

# Module 4: Minerals & Hydration

The body's spark plugs

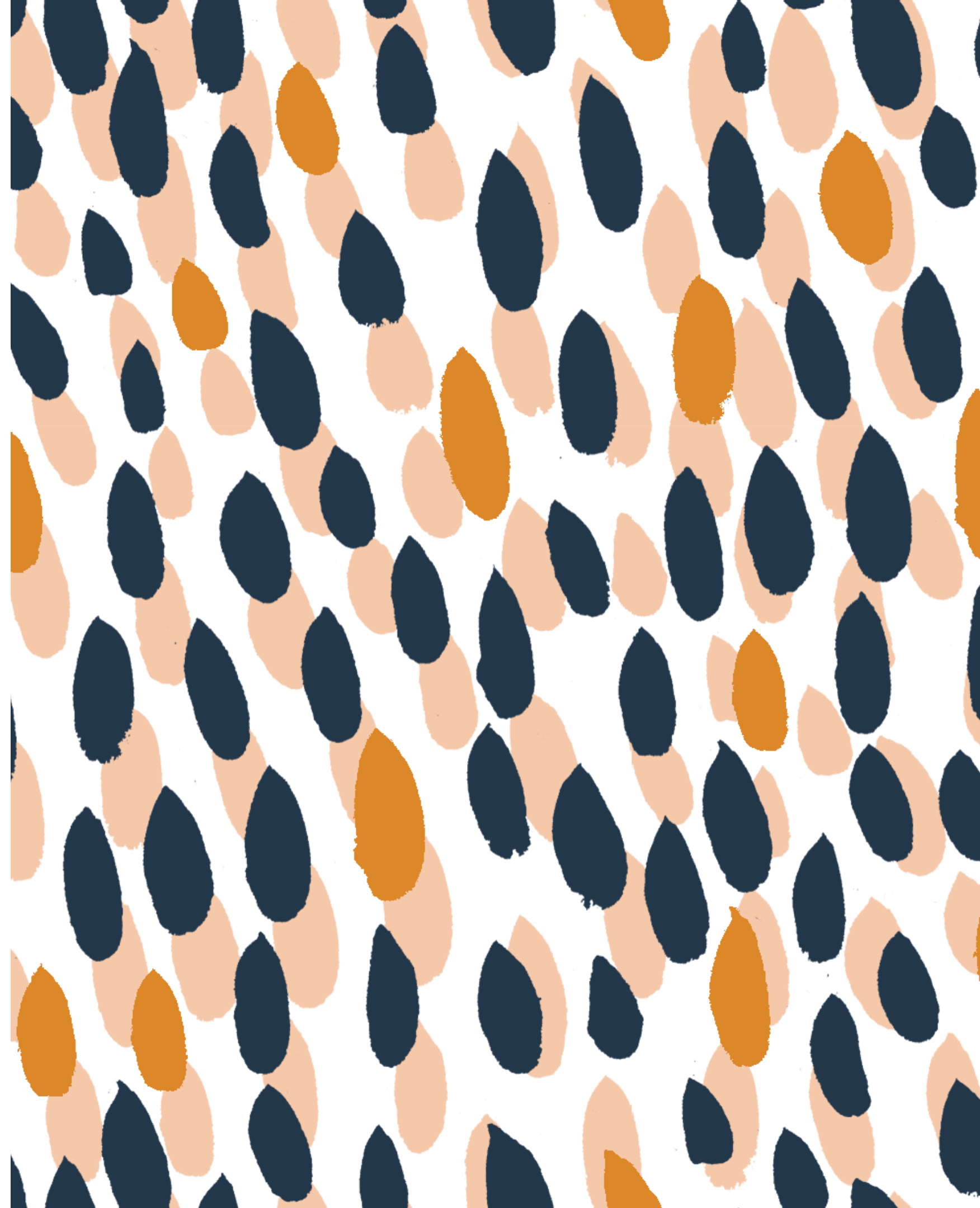






# Minerals

(the basics)



