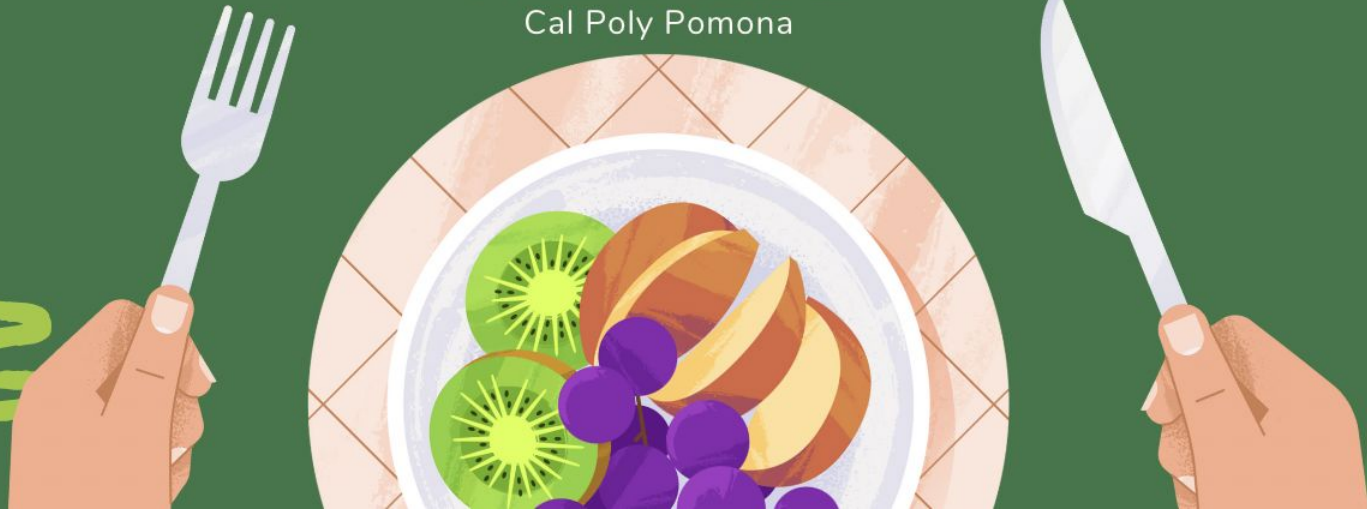


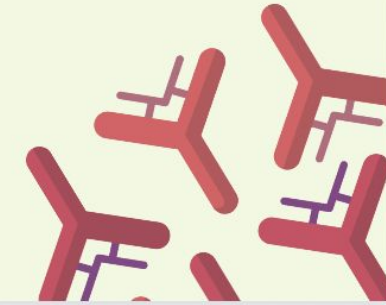
# IMMUNE HEALTH & NUTRITION

Leah Carson  
Dietetic Intern 2022-23  
Cal Poly Pomona



# WHAT IS THE IMMUNE SYSTEM?

A network of pathways within the human body that recognizes and defends against "foreign invaders" such as bacteria, microbes, viruses and parasites



TONSILS  
ADENOIDS  
THYMUS  
BONE MARROW  
SPLEEN  
LYMPH NODES  
PEYER'S PATCHES

# PHYSICAL & CHEMICAL BARRIERS

- SKIN
  - MEMBRANES
  - CILIA
  - OILS
  - PH
  - SWEAT
  - BODY TEMP
  - SALIVA
  - STOMACH ACID
  - URINE
  - TEARS
  - MUCUS
- 

## INNATE IMMUNITY



## ADAPTIVE IMMUNITY

- Rapid response (hours to days)
- Already present within the body
- Non-specific targets
- No memory

- Slow response (days to weeks)
- Natural or artificial
- Specific targets
- Long term memory

# WHAT MAKES A HEALTHY IMMUNE SYSTEM?

## NUTRITION

The **AMOUNT** and **TYPE** of nutrients consumed in food directly influence the growth and function of immune cells.



&



# VITAMINS & MINERALS

**A**

- Stimulates production of WBC
- Once broken down in the body, Vitamin A is used to maintain and strengthen barriers
- Steroid hormone - gene regulation

**B**

- B6, B12, Folate
- Co-factor for hundreds of enzymes involved in protein metabolism
- Supports the production of antibodies
- Promotes NK cell growth and maintenance

**C**

- Antioxidant
- Stimulates production of WBC
- No evidence to show prevention against common cold
- Studies show decreased duration by 4 days

**D**

- Maintains bone health
- Deficiencies are linked to increased respiratory infections
- Steroid hormone - gene regulation

**E**

- Antioxidant
- Protects from free-radical damage
- Reduces production of free-radicals in certain situations

**ZINC**

- Cellular function: catalytic, structural and regulatory
- Critical for T-cell development and thymus regeneration
- Major player in creation of DNA

# VITAMINS & MINERALS

**A**

**B**

**C**

**D**

**E**

**ZINC**

RDA (m): ~3000 IU  
RDA (w): ~2300 IU  
UL: ~5,000 IU

Find it In:  
Sweet potatoes,  
carrots, beef liver,  
fish oils, kale,  
spinach, red bell  
peppers, apricots,  
eggs

