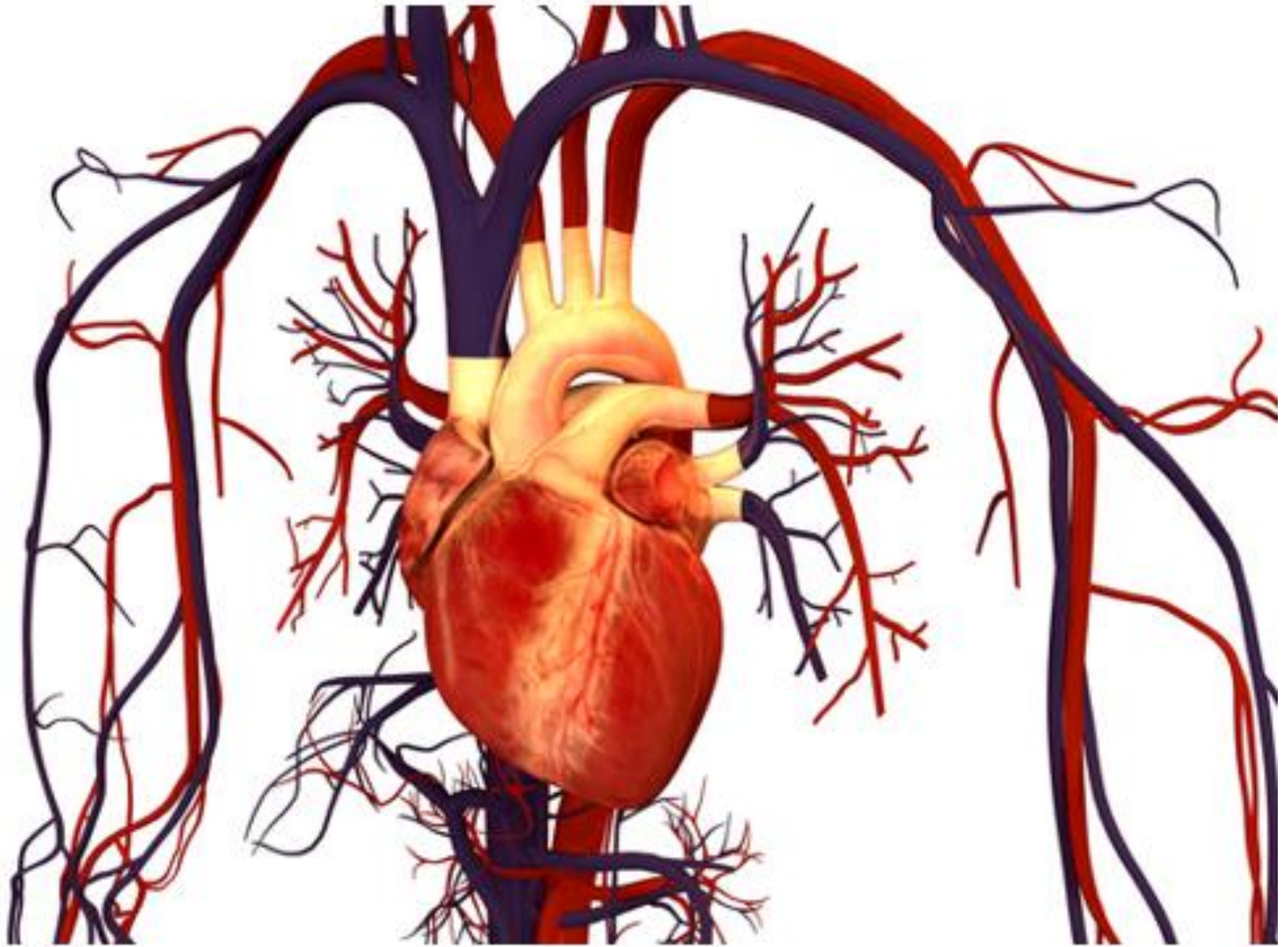
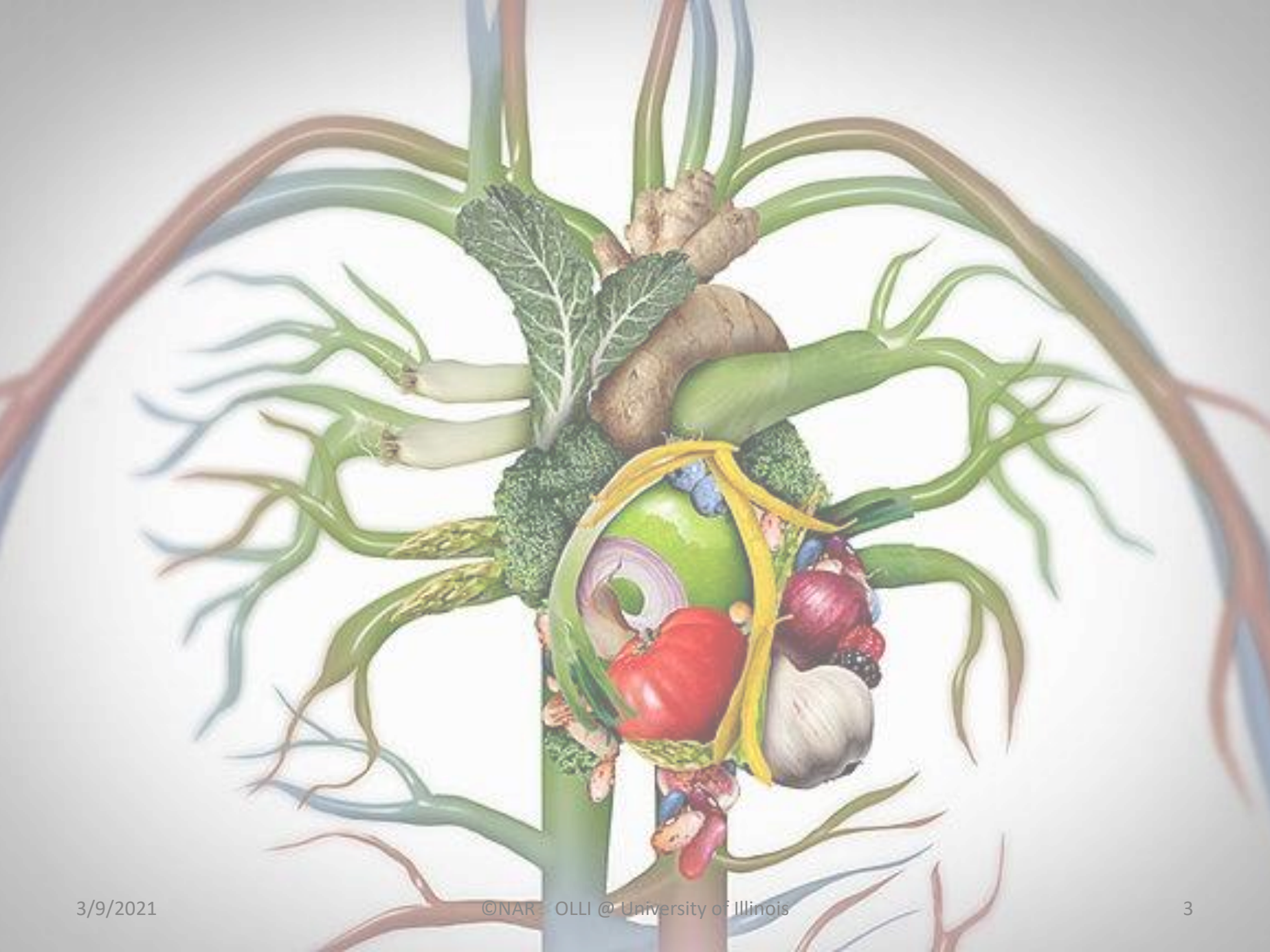