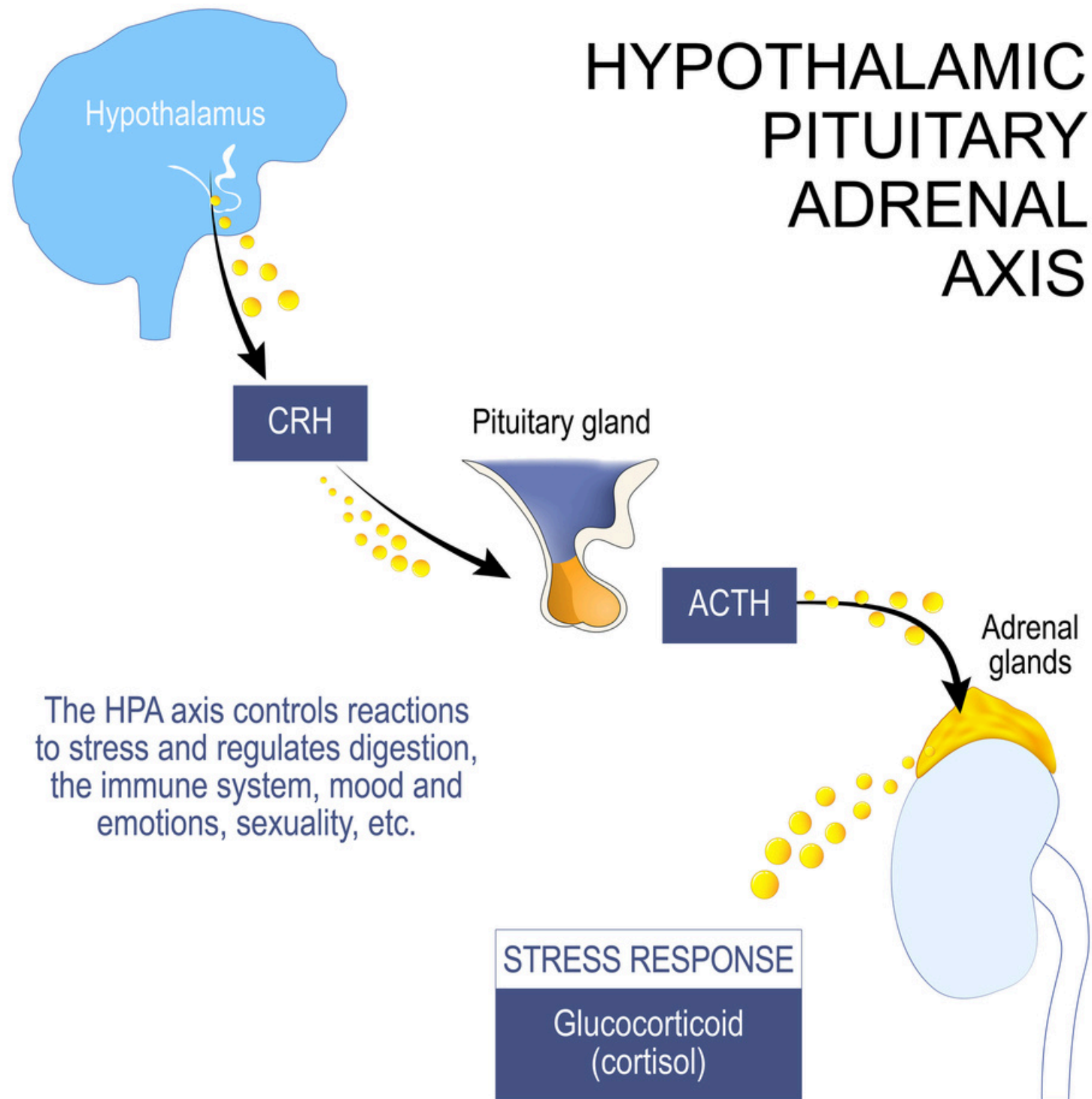


# Minerals 101

- Often referred to as the “spark plugs” for every metabolic pathway
  - foundational for making hormones, making energy, absorbing fluids, making stomach acid – to name a few
- Used up more quickly during times of stress







