



Gut Health - Mental Wealth **A Two-Way Street**

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GUT HEALTH = The state of your gut.

Your gut is the passageway by which nutrients (and pathogens) enter the body. Substances that enter the gut either get absorbed into the body or pushed through without gaining entry.



What is MENTAL WEALTH?



Mental Wealth = Your mental health assets minus your liabilities.

ASSETS

Joy

Love

Peace

Well-nourished

Well-washed

Well-exercised

Well-protected

Etc.

LIABILITIES

Fear

Anger

Grief

Worry

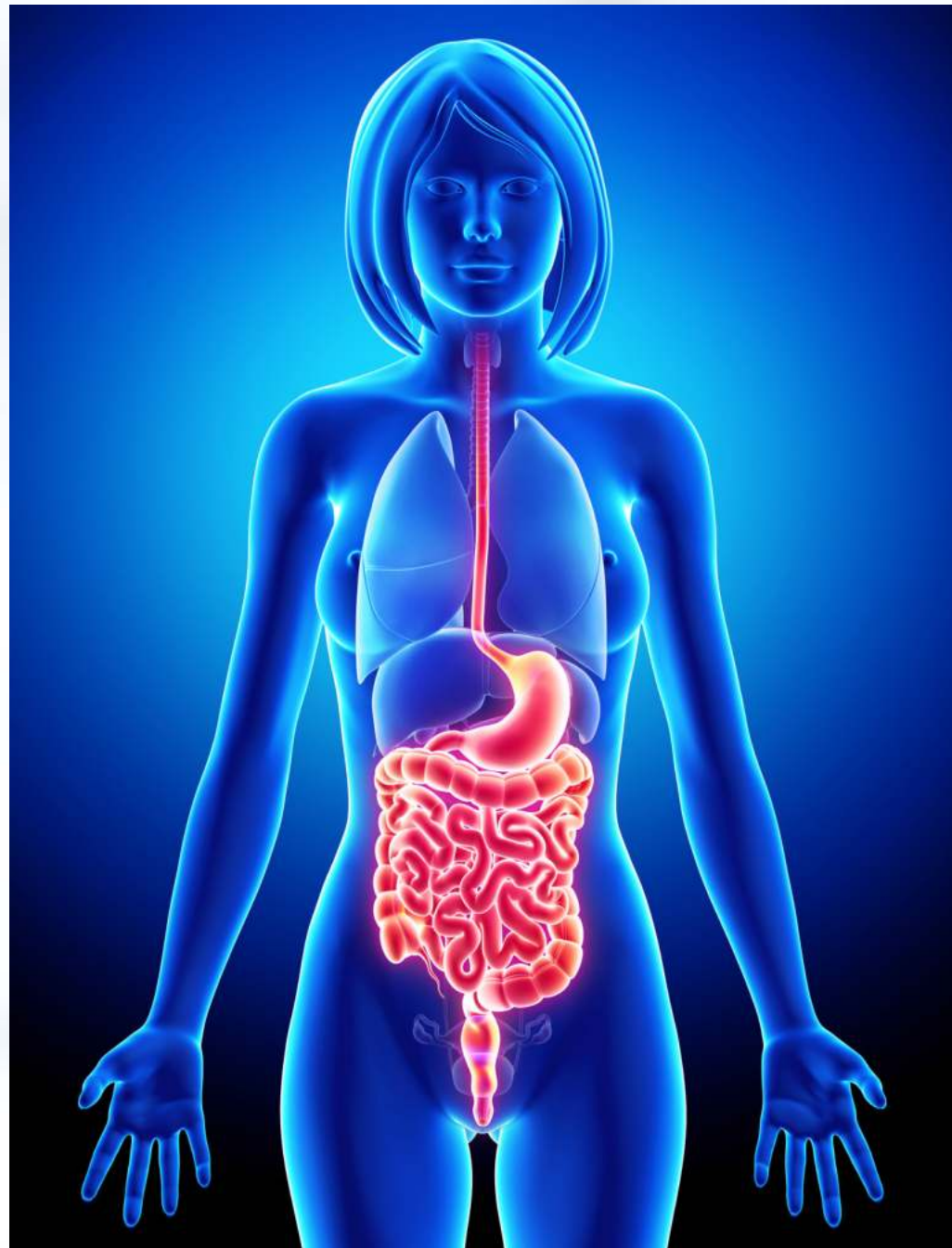
Depression

Anxiety

Chronic brain disorders

Etc.