## Session 6

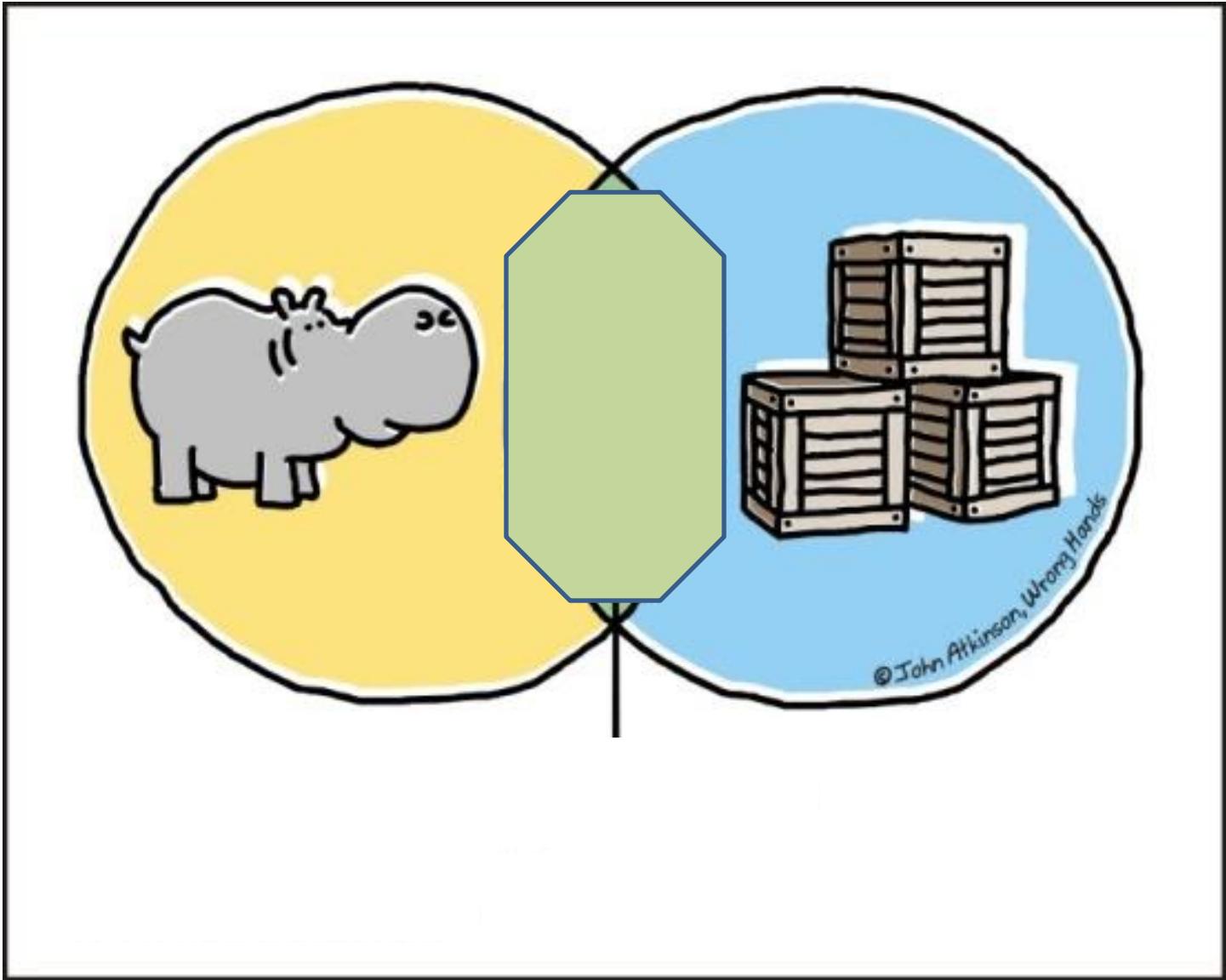
# **FOOD as MEDICINE**



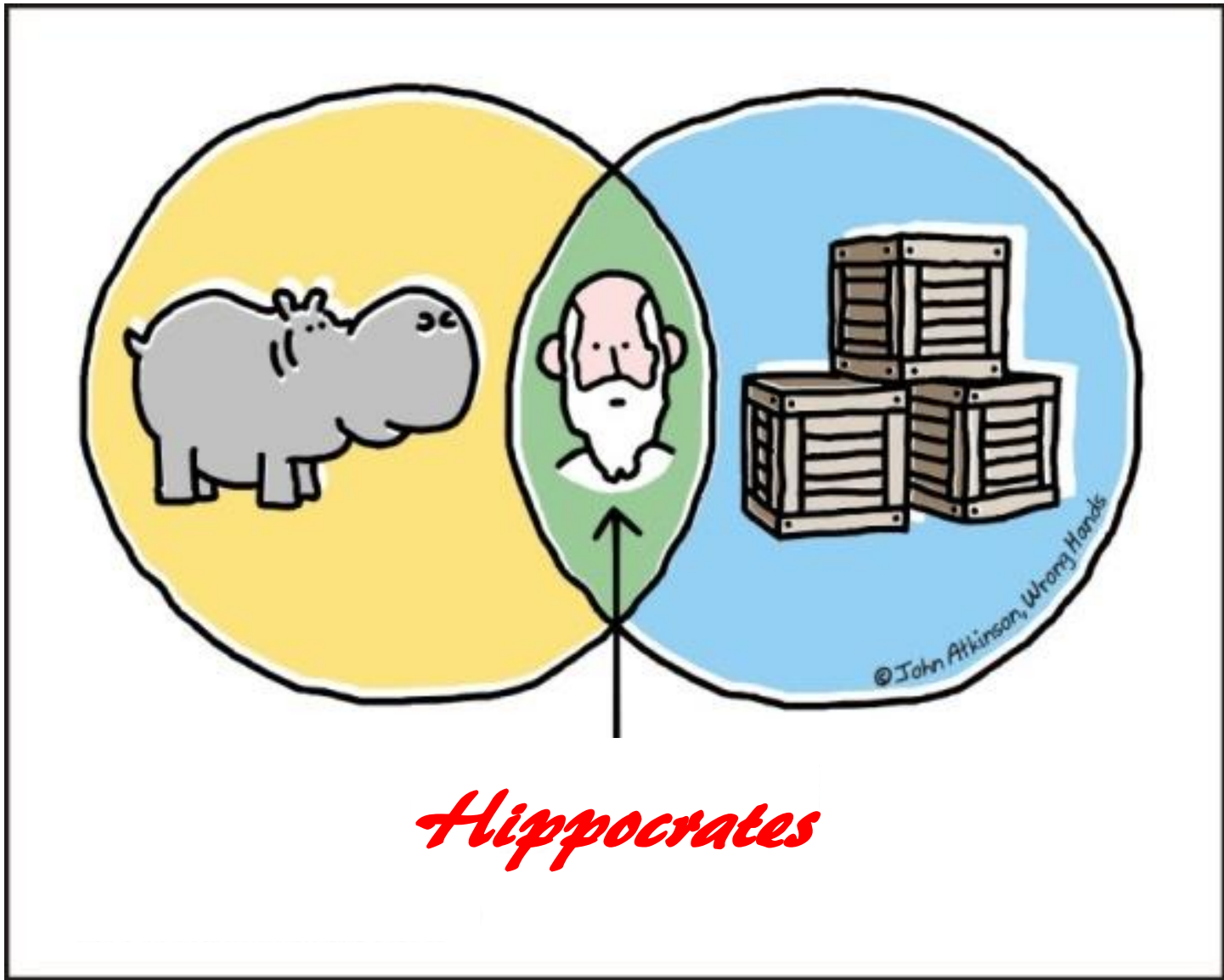


# Plan for Session 6

- Explore the notions of food as medicine.
- Review types and categories of nutrients.
- See the good and the bad of food products.
- Explore diets, health or weight-loss oriented.
- Suggestions for healthful eating.



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# Hippocrates

## Misinterpretations & Misattributions

Let thy food be thy  
medicine and thy  
medicine be thy food.

- “In food, excellent medication, in food bad medication, bad and good relatively.”
- From the *Oath*: “I will apply dietetic measure for the benefit of the sick according to my ability and judgement...”

First, do no harm  
(*Primum, non nocere*):

- From the *Oath*: “to abstain from doing harm”
- From *Epidemics*: “The physician must ... have two special objects in view with regard to disease, namely, to do good or to do no harm”.

# NATURAL MEDICINE



# Natural Medicine

- Also known as Naturopathic Medicine.
- Not identified with any particular therapy, and it is more than just a health system.
- Defined by its philosophies about life, health and disease, and the way they interact and devolve within the individual's environment.

# Natural Medicine

## Core Principles

First, do no harm: *primum non nocere*.

Nature's healing power:  
*vis medicatrix naturae*.

Identify and treat the causes: *tolle causam*.

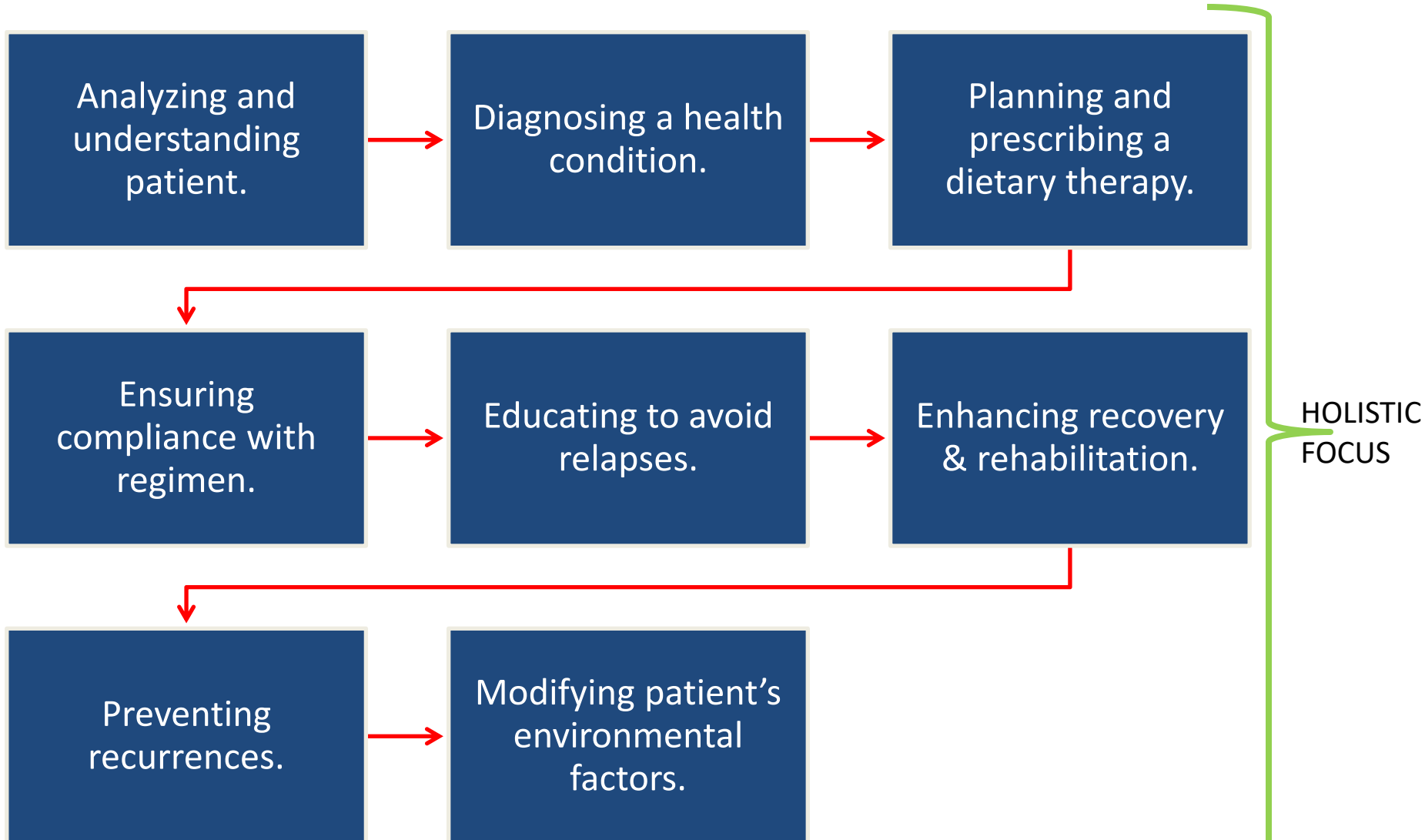
Treat the whole person: *tolle totum* (holism).