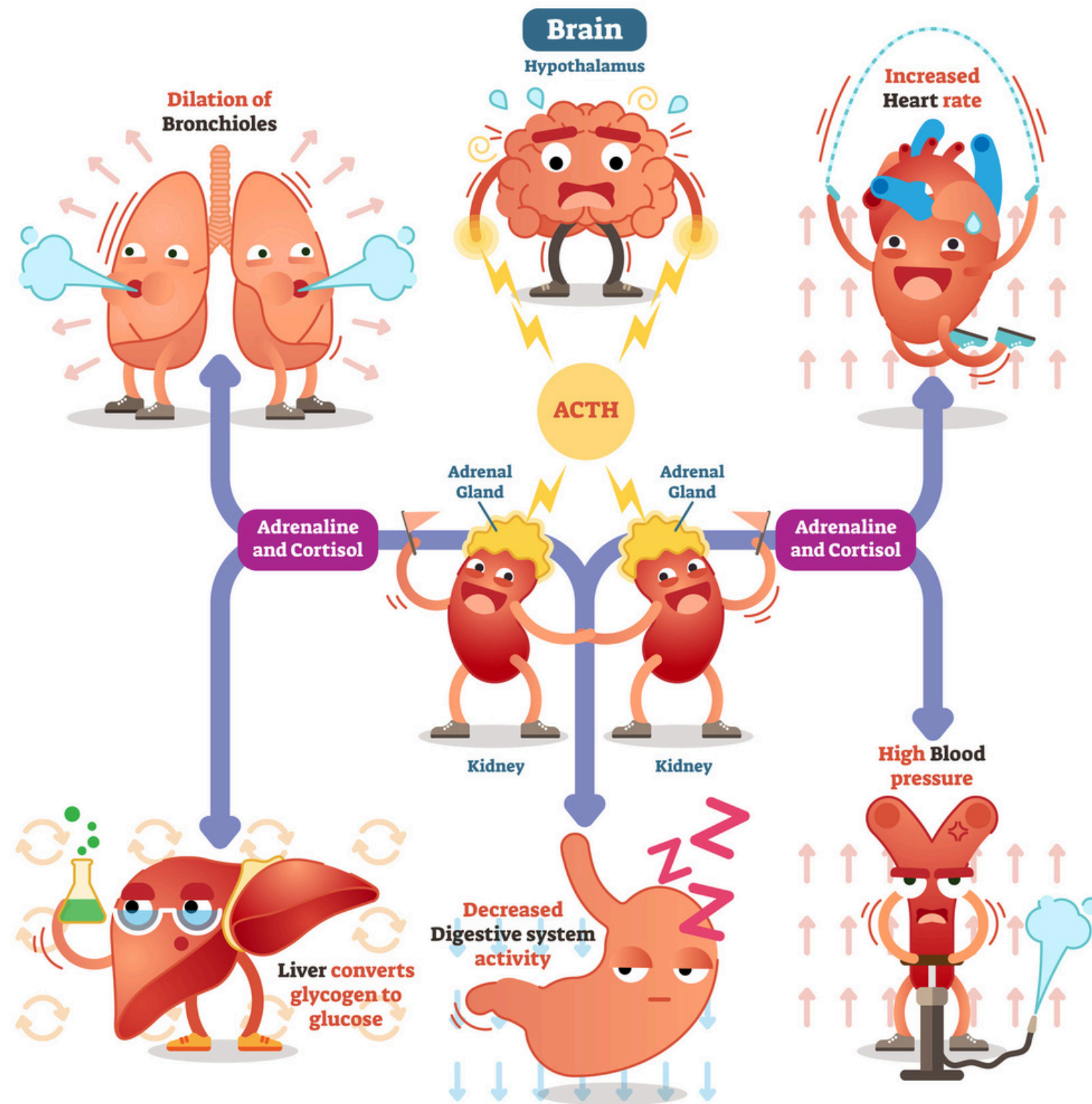
## HPA Axis

### Hypothalamus–Pituitary–Adrenal Axis

- Body's main way of responding to stress
- Involves our adrenal glands (small glands that sit on top of your kidneys)
- These glands secrete important hormones, including:
  - cortisol (our main stress hormone)
  - adrenaline
  - DHEA (precursor to our sex hormones)
- Produces more or less based on stress
- Require **sodium (Na)**, **potassium (K)**, & **magnesium (Mg)** to make cortisol