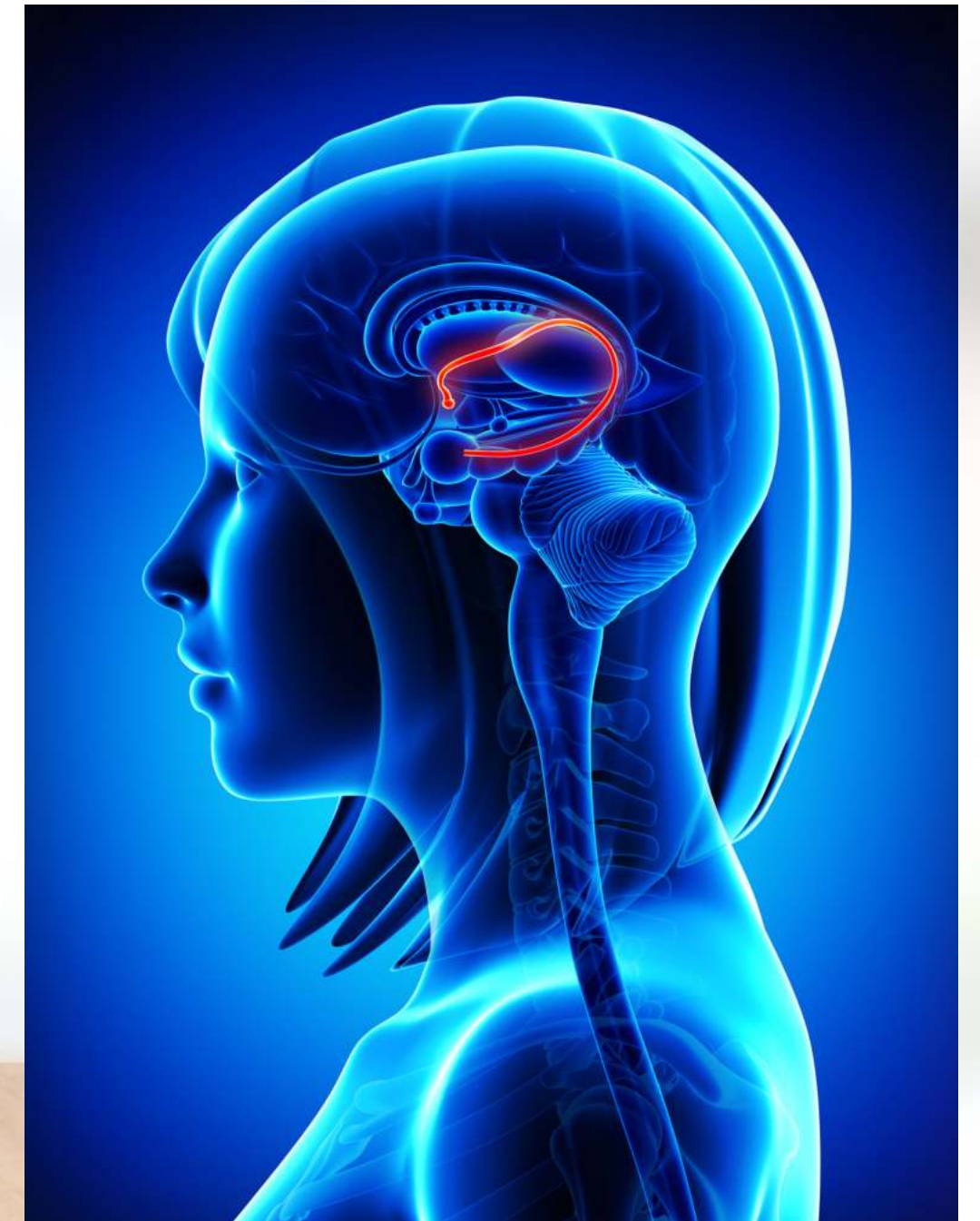
If you could only preserve your physical or mental health...



Physical Health

**Which would you
choose?**

**You actually don't
have to choose.**



Mental Health

Let's start with a few statistics...

01

A 2013 report showed that since 1979, death due to brain disease increased 66% in men and 92% in women in America.

02

About 1 in 4 adults in the US, suffers from a diagnosable mental disorder.

03

Anxiety disorders afflict more than 40 million Americans.

04

Depression, is now the leading cause of disability worldwide, and diagnoses are growing at epidemic rates.

05

Nearly 10% of the US adult population has a mood disorder for which drugs are prescribed.

06

The billions of dollars spent on treating mental disorders have a high failure rate.

Depression is an inflammatory disease.

01

High levels of inflammation dramatically increase the risk of developing depression.

02

The higher the levels of inflammatory markers, the worse the depression.

03

This places depression right in line with other inflammatory disorders.

04

Other inflammatory disorders include Parkinson's disease, multiple sclerosis, and Alzheimer's disease, etc.

05

There is now evidence that major depression is accompanied by an inflammatory response.

06

Individuals with severe depression have an increase in the level of antibodies against LPS in the blood. This is why we must focus on the gut.



You can take charge.

The good news is that brain health is largely dictated by what goes on in the gut.

90% of all known human illness can be traced back to an unhealthy gut. And so can health and vitality.

The 100 trillion microorganisms in our body outnumber our human cells by a factor of 10.