Preventive medicine: *praevenic*.

Doctor as teacher: *docere*.

# Food As Medicine

## Objectives and Process



# INFLAMMATION

# Inflammation (1)

Acute Inflammation is the normal reaction of all tissues to local injury / damage.

Inflammation as a process is meant to help the body in repairing injury.

Fast response allows immune cells to remove damaged tissue and destroy invading micro-organisms.

Endothelium dilates to bring more blood into the area, and allows fluid and proteins to escape.

4 cardinal signs of inflammation:  
***Rubor*** (redness)  
***Tumor*** (swelling)  
***Calor*** (heat)  
***Dolor*** (pain)

# Inflammation (2)

## Normal resolution

- After tissue structure is repaired, the immune signals that elicit the inflammatory response are switched off:
  - Prostaglandins.
  - Prostacyclins
  - Thromboxane
- Immune cells go back into the bloodstream, and order is restored.

# Inflammation (3)

- Dysfunctional inflammation occurs if the immune response becomes chronic due to harm and does not resolve or end.
- The causes of chronic harm:
  - Physical: injury, heat, cold, sun, radiation.
  - Toxic: corrosives, poisons, gases.
  - Infectious: viruses, bacteria, parasites.
  - Nutritional: incorrect, deficient or unbalanced eating.
- Chronic inflammation may cause:
  - Rheumatoid arthritis (RA)
  - Inflammatory bowel disease (IBD)
  - Coronary artery disease (CAD)
  - Type 2 diabetes (T2D).

# Inflammation (4)

- Foods with pro-inflammatory properties will promote the influx of immune cells into the tissue and increase the risk of further damage and chronic disease.
- In contrast, foods with anti-inflammatory properties aid in resolution of inflammation, promoting healing so that immune cells can return to the blood.



# Inflammation (5)

## Food Effects

### Pro-Inflammatory

- Refined sugars and flours
- Saturated fat
- Salt
- Excessive processing
- Loss of antioxidants
- Foods high in kilojoules can contribute to weight gain.
- Alcohol

### Anti-Inflammatory

- Apples & their peels
- Red, black and blue berries
- Cherries
- Kiwis & citrus fruits
- Olives & Olive oil
- Potatoes, eggplants, onions
- Beans and legumes
- Oily fish, flesh and skin
- Green tea
- Leafy green vegetables

# Inflammation (6)

- Chronic inflammation causes chronic illness.
- Chronic illness causes chronic stress and chronic stress causes chronic illness.
- Chronic stress will produce permanent and ongoing harm to the body's systems.
- Bad nutritional habits perpetuate stress, illness, unwellness, dis-ease and chronic pain.

# Inflammation (7)

- The cycle repeats and self-perpetuates.
- Result is more physical and emotional pain with worsening psychosomatic illness.
- Failure of all modern medical drug or surgical treatments causes despair and surrender.
- Eventually, hopelessness and depression set in.
- Bad eating continues and worsens.

# Inflammation (8)

- A large skin wound increases the body's energy requirements by around 120% if it is clean and 150% if infected.
- If due to the injury the person can not eat well, the additional calories for healing must be taken from body stores.
- Person's health before the wound has a large effect on healing outcome: a badly nourished person with poor body stores, will have delayed healing.

# Inflammation (9)

- Large amounts of protein and micronutrients are required for inflammation, and more will be needed for tissue regeneration.
- Stored body fat can be broken down for the extra energy (calories) required for healing, but the body has limited stores of protein.
- If protein is needed for healing, it must come from body muscle, causing the wasting often seen after injury.
- To reduce this wasting, it is very important to feed the injured person an easily digested, protein-rich diet.

# Inflammation (10)

Zinc is needed for immune function, collagen synthesis, and fibrocyte migration into the wound.

Other micronutrients needed:	Vitamin K for clotting in the initial response to injury,
	Vitamin D for effective immune responses,
	Vitamin A for tissue repair.
	Vitamin B1 increases the strength of newly formed tissues.
	Vitamin C provides antioxidant action and is important for collagen formation.
	Vitamin E is antioxidant and helps prevent excessive scarring.
	Polyunsaturated fats (PUFA) are needed for the molecules that allow inflammation to be replaced by tissue regeneration.

Successful healing is highly dependent on a protein-rich and nutritionally rich diet during the recovery phase. Foods like eggs and rich beef broth have often been used to aid recovery.

Micronutrients

Macronutrients

# **NUTRITION and NUTRIENTS**

# Nutrition (1)

- Nutrition is the science of food and its relationship to health and is used in prevention and treatment of illness.
- Nutrients are chemicals in foods that are used by the body for growth, maintenance, and energy.
- Nutrients that cannot be made by the body and must be derived from the diet are considered essential:
  - Vitamins
  - Minerals
  - Some amino acids
  - Some fatty acids
- Nutrients that the body can make are considered nonessential.



# Nutrition (2)

- Macronutrients are required by the body in relatively large amounts; micronutrients are needed in minute amounts.
- Lack of nutrients results in undernutrition, and leads to deficiency syndromes (kwashiorkor, goiter, scurvy).
- Excess of macronutrients leads to obesity and related disorders; excess intake of micronutrients can be toxic.
- Imbalance of other nutrients, like ratio of unsaturated vs saturated fat consumed, can produce serious illness.

# Macronutrients

## Macronutrients:

- Fats.
- Carbohydrates.
- Proteins.
- Macrominerals.
- Water.

# FATS

# Fats (1)

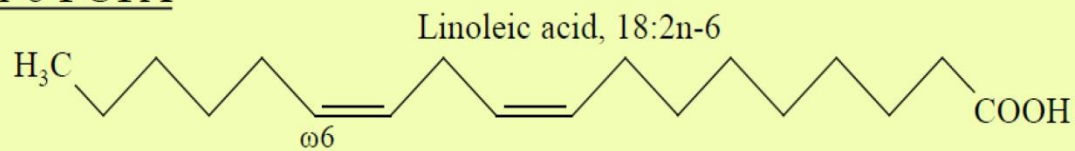
## Essential Fatty Acids (EFA's)

- **Linoleic** acid: an omega-6 fatty acid.
  - **Linolenic** acid: an omega-3 fatty acid.
- } Essentials
- The body requires other omega-6 and omega-3's but they can be synthesized from EFAs.
  - EFAs are needed to form biologically active lipids (eicosanoids), like prostaglandins, thromboxanes and prostacyclins.
  - Marine fish oils provide large amounts of omega-3 fatty acids that may decrease risk of coronary artery disease.

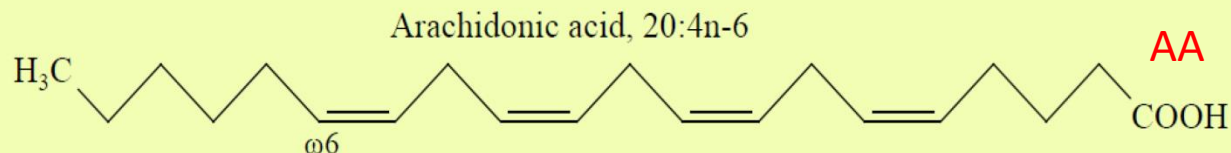
# Oh, My Omegas (1)

## Structure

### n-6 PUFA

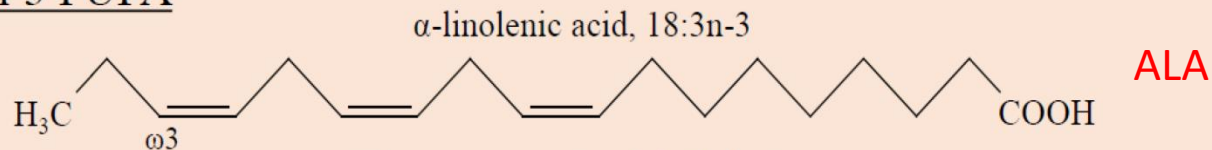


sunflower oil  
corn oil

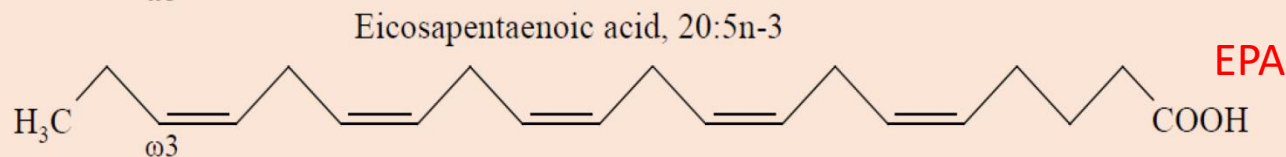


animal fat

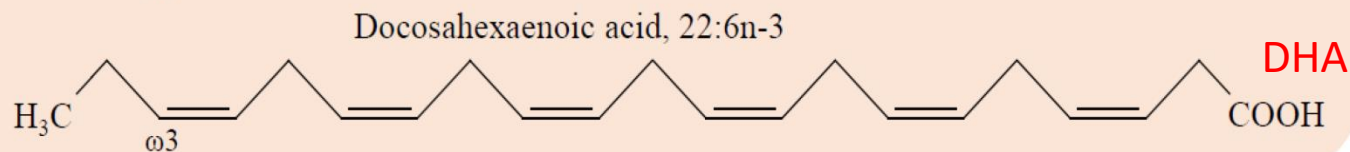
### n-3 PUFA



soybean oil  
flaxseed oil



fish oil



fish oil

# Omegas (2)

- Mammals cannot synthesize the essential omega-3 fatty acid ALA and can only obtain it through diet.
- They can use ALA, when available, to form EPA and DHA.
- Omega-3 fatty acids reduce triglyceride levels but do not change the level of LDL or HDL cholesterol.
- ALA does not confer the cardiovascular health benefits of EPA and DHAs.
- The effect of omega-3 PUFA's on stroke is unclear.