# STRESS RESPONSE SYSTEM



## HPA Axis

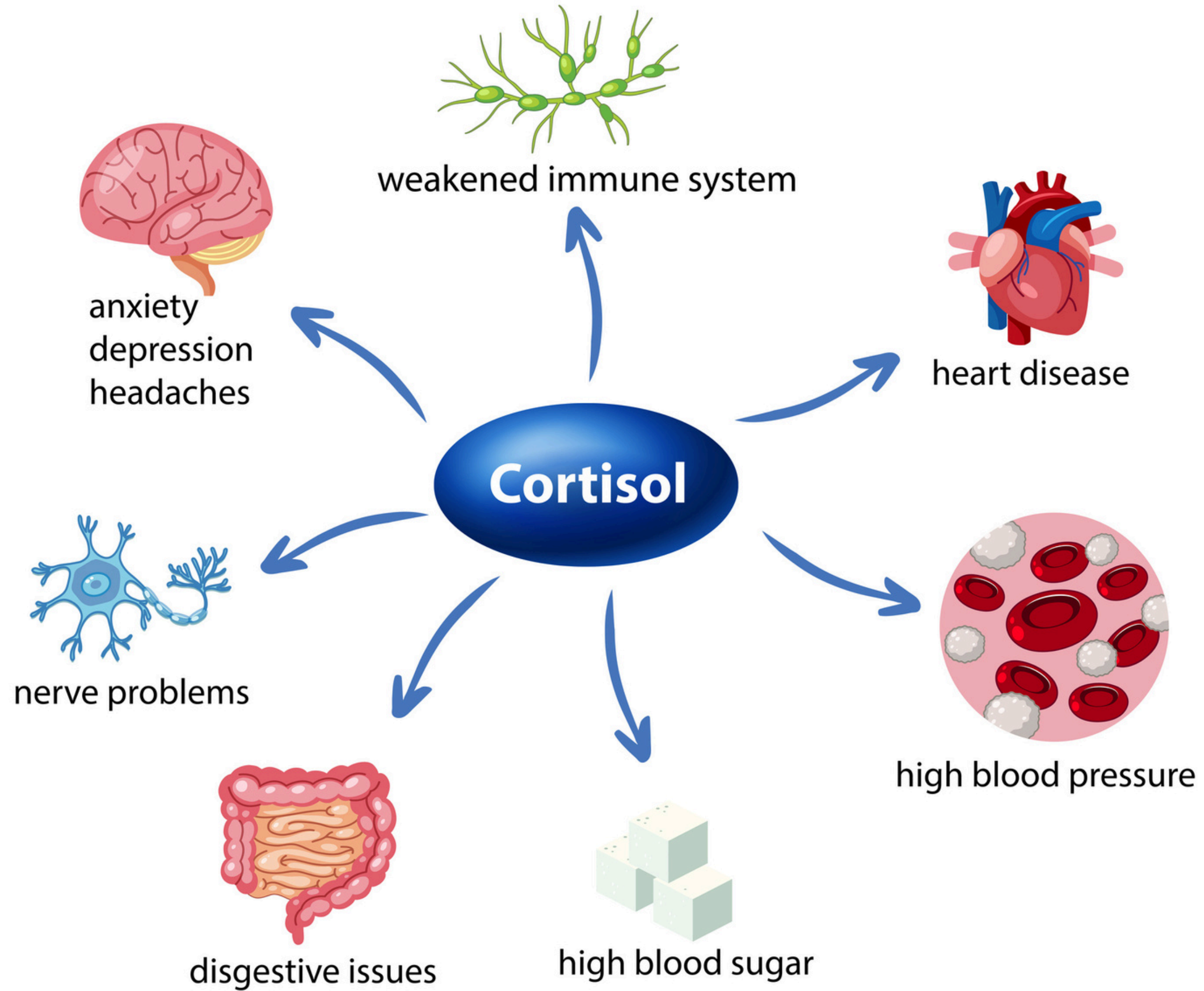
Under normal (i.e. short bouts of) stress:

- Adrenals push out more cortisol and DHEA to preserve our health
- Also secrete adrenaline to give you energy when needed – like to run away from a threat

But when stress becomes chronic:

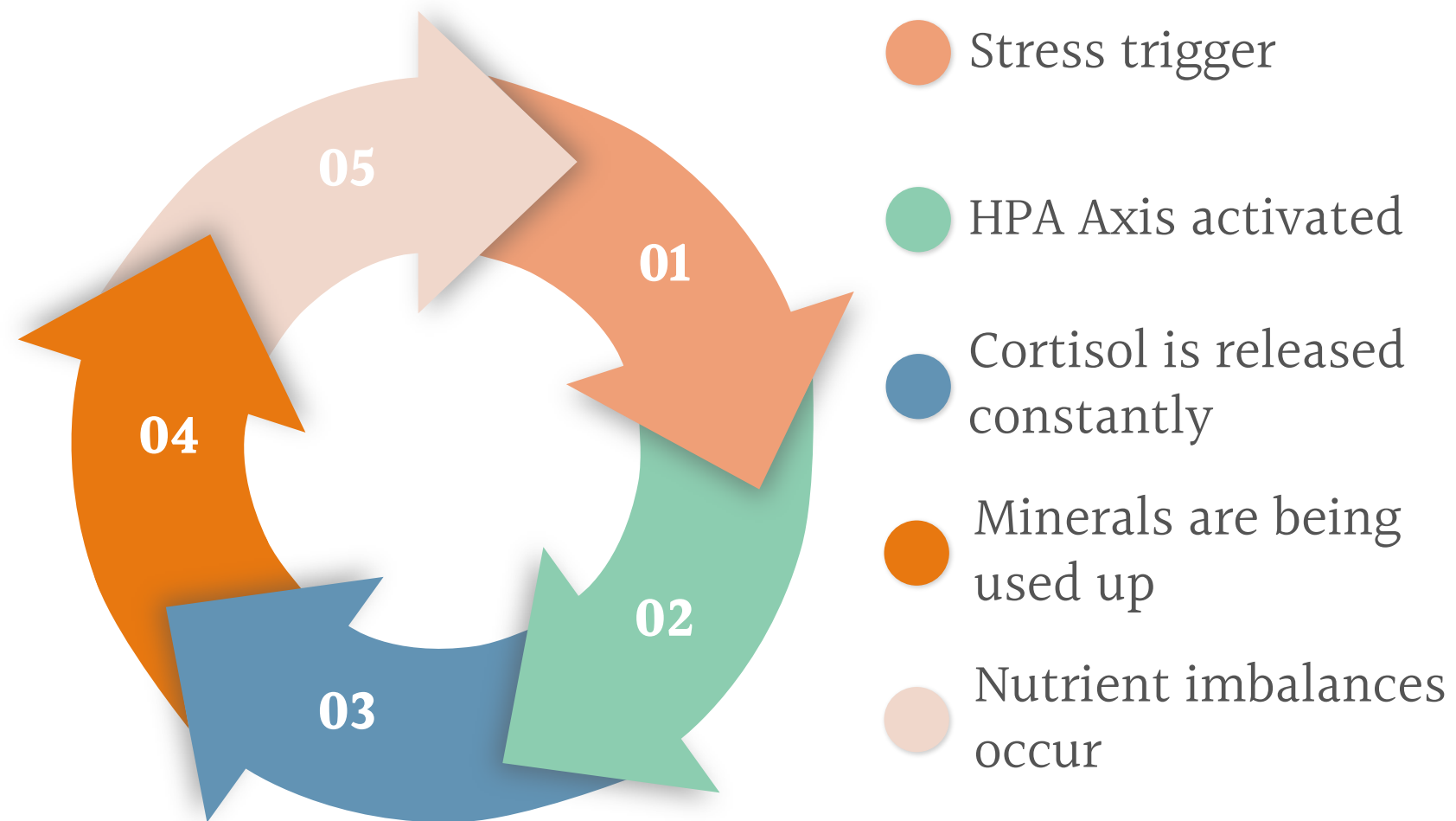
- Adrenals cannot keep up with the demand of cortisol and DHEA
- This can lead to feeling nervous and anxious
- Other side effects: insomnia, fatigue, depression, irritability, high blood sugar