RDA (m): varies  
RDA (w): varies  
UL: 100mg/day

Find it In:  
Chicken, bananas,  
fortified cereals  
salmon, tuna,  
yellowfin tuna,  
potatoes with skin,  
pork loin

RDA (m): 90 mg  
RDA (w): 75 mg  
UL: 2,000 mg

Find it In:  
Pineapple, kale,  
cauliflower,  
strawberries,  
Brussels sprouts,  
red bell pepper,  
guava

RDA (m/w): 600 IU  
RDA (>70): 800 IU  
UL: 4,000 IU

Find it In:  
Egg yolks, pork loin,  
wild salmon,  
swordfish, tuna, cod  
liver oil, fortified  
milk, fortified yogurt  
and cereals

RDA (m): 15 mg  
RDA (w): 15 mg  
UL: > 1,000 mg

Find it In:  
Sunflower seeds,  
almonds, sunflower  
oil, hazelnuts,  
spinach, peanut  
butter, plant based  
oils

RDA (m): 11 mg  
RDA (w): 8 mg  
UL: 40 mg

Find it In:  
Oysters, dark meat  
turkey, legumes,  
yogurt, mushrooms,  
spinach, broccoli,  
nuts, seeds

# HERBAL SUPPLEMENTS

## GARLIC



- Anti-septic
- Anti-bacterial
- Anti-fungal
- Promotes T-cell production
- Cut, slice or crush garlic to produce allicin
- Reduce cold symptoms and reduces risk of getting sick

## TUMERIC



- Anti-inflammatory
- Curcumin
- Consume with black pepper to boost absorption by 2,000%

## ECHINACEA



- Flowering plant that produces berries
- Increases production of WBC
- Studies show slight benefit in preventing colds

## OREGANO



- Anti-inflammatory
- Anti-microbial
- Anti-fungal
- Antioxidant
- Contains compounds that are proven to stop the growth of bacteria

## ELDERBERRY



- Antioxidant
- Promotes cytokine production
- High in Vitamin C, A, potassium, magnesium, calcium and fiber

## GINGER



- Anti-inflammatory
- Antioxidant
- Antibacterial
- Antiviral
- Nausea, vomiting and indigestion

# WELLNESS SUPPLEMENTS

## ELIXIRS/ WELLNESS SHOTS



- Antimicrobial
- Antioxidant
- Vitamin rich



## BEE POLLEN

- Antioxidant
- Antibacterial
- Nutritional benefit can vary based on plant source and season collected



## MUSHROOMS



- Antimicrobial
- Anti-inflammatory
- Positively influence gut microbiota
- Protect against bone marrow suppression

## EMERGEN-C

- High doses of Vitamin C and multiple B vitamins
- Contains Vitamin D and Zinc



## AIRBORNE



- High doses of Vitamin C, E and A
- Large dosage of vitamins in powder form

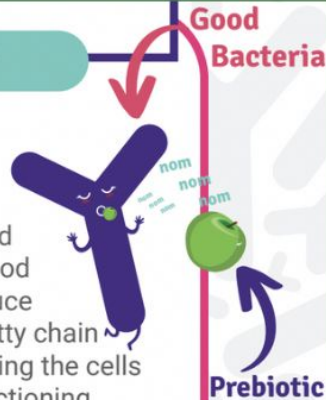
# GUT MICROBIOME

## What are Prebiotics?

They are food for our gut microbes.

Prebiotics are indigestible parts of food that ferment in the gut and feed the good bacteria. The good bacteria then produce 'short chain fatty acids.' Short chain fatty chain acids play an important role in nourishing the cells of our gut barrier, contributing to a functioning immune system, and so much more.

By getting enough prebiotics in our diet, we can improve the number and variety of bacteria in our gut – which supports better overall gut health.

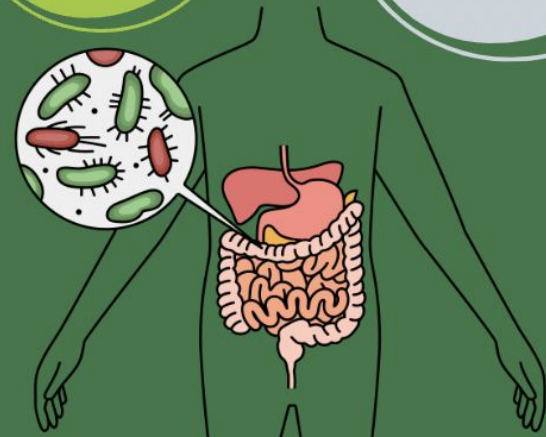


PREBIOTICS

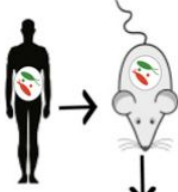
SHORT  
CHAIN  
FATTY  
ACIDS

ESSENTIAL  
AMINO  
ACIDS

PROBIOTICS



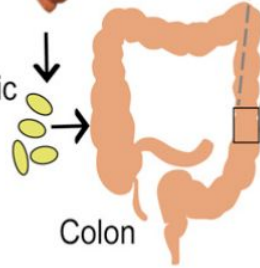
Gnotobiotic mice with characterized human gut microbiota



