

The Brain-Gut Food Connection and the Human Microbiome

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Did You Know?



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The 3 Brains

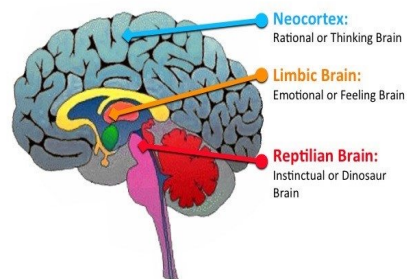
- * Head Brain
- * Heart Brain
- * Gut Brain



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Head Brain

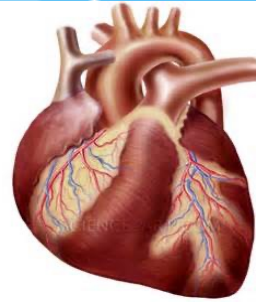
- * **100 billion neurons**
- * Cognitive Perception
- * Thinking
- * Making Meaning
- * **CREATIVITY**



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Heart Brain *

- * **40 000 neurons**
- * Emotions
- * Values
- * Relational affect
- * **Compassion**

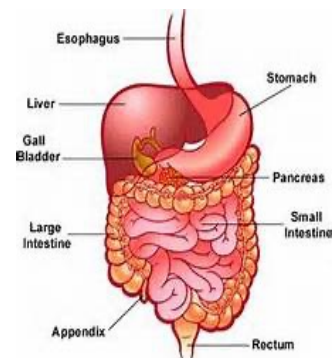


- * The heart has the strongest electromagnetic field

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Gut Brain

- * **100 million neurons**
- * Core Identity
- * Self Preservation
- * Mobilization
- * 30 Neurotransmitters
- * 90% Serotonin and
- * 50% Dopamine
- * **COURAGE**



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Brain Gut Connection and Communication Through the Vagus Nerve



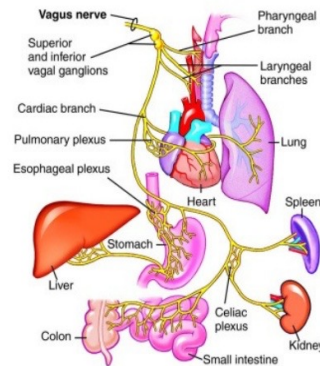
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Brain Gut Connection

- The gut brain connection refers to the physical and chemical connections between the head brain and the gut brain.
- Neurotransmitters and other chemicals produced in your gut also affects the brain
- There are more than 30 neuro transmitters produced in the gut, the main ones are: ***serotonin and dopamine***

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How these 2 Brains Connect?

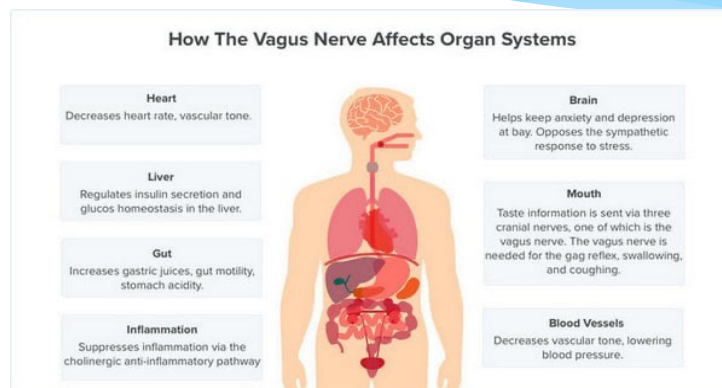


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The Vagus Nerve

How The Vagus Nerve Affects Organ Systems



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Vagus Nerve (1)

- Longest of the cranial nerves
- 10th cranial nerve
- Connects the brain to the rest of the body
- Prevents inflammation
- Help us to make memories (norepinephrine-amigdala)
- Help us breath (acetylcholine)
- Controls heart rate variability(HRV)
- Initiates body relaxation response

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Vagus Nerve 2

- It translates signals between your gut and your brain (walkie-talkie)
- Overstimulation of the vagus nerve is a common cause of fainting (vagal syncope)
- Electrical stimulation reduces inflammation and may inhibit it altogether
- Vagus nerve stimulation has created a new field of Medicine

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Gut-Brain Neurotransmitters

- * 90% Serotonin-sense of happiness and antidepressant
- * 50% Dopamine- feel good hormone
- * Some production of GABA-amino butyric acid
 - * Reduce stress
 - * Relieve anxiety
 - * Improve sleep

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Signs of an Unhealthy Gut

- Upset stomach
- Unintentional weight changes
- Sleep disturbances or constant fatigue
- Skin irritation
- Autoimmune conditions
- Food intolerance

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How Can We Increase Production of Dopamine and Serotonin Naturally

- * Exercise
- * Spend time in nature
- * Nutrition
- * Meditation
- * Gratitude
- * Essential Oils
- * Goal achievement
- * Happy Memories
- * Novelty
- * Therapy

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What Decreases Serotonin Level

- * Caffeine
- * Alcohol
- * Nicotine
- * Artificial sweeteners
- * Sugary snacks
- * Cholesterol lowering medication

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The Gut-Brain Connection Diet Foods Rich In Omega 3 Fats