# Inflammation & stress



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- A “sneaky” form of stress
- Activates the HPA Axis → cortisol is being released all the time → minerals are being used up → nutrient imbalances occur
- Caused by chronic blood sugar imbalances, gut infections, dysbiosis, gut permeability (aka “leaky gut”), etc.
- The stress response is supposed to be protective, but becomes harmful when it’s long term



# GETTING “STUCK” IN THE **STRESS** **RESPONSE**





# IMPACT OF CHRONIC STRESS



## 1 – The Stressor

Any change – good or bad  
Non-stop lifestyle  
BS imbalances  
Digestive dysfunction  
Defeated/hopeless/desperate mindset  
Poor circadian rhythm

## 2 – Increased Cortisol

Increased insulin resistance  
Increased BS  
Increased lipid levels in blood fats  
Increased cholesterol  
Water retention

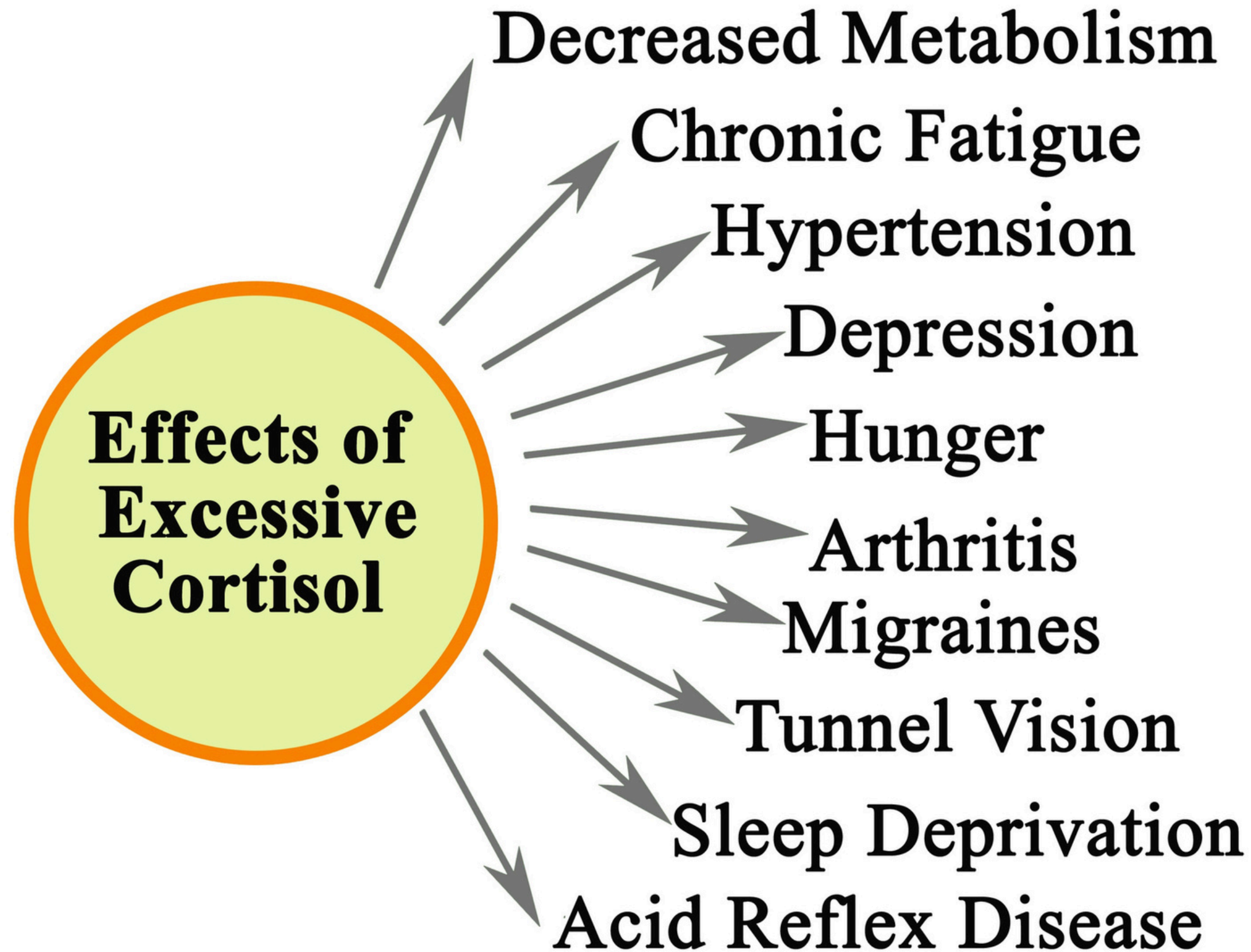
## 3 – Suppressed Immune System & Inflammation