# Omegas <sup>(3)</sup>

- Omega-3 fatty acid supplements do not appear to affect the risk of death, cancer or heart disease.
- Fish oil supplement studies have failed to support claims of preventing heart attacks or strokes or any vascular disease outcomes.
- The association between supplementation and a lower risk of all-cause mortality appears inconclusive.

# Sources of Omega Fatty Acids

## Oils rich in Linoleic Acid (n6)

- Safflower.
- Sunflower.
- Corn.
- Primrose.
- Wheat germ.
- Pumpkin.
- Soy.

## Oils rich in Linolenic Acid (n3)

- Marine fish oils.
- Flaxseed.
- Canola.
- Pumpkin.
- Soy.
- Krill oil
- Squid Oil



# Fats (2)

## *Trans*

- Plant fats contain high levels of monounsaturated fatty acids or polyunsaturated fatty acids (PUFAs).
- Partial hydrogenation of unsaturated fatty acids makes ***trans*** fatty acids (industrially done to increase shelf life of products).
- In US, main source of ***trans*** fats is vegetable oils used in the manufacture of cookies, crackers, chips.
- ***Trans*** fatty acids may elevate LDL cholesterol (bad) and lower HDL cholesterol (good).
- ***Trans*** fats may increase the risk of coronary artery disease.

# CARBOHYDRATES

# Carbohydrates



## “Carbs”

- Carbohydrates raise glucose, supplying energy:
  - Simple carbohydrates increase glucose levels rapidly.
  - Complex carbohydrates raise glucose levels slowly but for a longer time.
- Glucose and sucrose are simple carbohydrates; starches and fiber are complex carbohydrates.
- Dietary carbohydrates are broken down into glucose and other monosaccharides.

# Glycemic Index

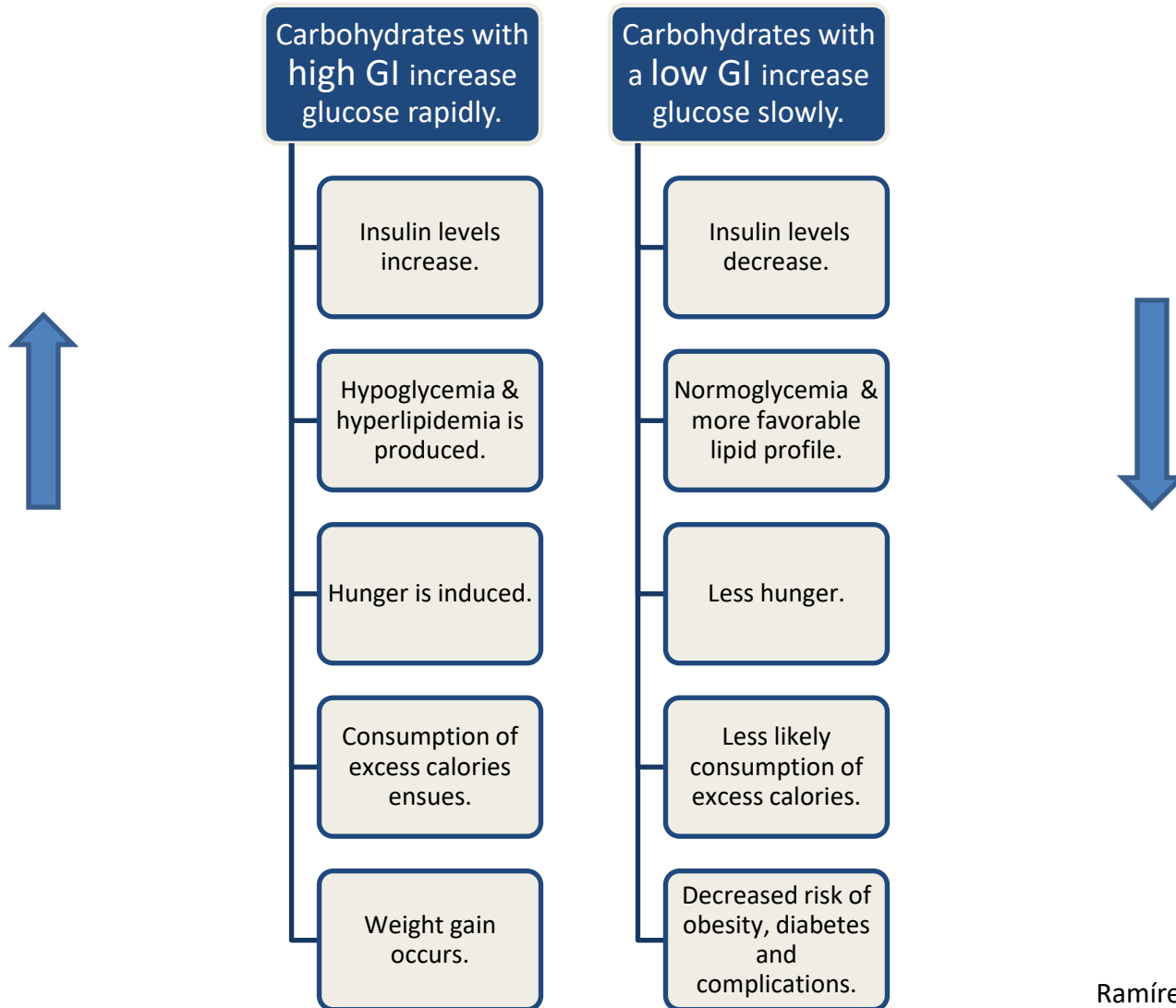
- Glycemic index: how rapidly consumption of a carbohydrate increases plasma glucose levels.
- Values range from 1 (slowest) to 100 (fastest).
- 100 is equivalent to pure glucose.
- The actual rate of increase also depends on what foods are consumed with the carbohydrates.

# Glycemic Index (GI)

Category	Food	Index (GI)
Beans	Kidney	33
	Soy	14
Bread	White	69
	Whole wheat	72
Cereals	All Bran, Oats	52-53
	Corn flakes	83 
Dairy	Milk, Ice Cream, Yogurt	34-38
Fruit	Apple, Strawberries, Orange	32, 38, 43
	Banana	61
Pasta	All	38
Grains	Brow rice, White rice	68, 72
Potatoes	Sweet	50
	White (mashed), White (instant)	72, 86 
Snacks	Potato chips, oatmeal cookies, corn chips	56, 57, 72

# Carbohydrates


## High GI vs Low GI




# PROTEINS

# Proteins


Proteins are needed for tissue maintenance, replacement, function, and growth but if calories from dietary sources or tissue stores are insufficient, protein may be used for energy.




Positive nitrogen balance exists when the body uses dietary protein for tissue production, therefore, there is a net *gain* of protein.



Negative nitrogen balance exists during catabolic states (starvation, infections, burns), because more protein is used than is absorbed, resulting in a net *loss* of protein



Of the 20 amino acids, 9 are essential amino acids (EAAs); they cannot be synthesized and must be obtained from the diet.



Everyone requires 8 EAAs; infants also require histidine.



# Proteins

- Biological value (BV) compares amino acid composition of protein to that of animal tissues, so it shows what % of a dietary protein provides EAAs for the body:
  - A perfect match is egg protein, with a value of 100.
  - Animal proteins in milk and meat have a high BV (~90).
  - Proteins in cereal and vegetables have a lower BV (~40)
  - Some derived proteins (eg, gelatin) have a BV of 0.
- How much dietary proteins supply each other's missing amino acids (complementarity) determines the overall BV of the diet.
- The recommended daily allowances (RDA) for protein assumes that the average mixed diet has a BV of 70.