These microorganisms live in our gut, mouth, nose, ears, genitalia, and all over our skin.

Our gut bacteria is critical for the brain and overall health.

- Aids in digestion and the absorption of nutrients.
- Creates a physical barrier against potential invaders, such as bad bacteria, harmful viruses, etc.
- Influences the immune system response.
- Produces and releases enzymes and substances that support our biology and brain, including vitamins and neurotransmitters.
- Helps us handle stress through its effect on our hormonal system.
- Helps to control our bodies inflammatory pathways.



A microscopic image showing various biological structures. On the left, there are large, branching, brownish structures resembling coral or a complex network of cells. In the center and right, there are numerous small, white, rod-shaped structures, likely bacteria, scattered across a dark background. Some of these structures are clustered together, while others are isolated. The overall scene suggests a complex biological environment, possibly related to the immune system or a site of infection.

Inflammation: What is it?

Inflammation is the process by which the immune system recognizes and removes harmful and foreign stimuli and begins the healing process.

What does inflammation have to do with it?

- Our immune system controls inflammation.
- 80% of our immune system is in our gut.
- Our gut is the intestinal wall (border) with the outside world. It is lined with bacteria that can turn off the chronic immune system response (the good bacteria).
- Inflammation is the connection between the status of your gut and the status of your brain.
- Inflammation is at the core of brain illnesses, not caused by trauma or negative emotional experiences.
- Inflammation in the brain is difficult to spot because we don't see the pain and swelling.
- The brain does not have pain receptors.





Example: High Blood Sugar

More inflammation...

- Elevated blood sugar (from food) causes inflammation in the bloodstream.
- It triggers a reaction called glycation, the process by which sugar binds to proteins and certain fats.
- These sugar proteins are called, Advanced Glycation End products, (AGEs).
- The body does not recognize a AGEs as normal, so they set off inflammatory reactions.
- The relationship between poor blood sugar control, and Alzheimer's disease is so strong that researchers are now calling Alzheimer's disease type three diabetes.
- Type 1 Diabetes is also caused by an inflammatory response; attack on beta cells in the pancreas.
- Insulin resistance can also cause glycation.



Not just diabetics...

- A study in the New England Journal of Medicine in 2013, showed that even slight elevations of blood sugar, far below the diabetes range, significantly increased the risk for the development of untreatable dementia.
- These individuals were not diabetic.
- They had blood sugar levels well below the threshold for a diagnosis of diabetes.

A detailed 3D rendering of the intestinal mucosal surface, showing a dense array of pink, finger-like villi. Numerous small, multi-colored bacteria (purple, green, and blue) are depicted floating in the space between the villi, illustrating the gut's microbial environment.

Leaky Gut

THE DOOR TO INFLAMMATION



Our gut lining...

3 Main Functions

- First, it is the vehicle by which you obtain the nutrients from food.
- Second, it blocks the entrance into the bloodstream of potentially harmful chemicals, bacteria, and other organisms that are a threat to your health.
- Third, it contains chemicals, called immunoglobulins that bind to bacteria and foreign proteins to prevent them from attaching to your guts lining. This allows pathogenic organisms and proteins to move on out and be excreted (e.g. diarrhea).

A microscopic view of the intestinal lining, showing a dense layer of pinkish-orange epithelial cells. Numerous small, bright green and purple particles are scattered throughout the scene, representing nutrients or bacteria. The background is a soft, out-of-focus light pink.

How does our gut become leaky?

The tight junctions...