Increased dysbiosis  
Increased intestinal permeability (aka “leaky gut”)  
Loss of potassium in the cells

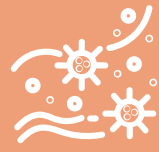
## 4 – Decreased Secretory IgA (helps manage food sensitivities)

Dysbiosis & intestinal permeability worsen  
Decreased white blood cells  
More frequent illness  
Food sensitivities increase (includes gut & skin reactions)









## Decreased Saliva

sympathetic state (“fight or flight”) decreases saliva production (first stage of chemical digestion, especially carb foods)



## Stomach

increased cortisol and other hormones degrade the mucus barrier that protects against ulcers, plus it lowers stomach acid over time



## Pancreas & Gallbladder

decreases pancreatic secretions, like insulin, enzymes, etc. This impacts BS balance and digestion



## Small Intestine

increased intestinal permeability (“leaky gut”), decreased motility

# Chronic Stress & Digestion



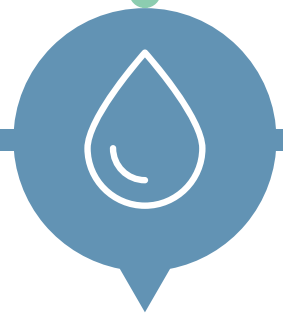
# Stress & Dysbiosis

(another form of sneaky stress)



## Slows Gut Motility & Food Breakdown

Less “rest and digest”



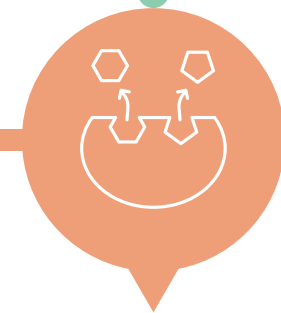
## Less Saliva Output

Less bacteria & digestive enzyme support



## Less Stomach Acid Output

Can't trigger next stage of digestion



## Inhibits Digestive Enzymes

Aren't available to assist with digestion



## Alters Immune Function

Autoimmunity, SIBO/LIBO, sIgA



Stress is **ANY** change



# Chronic stress + stimulation

- Our bodies were designed for short periods of high intensity stress, not chronic
- Types of chronic stress:
  - Stimulation overload
  - Technology + screens
  - To do lists that never end
  - Running from event to event
  - Over commitments
  - Noise
  - BS imbalances





# Signs of **Adrenal Dysfunction** & Mineral Imbalances

- Abnormal gut motility (too fast or too slow) and/or constipation/loose stools
- type A personality/lifestyle
- Never skip a workout and frequently workout to the point of exhaustion
- Eat 3 or less meals a day
- “Tired but wired” – have a hard time sleeping even though you are exhausted
- Hormones feel “out of whack”
- Dry skin
- Infrequent bowel movements
- Currently taking magnesium citrate at a dose of 800 mg or greater
- Difficulty passing stools or experiencing hard, pebbly stools
- Frequent urination during the night