# MICRONUTRIENTS

# *Micronutrients*



- **Water-soluble vitamins**

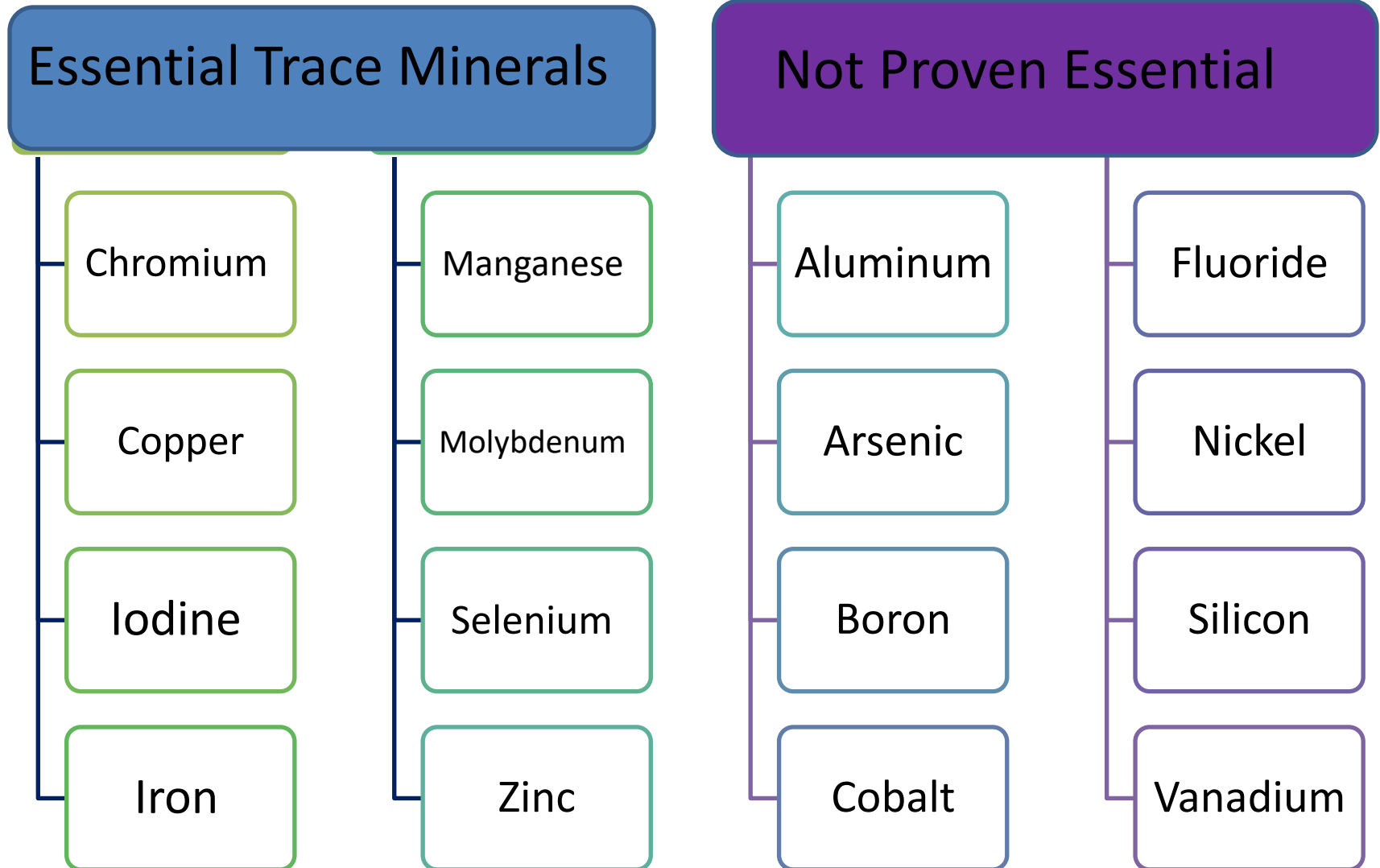
- C, Ascorbic Acid.
- B7, Biotin.
- B9, Folate.
- B3, Niacin.
- B5, Pantothenic acid.
- B2, Riboflavin.
- B1, Thiamin.
- B6, Pyridoxine.
- B12, Cobalamin.

- **Fat-soluble vitamins**

- A, retinol.
- D, cholecalciferol and ergocalciferol.
- E, alpha-tocopherol.
- K, phylloquinone and menaquinone.

# Micronutrients

## Trace Minerals



# *Micronutrients*

- Except for chromium, all trace minerals are incorporated into enzymes or hormones required in metabolism.
- Only vitamins A, E, and B12 are stored to any significant extent in the body;
- All trace minerals are toxic at high levels, and some (arsenic, nickel, and chromium) may cause cancer.

# Macronutrients

- Carbohydrates, Proteins, Fats and water constitute the bulk of a normal diet.
- Supply energy and many essential nutrients.
- Carbohydrates, fats, and proteins are interchangeable sources of energy:
  - Fats yield 9 kcal/g (37.8 kJ/g).
  - Proteins yield 4 kcal/g (16.8 kJ/g).
  - Carbohydrates yield 4 kcal/g (16.8 kJ/g).
- Water is considered a macronutrient because it is required in amounts of 1 mL/kcal (0.24 mL/kJ) of energy expended, or about 2500 mL/day. Needs vary with fever, physical activity, and changes in climate and humidity.

# Macronutrients

## Macrominerals

- Sodium, chloride, potassium, calcium, phosphate, and magnesium are required in relatively large amounts per day.
- Macrominerals are essential for many body functions at intracellular level.

# Macronutrients

Nutrient	Principal Sources	Functions
Calcium	Dairy products, meat, fish, eggs, cereals, beans, fruits, vegetables	Bone and tooth formation, blood coagulation, nerve transmission, muscle contraction, <b>myocardial conduction</b>
Chloride	Mainly animal products but some vegetables; similar to sodium	Blood and intracellular acid-base balance, osmotic pressure, kidney function
Potassium	Whole and skim milk, bananas, prunes, raisins, and meats	Muscle contraction, nerve transmission, intracellular acid-base balance, water balance
Magnesium	Green leaves, nuts, cereals, grains, seafood	Bone and tooth formation, nerve transmission, muscle contraction, enzyme activation
Sodium	Beef, pork, sardines, cheese, olives, corn bread, chips, sauerkraut	Blood and intracellular acid-base balance, osmotic pressure, muscle contraction, nerve transmission, maintenance of cell membrane gradients
Phosphorus	Milk, cheese, meat, poultry, fish, cereals, nuts, legumes	Bone and tooth formation, blood and intracellular acid-base balance, energy production



# **WATER AND OTHER DRINKS**



# WATER: FLAVORS, FIZZES & FALSEHOODS



## WATER IN THE HUMAN BODY

Brain	<b>75% Water</b>
Blood	<b>83% Water</b>
Heart	<b>79% Water</b>
Bones	<b>22% Water</b>
Muscles	<b>75% Water</b>
Liver	<b>85% Water</b>
Kidneys	<b>83% Water</b>

Overall, the human body is about 70% water.

# Water

Vital nutrient to the life of every cell.

Regulates internal body temperature by sweating and respiration

Carbohydrates and proteins that are metabolized get transported by water in the bloodstream.

Assists in flushing waste through urination and stools.

Shock absorber for brain and spinal cord.

Protects the fetus in utero.

Forms saliva and tears.

Lubricates joints.

# Fizzy Waters

- Fizzy drinks, flavored waters, juice drinks:
  - Fizzy drinks, flavored waters and juice drinks can contain lots of added sugar and very few nutrients.
  - “Juice” drinks may have less than 10% fruit.
  - *High sugar equals high calories.*
- If you like fizzy drinks, dilute real fruit juice with sparkling water.

# Fizzy Waters

(Children)

- Children who drink a lot of sugary drinks are more likely to become overweight.
- Sugary drinks can damage their teeth.
- “Juice drinks” may be high in sugars and low in nutrients.
- Best drinks to give children are water and milk.

# Caffeinated

- Caffeine is a stimulant that can temporarily make you feel more alert or less drowsy.
- Effects differ depending on a person's daily consumption.
- Pregnant women should limit caffeinated drinks, and toddlers and young children should not use them.
- Tea or coffee with sugar or flavor syrups may damage your teeth and add calories to your diet.

# Energy Drinks

- Have high levels of caffeine and sugar (calories).
- May contain other stimulants, vitamins, minerals or herbal substances.
- Caffeine levels vary, but there's about 80mg of caffeine in a small 12 ounce can.
- Same as 2 cans of cola or an 8 ounce mug of coffee.



# Fallacies

- Fizzy fruit flavored drinks or waters are NOT healthy, but may taste good.
- “Juice” drinks have little or no real fruit juice.
- Low-calorie drinks have artificial flavors:
  - *Isoamyl acetate (IA)* for pear or banana.
  - *IA* mixed with *malic acid* for apple-like flavor.
  - *Ethyl methylphenylglycidate* for strawberry.
  - *Octyl acetate* for orange.
  - *Allyl hexanoate* for pineapple.

# How Sweet It Is (1)

## Artificial Sweeteners

Acesulfame potassium (Sweet One, Sunett)

Aspartame (NutraSweet, Equal)

Sucralose (Splenda)

Saccharin (Sweet 'N Low)

High Fructose Corn Syrup (HFCS)

Sugar alcohols (erythritol, xylitol, sorbitol)

## Natural Sweeteners

Honey

Molasses

Maple Syrup

Fruit Juices and Nectars

Agave nectar

# How Sweet It Is (2)

Name	Calories / Gram	Sweetness Index	Glycemic Index	Calories / Spoon
Fructose	4	1.7	23	9
Sucrose	4	1	65	16
Glucose	4	0.75	100	21
Dextrose	4	0.75	100	21
Lactose	4	0.15	45	107
Honey	4	1.1	50	14
Maple Syrup	4	1	54	15
Coconut Palm	4	1	35	15
Sorghum Syrup	4	1	50	15
Agave Syrup	4	1.5	15	10



# Caveat Emptor

- Food marketed as sugar-free isn't all calorie-free, so it can still cause weight gain.
- Processed foods, which often contain sugar substitutes, don't offer the same health benefits as whole foods, like fruits and vegetables.
- Often, the lower price of a food is due to the cheaper components which make it unhealthier.