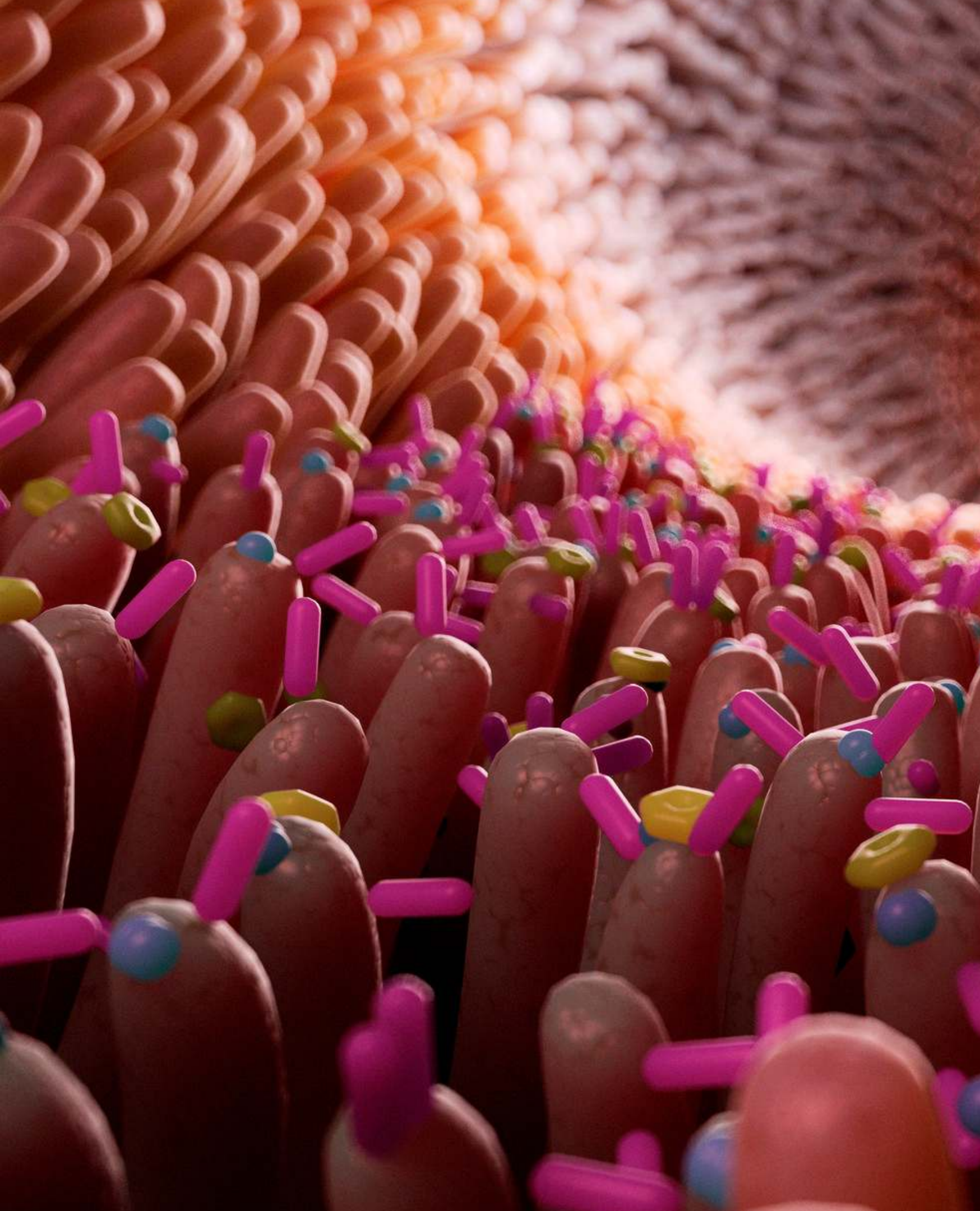
- Using the transcellular pathway, nutrients move through the epithelial cells.
- Using the paracellular pathway, nutrients pass between the epithelial cells.
- The connection between cells is called a tight junction.
- Leaky gut refers to the separation of these tight junctions.
- These tight junctions can indicate our set-point or baseline level of inflammation at any given time.
- **Leaky gut also leads to leaky brain.**



The main bad guys...

Gluten and lipopolysaccharide (LPS)

- When the gut is exposed to gliadin, a protein found in gluten, it triggers the release of zonulin another protein in the body.
- Zonulin loosens the tight junctions in the gut, making it permeable, letting gliadin into the bloodstream.
- The blood brain barrier also becomes more permeable in response to gliadin exposure.
- Gliadin also binds to opioid receptors in the brain which promotes euphoria/pleasure and addiction.
- When the tight junctions are compromised, and the lining becomes leaky or permeable, gliadin and LPS (produced within bacteria), goes into the bloodstream and produces violent inflammation.



More about LPS

A brain destroyer...

- High levels of LPS can cause elevated levels of beta-amyloid in the brain.
- Beta-amyloid is a protein that is strongly implicated in Alzheimer's disease and other memory problems.
- Research demonstrates that there is three times as much LPS in the blood of Alzheimer's patients versus healthy people.
- LPS has also been shown to decrease production of BDNF, the brain growth protein.
- We all have LPS in our guts, but it shouldn't end up in the bloodstream, where it can cause major problems.



Brain chemicals produced in the gut...

Good bacteria are capable of producing important brain chemicals like BDNF, gamma-amino butyric acid (GABA), and glutamate.