- * Anchovies
- * Cod liver oil
- * Salmon
- * Mackerel
- * Herring
- * Pumpkin seeds
- * Flax seeds
- * Walnuts
- * Chia seeds
- * Leafy greens (e.g., kale, spinach)

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The Gut-Brain Connection Diet Fermented foods

- * Yogurt
- * Sauerkraut
- * Kimchi
- * Miso
- * Tempeh
- * Pickles
- * Sour Cream
- * Natto
- * Kombucha
- * Kefir
- * Yogurt (with live cultures)
- * Grass fed cheese

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The Gut-Brain Connection Diet High Fiber Foods

- * Apples
- * Asparagus
- * Avocado
- * Bananas
- * Barley
- * Buckwheat
- * Cabbage
- * Celery
- * Chicory root
- * Garlic
- * Onion
- * Legumes (beans, lentils)

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The Gut-Brain Connection Diet Food Rich In Polyphenols

- * Cocoa or dark chocolate
- * Berries
- * Green tea
- * Extra virgin Oil
- * Coffee
- * Red wine

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The Gut-Brain Connection Diet Foods Rich in Tryptophan

- * Almonds
- * Chickpeas
- * Pumpkin seeds
- * Milk
- * Turkey
- * Cheese (cottage, cream)
- * Eggs
- * Soybeans
- * Tuna
- * Avocado
- * Seaweed
- * Spirulina
- * Oat Bran

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The Gut-Brain Connection Diet Foods Rich in Vitamin B12 and folate

- * Salmon
- * Organ meats
- * Anchovies
- * Clams
- * Meat and Poultry
- * Eggs
- * Spirulina
- * Seaweed
- * Nutritional yeast flakes
- * Shiitake mushrooms

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The Gut-Brain Connection Diet

Ways to Improve Your Gut Health

- * Take probiotics and eat fermented food
- * Eat prebiotic fiber
- * Eat less sugar and sweeteners
- * Reduce stress
- * Avoid taking antibiotics unnecessarily
- * Exercise regularly
- * Get enough sleep
- * Use different cleaning products
- * Avoid smoking
- * Eat a vegetarian diet

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The Gut-Brain Connection Diet

Foods That Naturally Boost Serotonin

- * Salmon
- * Poultry
- * Eggs
- * Spinach
- * Turkey
- * Cheese
- * Green tea
- * Almonds
- * Seeds
- * Milk
- * Soy products
- * Nuts
- * Cacao
- * Anchovies
- * Sweet potato
- * Sauerkraut

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How Can We Restore The Brain Gut Connection

- * Diet
- * Exercise
- * Limit medications
- * Stress Management
- * Meditation
- * Mindfulness
- * Breathing Exercises
- * Yoga

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Things You Can Do for Your Gut Health

- Lower your stress level (MEDITATE/BREATH)
- Get enough sleep
- Eat slowly
- Stay hydrated
- Take a prebiotic (vegetables) and a probiotic (fermented food)
- Check for food intolerances
- Change and adjust your diet

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Root Cause of Chronic Disease

- Poor life style choices
 - Smoking
 - Overuse of alcohol
 - Poor diet
 - Lack of physical activity
 - Stress
 - Lack of sleep

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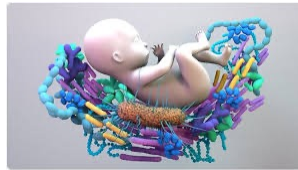
Conclusion Gut Brain Connection (GBC)

- * The GBC consists of bidirectional communication between the CNS and ENS, linking emotional and cognitive centers of the brain with peripheral intestinal function.
- * The bidirectional communication of the GBC is enabled by the Vagus Nerve.
- * Good GBC diet is vital for the production of serotonin and Dopamine and for maintaining a healthy bacteria in the gut positively impacting mood disorders and the immune system

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What is the Microbiome?

- The human microbiome is the population of more than 100 trillion microorganisms that colonize our gut, mouth, skin and elsewhere in our body
- Thousands of different microbial species colonize our bodies, together contain over one hundred times more genes than our genome.



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Our Body: A Collection of Microbial Ecosystems

We have 10 times more microbial cells in our body than human cells and the majority lives in our guts especially in the large intestine.



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How do we develop our microbiome

- In utero
- Mode of birth
 - Vaginal delivery
 - Caesarean section
- Completely developed by 3- 5 years of age

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Dietary Sources of Prebiotics

- | | |
|-----------------|----------------------|
| * Whole grains | * Nuts |
| * Apples | * Seeds |
| * Leeks | * Red wine extracts |
| * Onions | * Root vegetables |
| * Garlic | * Beans |
| * Cocoa extract | * Lentils |
| * Bananas | * Chickpeas |
| * Asparagus | * Green tea extracts |

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Probiotic foods

- * Idli and Dosa
- * Pickles
- * Dhokla
- * Yogurt
- * Kefir
- * Buttermilk
- * Cheese and Paneer
- * Apple
- * Dark Chocolate
- * Soy Milk

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Benefits of Having a Healthy Microbiome

- Strong immune system
- Heart health
- Brain health
- Improved mood
- Healthy sleep
- Effective digestion
- May help prevent some cancers and auto immune disease

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Healthy Microbiome

- Healthy
- Happy
- Strong
- Resilient



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BE HAPPY!



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