Weight-loss Diets

Health-focused Diets

Non-validated Diets

# **DIETS: FADS, FOLLIES & FALLACIES**

# **WEIGHT-LOSS DIETS**

# Fasting/Intermittent Fasting (1)

- Cycles between voluntary fasting and non-fasting over a given period.:
  - Alternate-day fasting (ADF ).
  - Periodic fasting.
  - Daily time-restricted feeding.
- American Heart Association stated in 2017 that intermittent fasting may:
  - Produce weight loss.
  - Reduce insulin resistance.
  - Lower the risk of cardiometabolic diseases.
  - Its long-term sustainability is unknown.

# Fasting/Intermittent Fasting (2)

A 2019 review showed that intermittent fasting may help with:

- Obesity.
- Insulin resistance.
- Dyslipidemia.
- Hypertension.
- Inflammation.
- Diet-related diseases (metabolic syndrome).



# **SOUTH BEACH DIET**

# South Beach Diet

## Grocery Shopping List

### Dairy :

- Greek yogurt
- Eggs
- Fresh cheese



- Butter
- Cream



### Fruits :

- Citrus fruits
- Berries
- Melons



- Apples
- Bananas
- Pears



### Vegetables:

- Spinach
- Lettuce
- Carrots
- Celery



- Cabbage
- Kale
- Broccoli
- Onions



### Starchy Vegetables :

- Sweet potatoes
- Squash and members of the squash family



### Grains:

- Whole grain breads
- Pastas
- Quinoa



- Oatmeal
- Corn



### Animal Proteins :

- Lean meats
- Fish and seafood



### Plant Proteins :

- Beans
- Soybeans



- Chickpeas
- Nuts and seeds



South Beach diet food cheat sheet.

# South Beach <sup>(1)</sup>

- Introduced in 2003, based on the premise of changing a person's overall eating habits by balancing out their everyday diet.
- Often leads to developing a healthy way of eating so that it will be sustainable for the rest of people's lives.
- Uses a selection of healthy fats, lean protein, good carbs and avoids certain "bad" carbs.

# South Beach <sup>(2)</sup>

- Diet with low-carbohydrate, high protein, and high in healthy fats.
- Uses the glycemic index (GI) and glycemic load (GL) to determine which carbs to avoid.
- Encourages limiting unhealthy fats, while eating foods with healthier monounsaturated fats.
- Emphasizes the benefits of fiber and whole grains and encourages including fruits and vegetables in the general eating plan.
- Physicians should monitor patients who are at risk or have a kidney disorder due to the increased protein.

# ATKINS

# Atkins <sup>(1)</sup>

- Weight-loss diet based on eliminating carbs and increasing consumption of high-fat foods like bacon, heavy cream, cheese and high % cacao dark chocolate.
- These foods are considered fattening because of high fat and calorie content.
- On a low-carb diet, the body increases use of fat as an energy source and suppresses appetite.
- This reduces the risk of overeating and weight gain.

# Atkins (2)

## 4 Phases

- **Phase 1 Induction:** Under 20 grams of carbs per day for 2 weeks. Eat high-fat, high-protein, with low-carb vegetables like leafy greens.
- **Phase 2 Balancing:** Slowly add more nuts, low-carb vegetables and small amounts of fruit back to the diet.
- **Phase 3 Fine-tuning:** When very close to goal weight, add more carbs to the diet until weight loss slows down.
- **Phase 4 Maintenance:** Can eat as many healthy carbs as body can tolerate without regaining weight.

# Atkins (3)

## Foods to Avoid

- Sugar: Soft drinks, juices, cakes, candy, ice cream, etc.
- Grains: Wheat, spelt, rye, barley, rice.
- Vegetable oils: Soybean, corn, cottonseed, canola.
- Trans fats: Processed foods with “hydrogenated” on the ingredients list.
- “Diet” and “low-fat” foods: Usually high in sugar.

## Only During Induction:

- High-carb fruits: Bananas, apples, oranges, pears, grapes.
- Starches: Potatoes, sweet potatoes.
- Legumes: Lentils, beans, chickpeas, etc.
- High-carb vegetables: Carrots, turnips, etc.



# Atkins (4)

## Permitted Foods

**Meats:** Beef, pork, lamb, chicken, bacon and others.

**Fatty fish and seafood:** Salmon, trout, sardines.

**Low-carb vegetables:** Kale, spinach, broccoli, asparagus, others.

**Full-fat dairy:** Butter, cheese, cream, yogurt.

**Nuts & seeds:** Almonds, macadamias, walnuts, sunflower seeds.

**Eggs:** omega-3 enriched or pastured.

**Healthy fats:** EVOO, coconut oil, avocados and avocado oil.

**Beverages:** Water, Coffee, Regular or Green tea.

**alcohol :** dry wines w/o added sugars, avoid high-carb beer.

# Atkins (5)

- To maintain weight loss, user will need to stay on moderately low-carb diet for life, even if weight loss goals have been reached.
- If user starts eating the same old foods again in the same amounts as before, they will gain back the weight.
- This is true of any weight loss diet.

# Atkins (6)

## What About Vegetarians?

- Vegetarians, and even vegans, can do the Atkins diet, but it's difficult.
- Soy-based foods can be used for protein.
- Nuts, seeds ,olive oil and coconut oil are excellent plant-based fat sources.
- Lacto-ovo-vegetarians can also eat eggs, cheese, butter, heavy cream and other high-fat dairy foods.

# HEALTH-FOCUSED DIETS

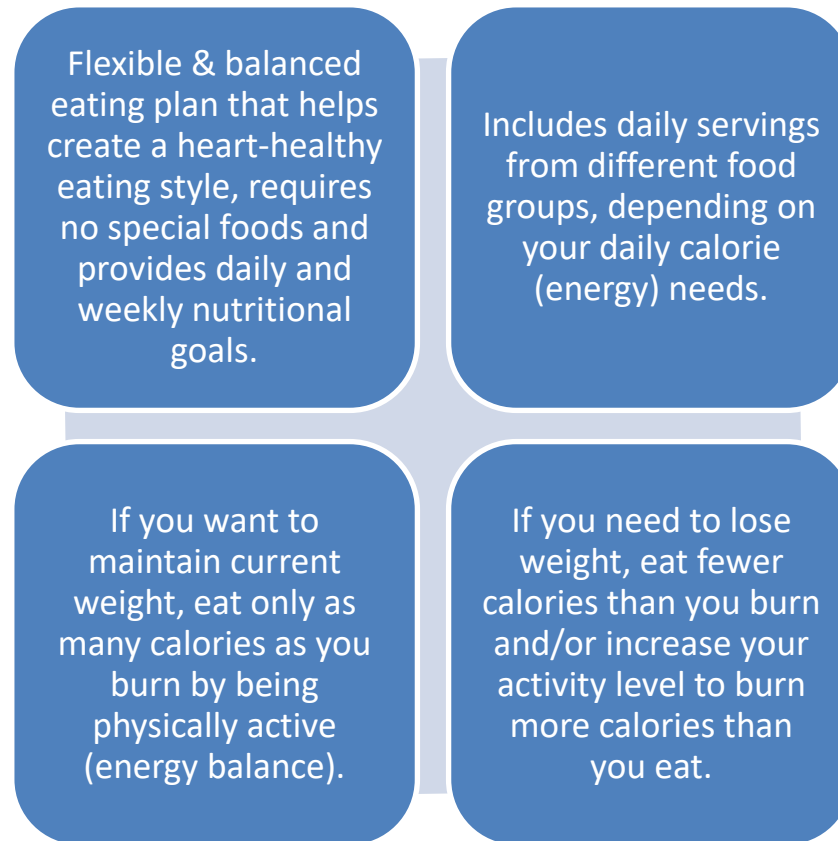
# DASH (1)

## Dietary Approaches to Stop Hypertension

- Based on studies sponsored by the National Heart, Lung, and Blood Institute (NHLBI) that proved DASH lowers blood pressure and cholesterol levels, reducing the risk of heart disease.
- The DASH eating plan:
  - Emphasizes vegetables, fruits, and whole-grains.
  - Includes fat-free or low-fat dairy products, fish, poultry, beans, nuts, and vegetable oils.
  - Limits foods high in saturated fat (fatty meats, full-fat dairy, tropical oils.
  - Limits sugar-sweetened beverages and sweets.
- Lifestyle changes:
  - Staying at a healthy weight.
  - Exercising.
  - Not smoking.

# DASH (2)

## Dietary Approaches to Stop Hypertension



# DASH (3)

## Dietary Approaches to Stop Hypertension

Food Group	Daily Servings	Weekly Servings
Grains	6-8	----
Meats, poultry, fish	6 or less	----
Vegetables	4-5	----
Fruit	4-5	----
Low-fat or fat-free dairy	2-3	----
Fats and oils	2-3	----
Sodium	1500-2300 mg	----
Nuts, seeds, peas, dry beans	----	4-5
Candy or sweets	----	5 or less

# KETOGENIC



# Ketogenic <sup>(1)</sup>

High-fat, adequate-protein, low carbohydrate diet, which forces the body to burn fats rather than carbohydrates.

Liver converts fat into fatty acids and ketone bodies that pass into the brain and replace glucose as an energy source = Ketosis.

Used in children with recurrent and refractory seizures, must restrict total daily carb count to 20-50 grams per day.

Most of their daily calorie intake comes from protein and fat.

# Ketogenic (2)

Caution in patients with a history of gallbladder disease or cholecystectomy.

Monitor volume-sensitive patients because most become dehydrated when entering ketosis.