# Signs of **Adrenal Dysfunction** & Mineral Imbalances

- Persistent dehydration despite drinking ample water
- Use water filtration without mineral replacement
- Experiencing physical symptoms like low blood pressure (< 100/60), lightheadedness upon standing, hypoglycemia between meals, or fatigue despite adequate sleep
- Dependence on caffeine to get through the day
- Experiencing chronic stress or fatigue
- History of trauma
- Tendency towards anxious thoughts
- Past or current use of birth control pills
- Persistent racing thoughts
- Difficulty calming down after stressful events



**How many of these symptoms  
apply to you?**



# Where **do I start?**

- Can only get minerals through food and supplements
- We start by focusing on the Big 3: **sodium, potassium, and magnesium**





# Sodium's role in digestion

- stomach acid production
- draws water into the cells (an electrolyte)
- helps control blood volume and blood pressure
- helps contract & relax muscles
- needed for optimal nerve signaling/communication (nerve impulses)





# Potassium's role in digestion

- regulates muscle contractions (the gut is a muscle and needs to contract/release for the migrating motor complex – MMC)
- improves gut motility
- improves thyroid function
- helps with fluid absorption (electrolyte)





# Magnesium's role in digestion

- cofactor in >300 enzyme systems
- needed for making protein
- improves stomach acid levels
- needed for energy production
- helps relax gut muscles
- regulates muscle and nerve function
- natural antacid
- helps balance BS
- helps regulate BP
- supports adrenal gland health and regulation of cortisol release
- needed for vitamin D metabolism







**Foods 1st!**



# Mineral **mocktails**

- **Mix of sodium\*, potassium, magnesium and vitamin C**
  - \*skip the sodium if you have high blood pressure
- Guidelines:
  - Ideally between 1–4pm (this is when our adrenals are the most active), but will still be helpful outside of these hours.
  - Start with 1 per day (can go up to 2x/day if you're feeling very dysregulated (i.e. have most/all of the listed symptoms) or are going through a particularly stressful time)





# Basic recipe & product **recommendations**

Choose one from each category

(1 scoop of the Adrenal Cocktail by Jigsaw meets all requirements EXCEPT magnesium)

Sources of Sodium:

- 1/4 tsp Celtic sea salt or Redmond's Real Salt
- Adrenal Cocktail by Jigsaw Health
- 1 packet LMNT

Source of potassium:

- 8 oz coconut water (unsweetened)
- 1/4 tsp cream of tartar
- 1 scoop Adrenal Cocktail by Jigsaw Health
- Pickleball by Jigsaw Health

Sources of magnesium:

- 1 scoop MagSoothe by Jigsaw Health
- 1 scoop Magnesium Citrate by Perfect Supplements (for constipation only)

Sources of vitamin C:

- 1/2 cup fresh citrus juice
- 1 tsp acerola cherry
- 1 tsp camu camu powder
- 1 scoop Adrenal Cocktail by Jigsaw Health





# Stomach Acid



# Stomach acid

Need sodium and magnesium to make HCL (aka stomach acid)

- Don't have what we need during times of chronic stress – being used up by adrenals

What can we do?

- Make sure the body has the building blocks it needs – aka minerals
  - magnesium-rich foods
  - zinc-rich foods
  - mineral mocktails
- Intentionally work on managing stress
  - more on this in another module



# Stomach **acid**

What can we do?

- Eliminate h.pylori infection
  - We test for this in the VIP level
  - One of the most prevalent infections in the world
  - Keeps you stuck in low stomach acid cycle

Stress → low stomach acid → stomach pH is not acidic enough to fight off infections → h.pylori infection occurs → keeps stomach acid low