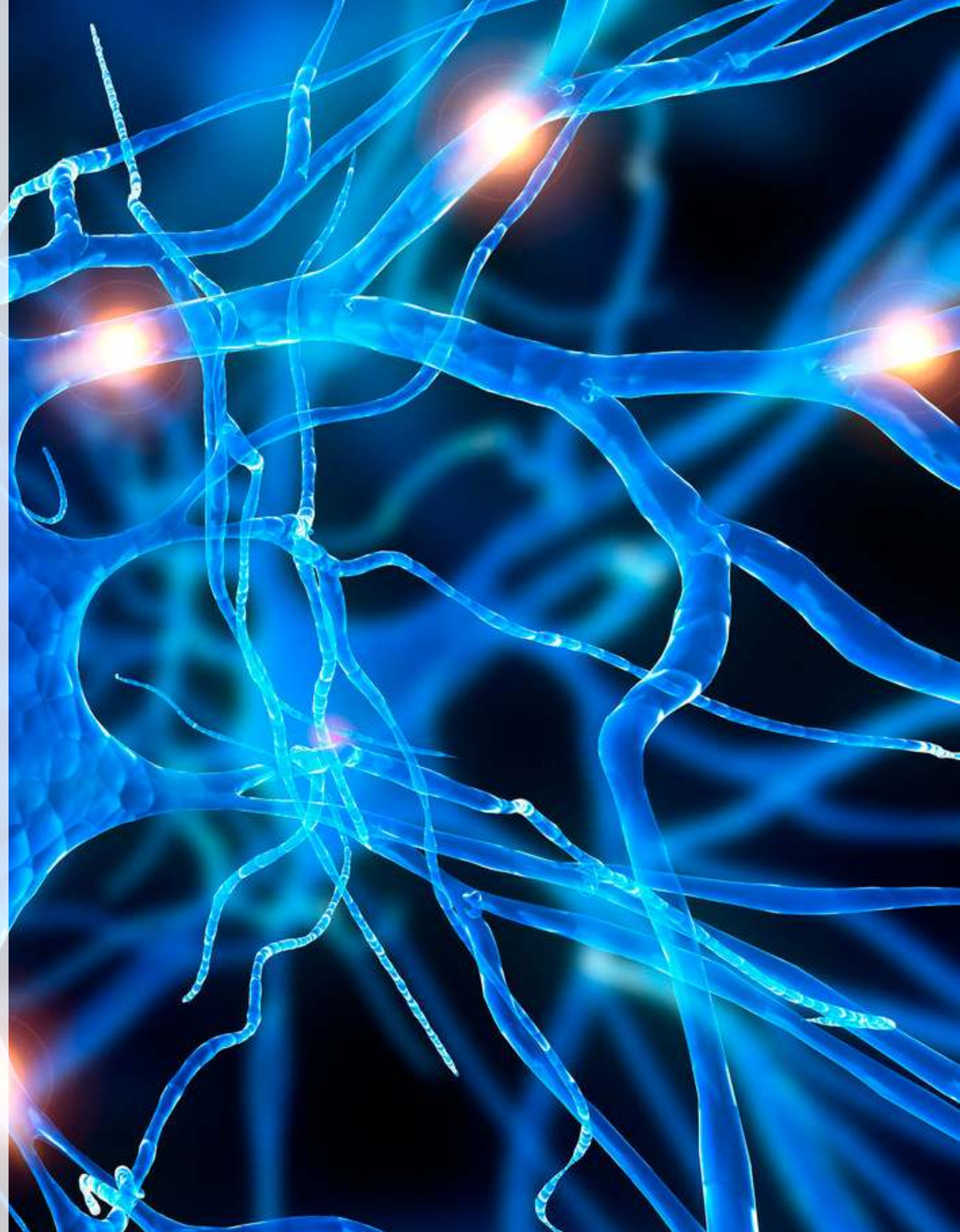
BDNF (brain-derived neurotrophic factor)

- BDNF is a critical brain growth protein that is involved in the creation of neurons.
- BDNF also protects existing neurons.
- It also supports synapse formation, which is essential for thinking, learning, and higher levels of brain function.
- Decreased levels of BDNF are found in people with Alzheimer's, epilepsy, anorexia, depression, schizophrenia, and obsessive compulsive disorder, etc.
- BDNF is primarily produced through aerobic exercise and is vitally dependent on the balance of bacteria in the gut.



GABA (gamma-aminobutyric acid)

- GABA is another chemical manufactured by gut bacteria that serves as a neurotransmitter in the brain.
- It's the main chemical in your brain that calms down nerve activity.
- It returns the nervous system to a more stable state so you can deal with stress better.
- It keeps anxiety in check.



Glutamate

- Glutamate is another neurotransmitter that is produced by the gut bacteria.
- It is involved in most aspects of normal brain function, including cognition, learning, and memory.
- It's abundant in a healthy brain.
- Numerous neurological challenges, from anxiety to depression, and Alzheimer's disease, have been attributed to a lack of GABA and glutamate.




Benzodiazepines

- This is a chemical compound that is used as a psychoactive drug that enhances the effect of the neurotransmitter GABA.
- As a drug it's a sedative that is used to combat anxiety, insomnia, seizures and muscle spasms.
- A healthy gut makes this chemical compound all on its own!
- You have your own built-in anti-anxiety pharmacy, if it's functioning properly!