Monitor patients with renal disease or GI issues due to the higher amount of protein.

Closely monitor patients with diabetes to avoid hypoglycemia due to low carbohydrates.

All medication doses may need to be adjusted.

# Ketogenic <sup>(4)</sup>

## Allowed Foods

Natural fats  
like butter,  
olive or  
coconut oil.

Fish and  
seafood.

Meat and  
poultry.

Eggs .

Cheese.

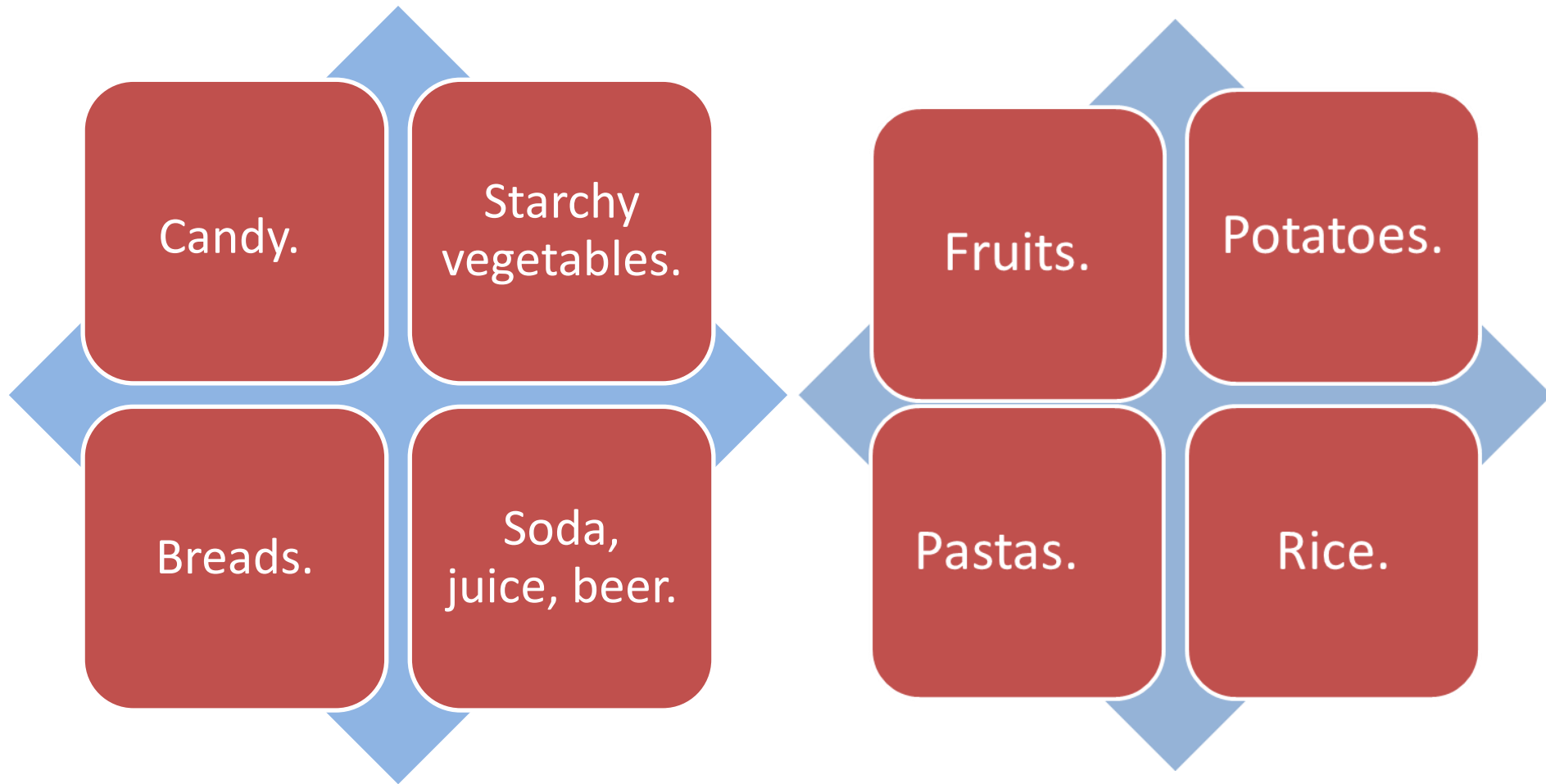
Above-ground  
vegetables  
cauliflower,  
cabbage,  
avocado,  
broccoli.

Nuts in  
moderation,  
preferably  
macadamia,  
walnuts and  
pecans.

Water, coffee,  
tea.

# Ketogenic <sup>(3)</sup>

## Restricted Foods



# ORNISH

# Ornish <sup>(1)</sup>

- Created in 1977 by Dr. Dean Ornish, founder of the nonprofit Preventive Medicine Research Institute in Sausalito, CA.
- Goal is to help people “feel better, live longer, lose weight and gain health.”
- Ornish diet is:
  - Low in fat.
  - Low in refined carbohydrates.
  - Low in animal protein.
- It also emphasizes:
  - Exercise
  - Stress management.
  - Relationships.

# Ornish (2)

- Users can cater the plan to their individual goals:
  - Losing weight.
  - Lowering blood pressure.
  - Preventing cancer.
- It is the only scientifically proven program to ***reverse*** heart disease without drugs or surgery.

# Ornish <sup>(3)</sup>

- Allowances:
  - Only 10% of calories can come from fat.
  - Eat fiber and lots of complex carbohydrates.
  - Up to 2 ounces of alcohol a day are permitted.
  - May include some seeds and nuts.
  - 1 cup of non fat milk or yogurt per day.
  - Egg whites are allowed.
- Total ban on:
  - Foods with cholesterol or refined carbohydrates.
  - All oils.
  - Excessive caffeine.
  - All animal products.



# Ornish (4)

- Classifies food into 5 groups, from most healthful (group 1) to least healthful (group 5).
- For exercise, it emphasizes aerobic activities, resistance training and flexibility.
- To manage stress, it recommends deep breathing, meditation and yoga, and smoking cessation.
- Spending time with those you love and respect, and leaning on them for support, can powerfully affect your health in good ways.

# MEDITERRANEAN

# Mediterranean (1)

- Vegetable-heavy diet that uses whole grains, nuts and herbs.
- High consumption of fish and very low consumption of non-fish meat products.
- Moderate consumption of dairy like cheese and yogurt.
- Moderate red wine consumption.
- Uses olive oil instead of butter, salad dressings or marinades.

# Mediterranean (2)

- AHA and ADA recommend it as a healthy dietary pattern that may reduce the risk of cardiovascular diseases and type 2 diabetes.
- Helps with depression, controls blood sugar levels and helps with weight loss.
- One of 3 healthy diets recommended in the US Dietary Guidelines, with the DASH diet or a vegetarian diet.

# Dr. WEIL'S

# Dr. Weil's <sup>(1)</sup>

## Anti-Inflammatory Diet

- Emphasizes choosing and preparing foods that help keep you healthy.
- It's not a weight-loss plan, but people lose weight on it.
- You get steady energy and meet your nutritional needs in a livable way for years to come:
  - Carbs make up 40% to 50% of daily calories.
  - Good fats make up 30% of daily calories.
  - Protein accounts for 20% to 30% of daily calories.

# Dr. Weil's (2)

## Anti-Inflammatory Diet

### Allowed

- Beans, soybeans, soy products.
- Salmon, sardines, cod, herring.
- Avocados, nuts and nut butters.
- Flaxseeds, hempseeds.
- EVOO.
- Grains, legumes, vegetables.
- Some cheeses and yogurt.
- Tea is preferred over coffee.
- A glass or two a day of red wine.
- Chocolate at least 70% cocoa.

### Not Allowed

- Safflower, sunflower, corn, cottonseed, and mixed vegetable oils.
- Processed foods like chips and cookies.
- Foods with HFCS
- Any food with partially hydrogenated oil (***Trans***).
- Animal proteins, except fish.

# Dr. Weil's <sup>(1)</sup>

## Anti-Inflammatory Diet

Recommends taking daily supplements:

- Vitamins C and E.
- Selenium.
- Mixed carotenoids
- Multivitamin with vitamin D and folic acid.
- Calcium (for women only).
- Fish oil (only if not eating oily fish twice a week)
- Coenzyme Q10
- Ginger supplement
- Turmeric supplement



# NUTRITARIAN DIET

# Nutritarian (1)

“Eat to Live Diet”

- The Nutritarian Diet, also referred to as a nutrient-dense, plant-rich diet (NDPR diet), promises impressive weight loss and other health benefits.
- It slows aging, increases lifespan, and helps prevent or even reverse chronic illnesses, including diabetes and heart disease.
- Supplying the right amount of macro and micro nutrients and fiber will release the body's power to heal itself and slow the aging process.