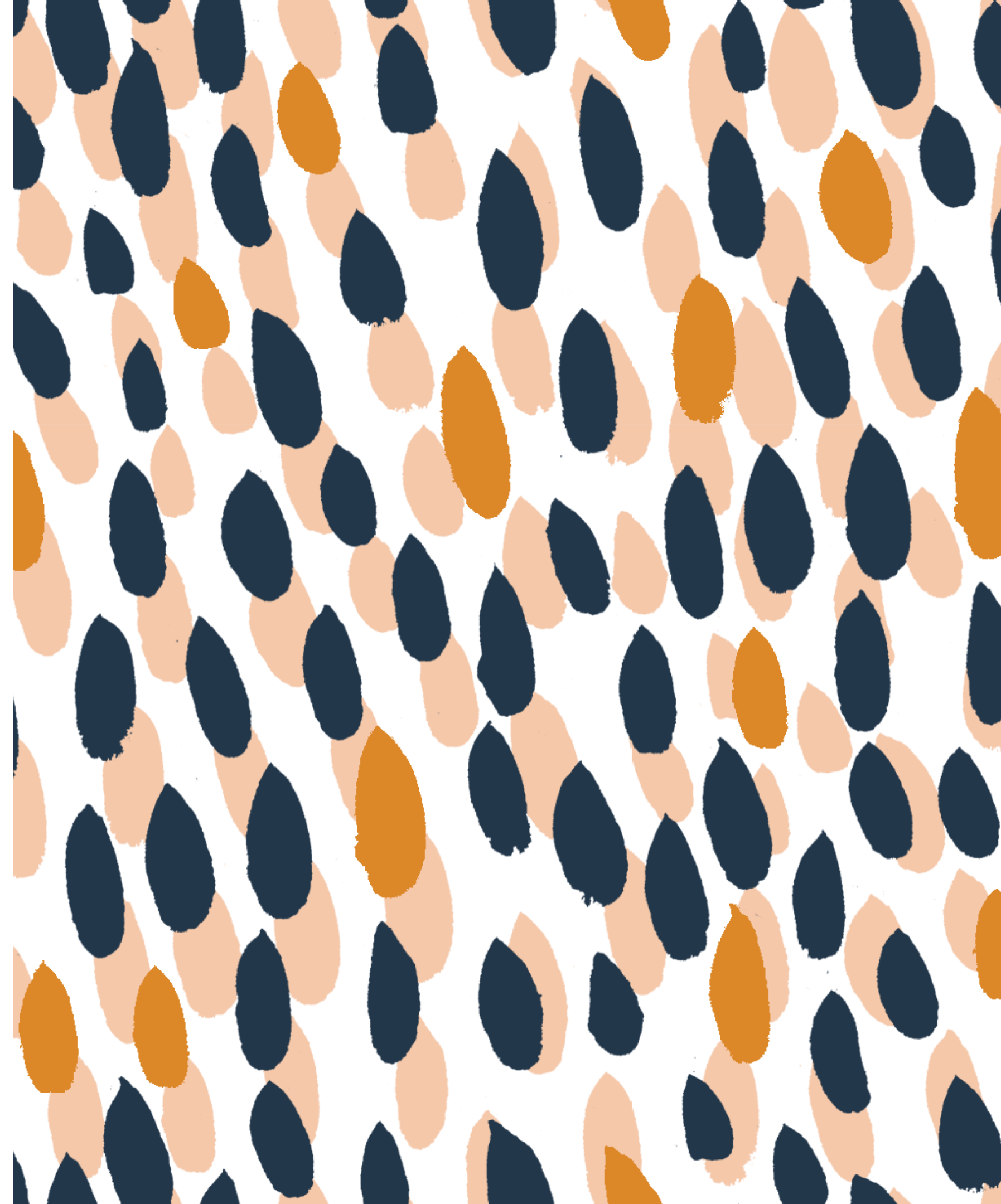
# Stomach acid

- ½–1 tsp digestive bitters before each meal/snack
- Add bitter foods to diet
  - Arugula, mustard greens, radishes, artichokes, dandelion greens, coffee (be careful of caffeine intake), Brussels sprouts
- Focus on getting fluids/water between meals
  - stop drinking large amounts ~20 min before/after eating.





**Hydration!**  
**Hydration!**  
**Hydration!**





# Fluid needs for digestion

- Helps start the process of breaking down our food
- Absorbed by the small and large intestine, moves into your bloodstream and helps to further breakdown nutrients
- Essential for digesting soluble fiber, which turns into a gel-like substance in your intestines by drawing water into the gut and softening your stool





# How much water do you need

- Start with @ least  $\frac{1}{2}$  your body weight in ounces
  - Calculate your baseline, then slowly increase how much you're having per day by 4–8 oz at a time
- If you struggle with constipation
  - **Goal = 80–100 oz/day**
- If you're sweating a lot – working out, hot summer day, etc.
  - **Maybe closer to 120–130 oz/day**





# Hydration + minerals

Does it feel like fluids go right through you or like you have a small bladder?

- \*mineral imbalance\*
- need sodium and potassium (i.e. electrolytes) to absorb fluids

## Start HERE:

- Add a pinch of mineralized salt (Redmond's Real Salt, Celtic sea salt) to your water
- Add high quality electrolyte supplement (see handout for recommendations)







# Homework

Take the **Mineral Balance Quiz** to identify what type of mineral balance you need.

Refer to the **Balanced Meal Worksheet** for balanced meal inspiration/support.

Continue using the **Food Tracking Worksheet** from Module 2 (\*if it's helpful and not adding to your stress).







# Homework

Take 10–25 minutes to reflect on the following journal prompt:

- Take a look at the barriers to accomplishing your transformation from Module 1. What is one possible solution you've learned here that will help you break down at least one of those barriers?
- Identify at least 2 ways you've been able to move in the right direction.
  - These can be anything from “I was able to add 2 new plants to my diet this week” to “I've had a complete BM 4 days this week”