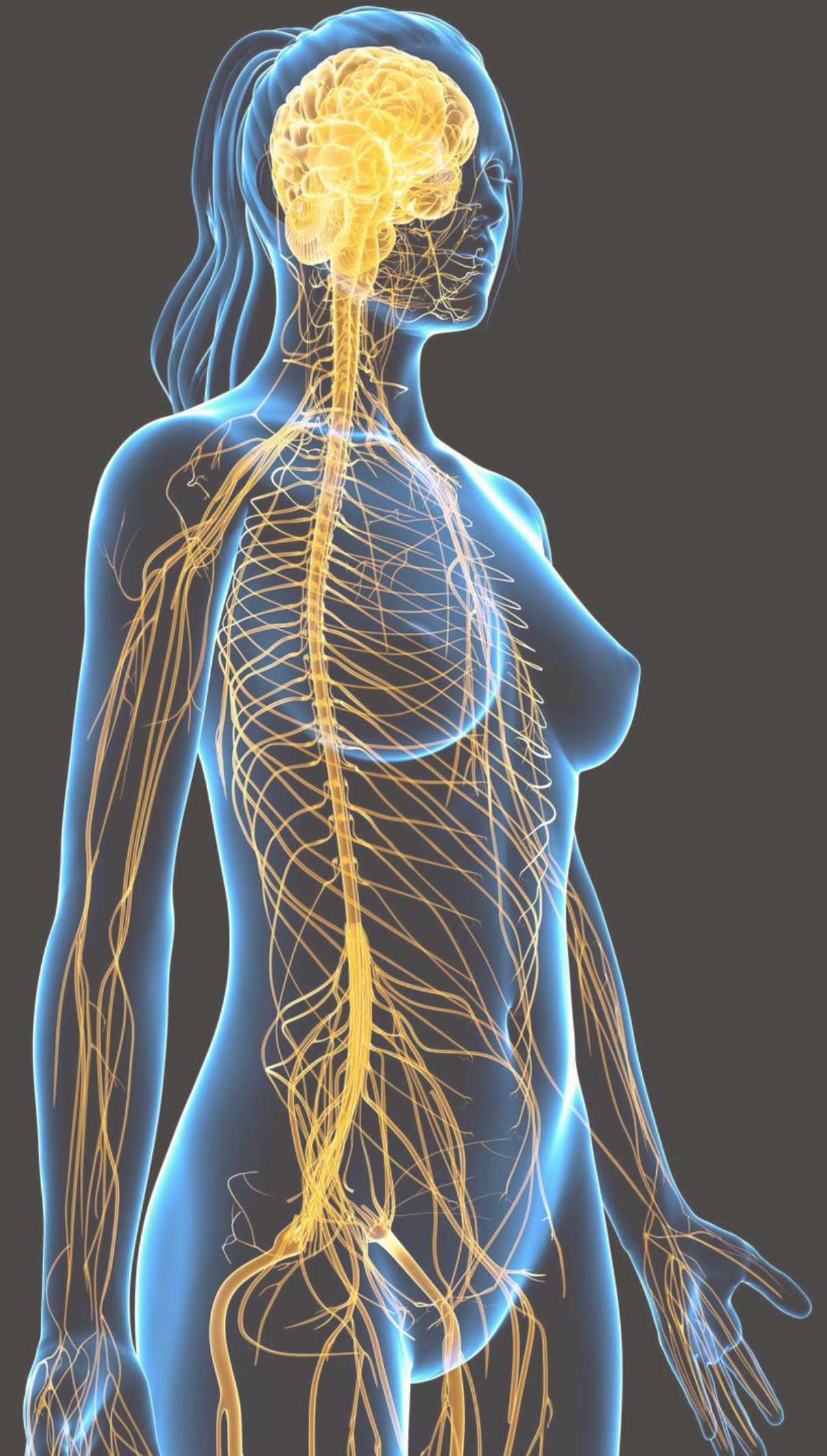


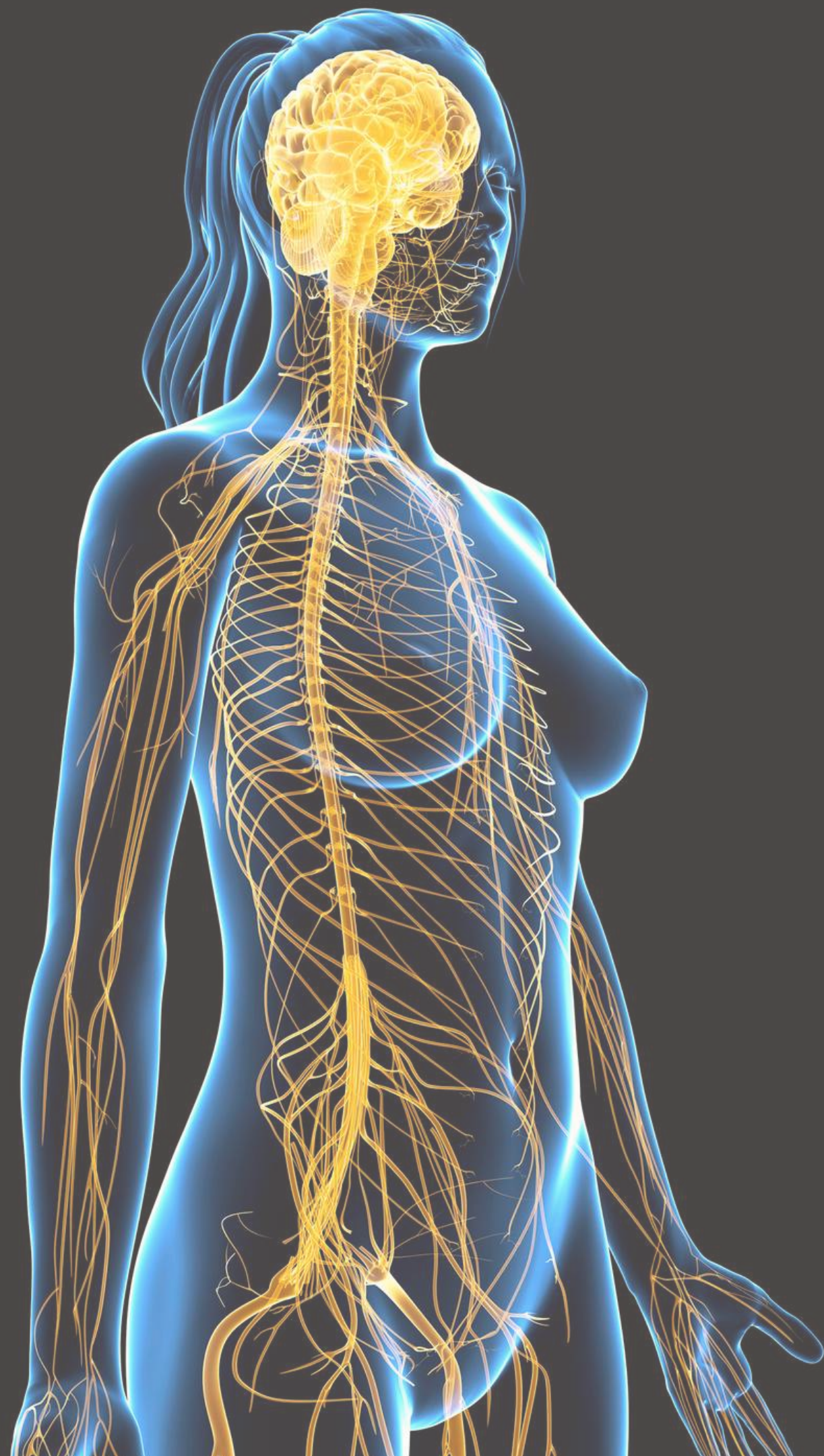
The top ways a healthy gut reduces the risk of brain disease.

- They help control inflammation.
 - They support the intestinal wall.
 - They prevent permeability.
 - They produce BDNF, GABA, Glutamate, and benzodiazepines.
- 

Bidirectional: It works both ways.

- ·The brain can affect the gut bacteria as well.
- ·Psychological stress/Trauma and anxiety can also increase gut permeability leading to further inflammation reaching the brain.
- ·The HPA axis (hypothalamic pituitary adrenal axis) stimulates the adrenal glands during times of stress to create cortisol, the body's key stress response hormone.
- ·Higher levels of cortisol stimulate inflammation in the gut and correlate with a variety of brain issues, including depression and Alzheimer's disease.
- ·Elevated cortisol can also directly damage the gut.
- ·However, the damaging effects of cortisol can be reversed with probiotics.





The Vagus Nerve

The Communication Channel

- Downstream nervous butterflies.
- Upstream anxiety and depression.