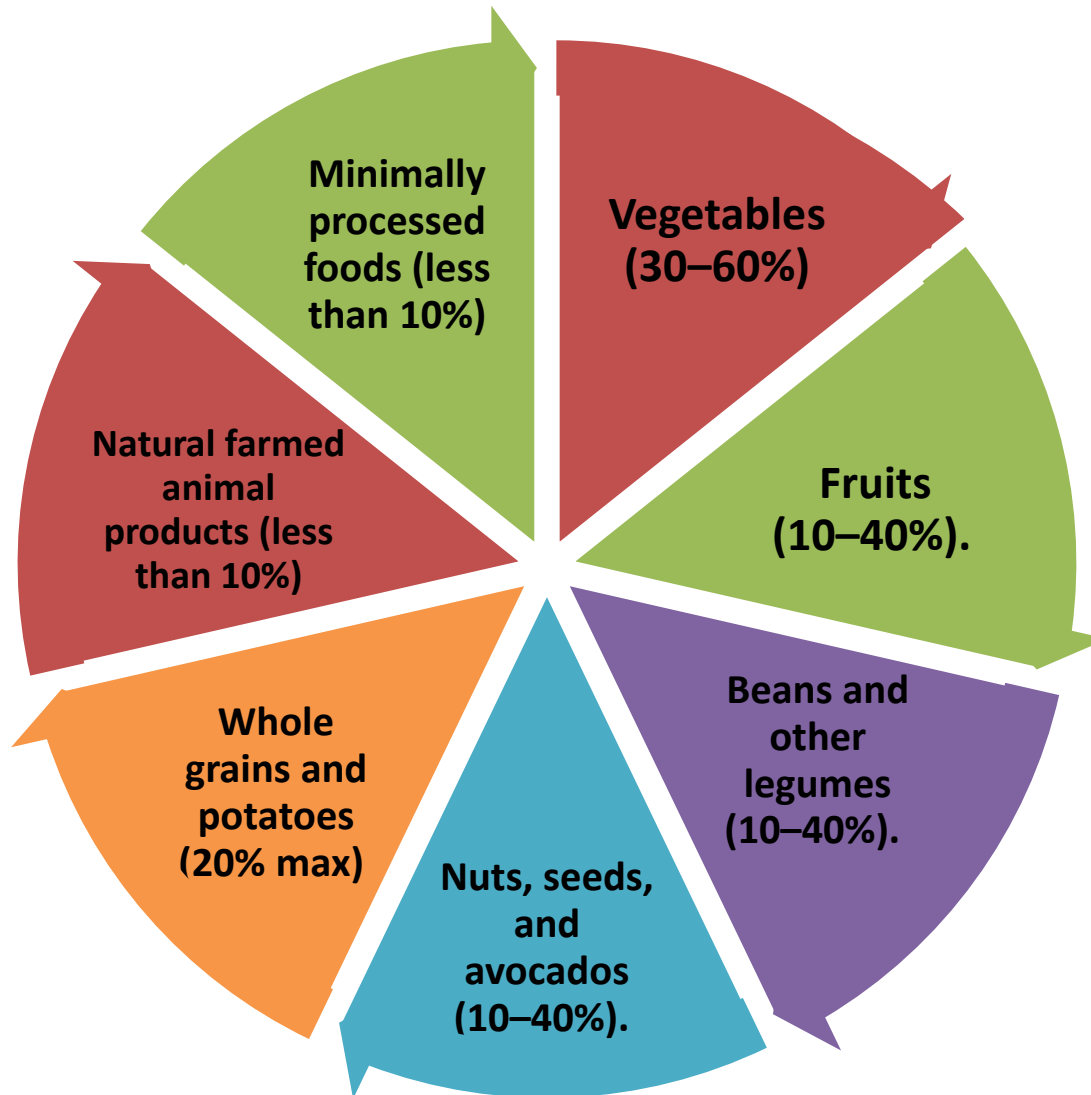
# Nutritarian (2)

- Created in 2003 by physician Joel Fuhrman in his book “Eat to Live.”
- Largely plant-based, gluten-free, low-salt, and low-fat.
- Limits processed foods, and promotes nutrient-dense, minimally processed ones.
- Fuhrman developed several meal products for his diet, each promising its own set of results.

# Nutritarian (3)

- Central premise is that the amount of nutrients consumed per calorie predicts user's weight and influences their long-term health.
- Doesn't restrict calories, but sets a calorie % range that each food group should provide per day.
- *Eat to Live* book helps readers lose 20 pounds in 6 weeks; newer *10 in 20* program advertises 10 pounds of weight loss over 20 days.
- Neither plan requires counting calories or measuring portions.

# Nutritarian



# Nutritarian <sup>(4)</sup>

- Vegetables (30–60%): unlimited quantities, but raw veggies should be at least half. NO potatoes.
- Fruits (10–40%): 3–5 servings of fresh fruit daily.
- Beans and other legumes (10–40%): at least 1/2 cup daily.
- Non-factory-farmed animal products (less than 10%): meat, dairy, eggs, fish, and seafood, less than 8 ounces per week.

# Nutritarian (5)

- Nuts, seeds, and avocados (10–40%): at least 1 ounce per day.
- Whole grains and potatoes (20% max): Limit cooked starches to 1 cup daily.
- Minimally processed foods (less than 10%): tofu, tempeh, and coarsely ground or sprouted whole-grain breads and cereals.
- Sweets, processed foods, and factory-farmed meat and dairy (minimal): rarely or not at all.

# Nutritarian (6)

## Core Principles

- Nutrient density: foods ranked by nutrients packed per calorie; Cruciferous greens (kale, collards, mustard greens) get top scores, while colas scrape the bottom.
- Nutrient adequacy: has all the vitamins, minerals and omega-3's.
- Toxin avoidance: shuns chemicals, carcinogens & infectious agents.
- Hormonal favorability:
  - Choose carbs with lower glycemic load.
  - Reduce animal protein to decrease harmful hormones linked to an increased risk of breast & colon cancer.
  - Reject foods that cause hardening of the arteries.
  - Ban foods that increase fat storage.



# OTHER DIETARY SUBSTANCES

# Other Dietary Substances

- Human diet contains as many as 100,000 chemicals (eg, coffee contains 1000).
- Only 300 are nutrients, few are essential.
- Many non nutrients in foods are useful.
- Food additives improve the production and stability of foods.
- Trace components like spices, colors, odors and phytochemicals improve appearance and taste.

# Fiber (1)

- Various forms like cellulose, hemicellulose, pectin, gums:
  - Increases gastrointestinal motility.
  - Prevents constipation and hemorrhoids.
  - Helps control diverticular disease.
  - Eliminates cancer-causing substances made in the large intestine.
  - Beneficial effect in patients with functional bowel disorders.
  - Helps patients with obesity.
- A soluble fiber in fruits, vegetables, oats, barley, and legumes can reduce cholesterol levels.

# Fiber (2)

- Typical Western diet is low in fiber (about 12 g/day) because of a high intake of highly refined wheat flour and a low intake of fruits and vegetables.
- Colon cancer is associated with low fiber intake.
- Increasing fiber intake to about 30 g/day by consuming more vegetables, fruits, and high-fiber cereals and grains is generally recommended.
- However, very high fiber intake may reduce absorption of certain minerals.

# **PREBIOTICS**

# **PROBIOTICS**

# Probiotics & Prebiotics (1)

## PROBIOTICS

Live microorganisms

Bacteria or yeast

Available as food supplements and in certain foods containing live cultures such as yoghurt, kefir, aged cheese, kombucha, sauerkraut, or miso

Probiotics may support the treatment of diarrhea, irritable bowel syndrome, certain intestinal infections, prevent or reduce the severity of colds and flu or aid digestion

## PREBIOTICS

Non-living, non-digestible by human ingredient (carbohydrates)

Serve as food for friendly bacteria within the gut

Available as food supplements and naturally occurring in certain foods, such as chicory root, Jerusalem artichoke, onion, leek, garlic, raw oats, or banana

Prebiotics aid digestion and may support the treatment of several chronic digestive disorders or inflammatory bowel disease

# Probiotics and Prebiotics (2)

- Prebiotics are a type of dietary fiber, they don't contain bacteria but are fuel to help bacteria grow. .
- The fiber inulin is found in chicory, bananas and asparagus.
- Onions, garlic, artichokes, and legumes are also sources of prebiotics.

# Probiotics and Prebiotics (3)

- Many slightly fermented food products contain natural probiotics: sauerkraut, kimchi, yogurt and pickles.
- If a food contains both prebiotics and probiotics, it is called a synbiotic: cheese, kefir, and some yogurts.
- Prebiotics by themselves haven't been found to be of much use; it's only when used with probiotics that they seem to have any effect.



# SOME DIETS

# Stone Age (Paleo)

- Recommended for people with wheat sensitivity or Irritable Bowel Syndrome (IBS).
- Not allowed: Sugar, dairy, processed foods and grains are eliminated from the Paleo diet.
- Allowed: fish, fowl, vegetables, fruits, nuts, oils, sweet potatoes, eggs and grass-fed, not grain-fed meats.
- Less carbohydrates leads to decreased glucose, so your system will begin to use fat as its energy fuel source.

# Raw Food

- Emphasizes eating uncooked and unprocessed foods.
- Eliminates intake of any foods that have been pasteurized or produced with any kind of synthetics or additives.
- Intended to create a surge in energy, a decrease in inflammation, while lowering the number of carcinogens in one's diet.

# Blood Type

- Matches people's common dietary needs based on their blood type.
- Individuals with type O blood should eat lots of food that are high in protein.
- In order to lose weight, spinach, red meat, seafood and broccoli are suggested while dairy should be avoided.
- Those with type A blood should avoid meat and mostly eat turkey, tofu, and fruit.
- For weight loss, diet consists primarily of soy, seafood and vegetables.
- Individuals with type B and AB blood also have their own dietary restrictions and recommendations.

# Other Diets

- Alkaline
- Asian
- Dukan
- Elimination (Myers)
- Engine 2
- Flexitarian
- Hay Diet
- HMR
- Jenny Craig
- Macrobiotic
- Mayo Clinic
- Nordic
- Nutrisystem
- Optavia
- Raw Food
- SlimFast
- Volumetric
- Weight Watchers
- Whole 30
- Zone (40-30-30)

# “Ideal” Diet

Carbohydrates  
30%



Fruits and  
Vegetables  
35%



Protein  
12%



Discretionary  
8%



Dairy  
15%