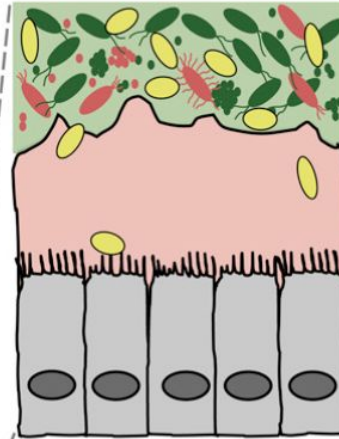
Dietary fiber deprivation



Infection with enteric pathogen

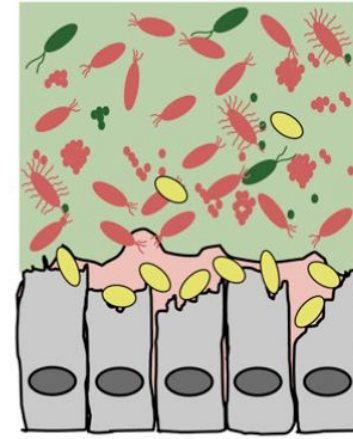


Fiber-rich diet



Mature mucus layer:  
intact barrier function

Fiber-free diet



Microbiota eroded mucus  
layer: barrier dysfunction



Mucus  
layer



Fiber-degrading  
microbiota



Mucus-degrading  
microbiota



Mucosal  
pathogen



Bacterial dietary-  
fiber degradation



Bacterial host-secreted  
mucus degradation

Figure 1. Model of How a Fiber-Deprived Gut Microbiota Mediates Degradation of the Colonic Mucus Barrier and Heightened Pathogen Susceptibility

# WHAT DO ALL OF THESE HAVE IN COMMON?

Vitamin A, C,  
D, E and B rich  
sources

Contain  
antimicrobial,  
antibacterial,  
anti-fungal and  
anti-inflammatory  
properties

Found primarily within  
plant sources (vitamins,  
minerals, herbs, spices,  
fungi)

# WHOLE FOODS



# SUPPLEMENTS

- Provides a wide range of micronutrients and minerals
- Can meet most people's daily needs
- Contains fiber, phytochemicals, flavonoids
- Provides satiety
- Hard to exceed tolerable upper intake levels

- Expensive
- Large, specific doses
- Targets specific needs
- Can treat deficiencies quicker
- Easy to intake toxic levels
- Some may be unregulated

# GINGER TURMERIC CARROT SOUP



This delicious soup is as comforting as it is healing. Packed with strong flavors like garlic, fennel, and ginger, and full of anti-inflammatory ingredients, this is the perfect winter soup.



**PREP TIME**  
10 MINUTES



**COOK TIME**  
40 MINUTES



**SERVING**  
4

## INGREDIENTS:

- 1 TBSP. OLIVE OIL
- 1 LEEK, CLEANED AND SLICED
- 1 CUP CHOPPED FENNEL
- 3 CUPS CHOPPED CARROTS
- 1 CUP CHOPPED BUTTERNUT SQUASH (OR MORE CARROTS)
- 2 GARLIC COVES, MINCED
- 1 TBSP. GRATED GINGER (ABOUT A 2 IN. PIECE)
- 1 TBSP TURMERIC POWDER
- 2 TSP BLACK PEPPER
- 2 CUPS LOW-SODIUM VEGETABLE BROTH
- 1 CAN LITE COCONUT MILK

## PROCEDURE:

- 1 HEAT THE OLIVE OIL IN A LARGE DUTCH OVEN OR SAUCEPAN. ADD THE FENNEL, LEEKS, CARROTS, AND SQUASH. SAUTÉ FOR 3-5 MINUTES UNTIL THE VEGGIES START TO SOFTEN. ADD THE GARLIC, GINGER, TURMERIC, SALT, AND PEPPER, AND SAUTÉ FOR A FEW MORE MINUTES.
- 2 ADD THE BROTH AND COCONUT MILK. BRING THE MIXTURE TO A BOIL, COVER, AND SIMMER FOR 20 MINUTES.
- 3 ONCE THE SOUP IS COOKED, ADD IT TO A BLENDER AND BLEND UNTIL CREAMY. YOU COULD ALSO USE AN IMMERSION BLENDER. TASTE AND ADJUST THE SEASONINGS TO YOUR TASTE.
- 4 SERVE IMMEDIATELY WITH A DOLLOP OF COCONUT YOGURT AND ENJOY!

Give your soup a boost! Top with nuts and seeds of your choice to give it a crunch.

## NUTRITION FACTS:

Serving: 1.5 cups  
Calories: 205 kcal  
Carbohydrates: 25g  
Protein: 2g  
Fat: 10g  
Saturated Fat: 7g  
Polyunsaturated Fat: 1g  
Monounsaturated Fat: 3g  
Sodium: 869 mg  
Potassium: 618mg  
Fiber: 5g  
Sugar: 9g  
Vitamin A: 20534IU  
Vitamin C: 19mg  
Calcium: 78mg  
Iron: 2mg

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