- The vagus nerve is the communication channel between the nerve cells in our intestinal/enteric nervous system and our central nervous system.
- The vagus nerve runs from the brain stem to the abdomen.

- The central and enteric nervous systems are created from the same tissue during fetal development.

- 80 to 90% of our serotonin is made in our gut.
- Serotonin is our feel good hormone/neurotransmitter..

6 Essentials to rebuild your microbiome to support brain health...



- 1. Prebiotics**
- 2. Probiotics**
- 3. Fermented foods (1&2+)**
- 4. Raw vegetables & berries**
- 5. Gluten-free foods**
- 6. Healthy fats**

Brain Foods

Fermented Foods

Yogurt (non-dairy and no sugar added), pickled fruits and vegetables, kimchi, sauerkraut.

Raw Veggies

Leafy greens and lettuce, collards, spinach, broccoli, kale, chard, cabbage, onions, mushrooms, cauliflower, brussels sprouts, artichoke, alfalfa, sprouts, green beans, celery, bok choy, radishes, watercress, turnip, asparagus, garlic, leek, fennel, Shallots, scallions, ginger, jicama, parsley, water chestnuts.

Low-sugar Fruit

Avocado, blueberries, bell peppers, cucumber, tomato, zucchini, squash, pumpkin, eggplant, lemons, limes.

Healthy Fat

Extra-virgin, olive oil, sesame, oil, coconut oil, almond milk, avocados, coconuts, olives, walnuts, other nuts, and nut butter, flaxseed, sunflower, seeds, pumpkin seeds, sesame seeds, Chia seeds. (Omega 3s: Salmon, Algae oil, Flaxseed oil)

Non-gluten grains

Oats, buckwheat, amaranth, millet, quinoa rice (brown, wild, white), sorghum, teff.

Dark Chocolate

Flavonols are anti-inflammatory and antioxidant.



A Few of My Favorite Fermented Foods...



Foods to Avoid

Gluten

Wheat, barley, rye, spelt, etc.

High Fructose Corn Syrup

Sodas, bottled juices, many processed foods...
CHECK THE LABEL.

Cow's Milk

Instead use nut milk or other plant based milk. You can also use goat milk.

Refined Sugar

So many foods... CHECK THE LABEL FOR CANE SUGAR, ETC.

Processed Foods

Snacks, desserts, etc. Foods in a box, can, bag, etc.

Inflammatory Oils

Sunflower, Safflower, and Canola oils are highly inflammatory when consumed.



Three Forces that work against your gut...



Force 1

Exposure to substances that kill or change the composition of bacteria in the gut. This includes ingredients in food (sugar and gluten), water (chlorine), and **drugs (antibiotics)**.



Force 2

Lack of nutrients that support healthy, diverse tribes of bacteria and instead favor bad bacteria.



Force 3

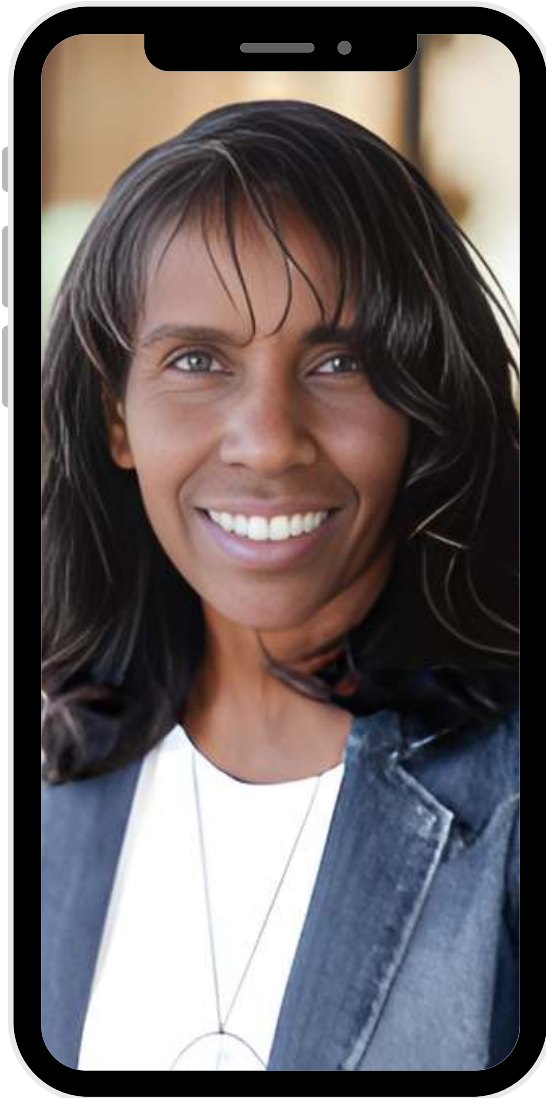
Stress.

TAKEAWAY...

SUPPORT YOUR GUT HEALTH FOR MENTAL WEALTH



I can't
do it



LET'S CONNECT

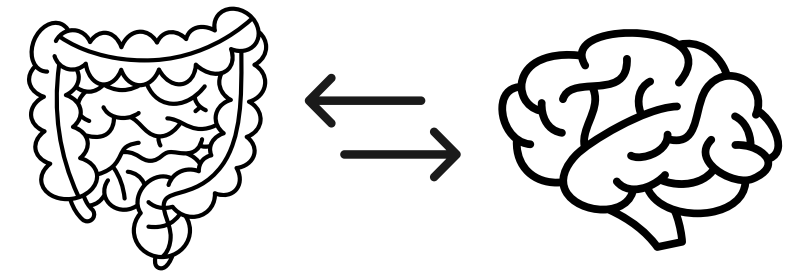
 hello@donnamarie21.com

Thank You



SAVE THE DATE

SEPTEMBER 16 - 17



THE GUT-BRAIN 21-DAY RESET Live Virtual Event

Send an email to
hello@donnamarie21.com to
get the details.

REFERENCES / CREDITS

The information contained in this presentation has been obtained from various sources, largely Dr. David Perlmutter's (neurologist) research, books, and writings, as well as the Functional Nutrition Alliance, and other research studies.