
Dysautonomia
&
Mast Cells
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About Me:

Roselle P. O'Brien,

LMHC, REAT, REACE, ICAT, LPN

Education:

- PhD in Psychology with focus on
  Mast Cell Disorders (MCD)
  Current Candidate
- MA in Clinical Mental Health Counseling
- MA in Education
- MFA in Creative Writing
- BA in Art/Fine Arts, Education
- Diploma Nursing

Licenses/Certification:

- Licensed Mental Health Counselor (LMHC)
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- Licensed Educator
- Licensed Nurse
- Intermodal Creative Arts Therapist (ICAT)
- Intermodal Creative Arts Facilitator (ICAF)

About Me (cont'd):

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Licenses/Certification (cont'd):

- Registered Expressive Arts Therapist (REAT)
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- Certified Life Coach
- Certified Health & Nutrition Life Coach
- Certified Therapeutic Arts Life Coach
- Certified Group Life Coach

Certificates:

- Eco-Health Support: Medical Professional
- Eco-Health Support: Therapist

The Eco-Health Certificate Programs are for understanding and working with people who have Mast Cell Disorders (MCD) such as Mast Cell Activation Syndrome (MCAS), Post-/Long-COVID, being sensitive to multiple chemicals, chronic fatigue, brainfog, EDS, fibromyalgia, and more.

For more information: https://celacareonline.us

About the Work I Do:

Roselle P. O'Brien,

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Health & Wellness · Therapy · Life Coach
Creative Arts for Health & Healing · Supporting You!

I am a mast cell specialist with over 13 years of experience working with and supporting individuals with MCAS and other mast cell activation related issues and disorders. Visit the website and learn more:

CELACare Eco-Health, Inc.
https://celacareonline.us

RoadMap:

- Mast Cells: They're Everywhere
- Connective Tissues
- Mast Cells & their Mediators
- The Nervous System & Autonomic Nervous System
- Dysautonomia
- Enter Mast Cells
- Mast Cell Informed Strategies & Supports

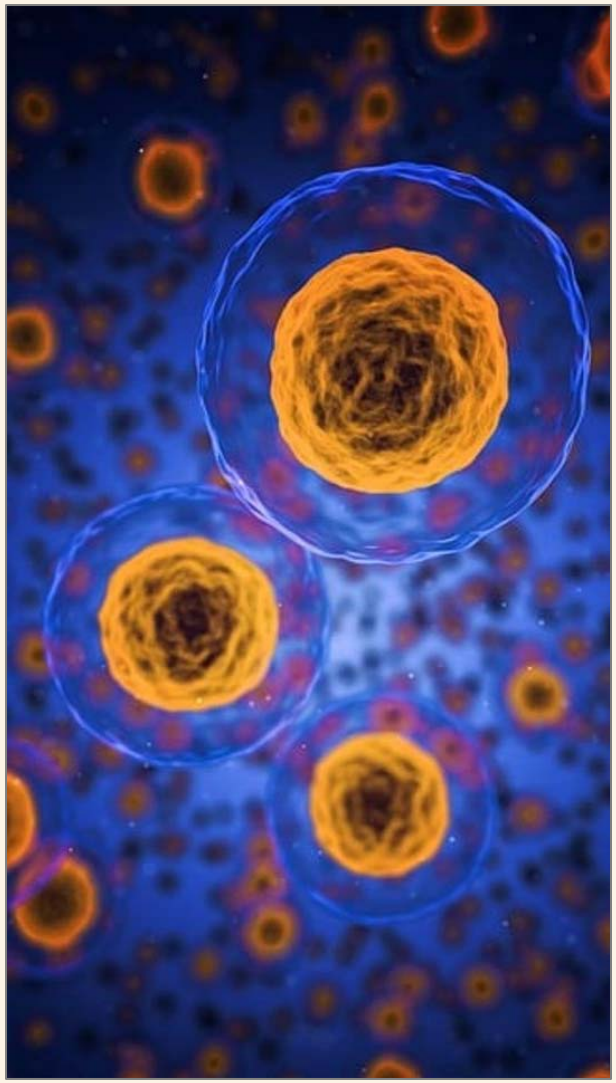
"There is a biologist named Lewis Thomas whose work I appreciate very much. He describes how our human bodies are "shared, rented, and occupied" by countless other tiny organisms, without whom we couldn't move a muscle, drum a finger, or think a thought." Our body is a community…There are, he says, no solitary beings. The whole planet is one giant, living, breathing cell, with all its working parts linked in symbiosis."

---*Thich Nhat Hanh*

Mast Cells: They're Everywhere

Mast Cells Are:

- A type of white blood cell
- Found in the connective tissue throughout the body
- Found in every organ system including the brain
- Part of the body's immune response
- Part of the body's inflammatory response
- The body's 1st responders to perceived dangers and threats

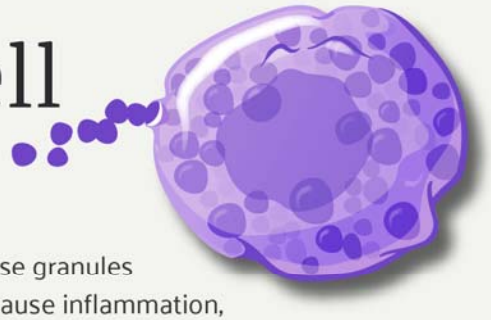


Mast Cells: They're Everywhere

Things Mast Cells Do:

- Body's 1st line of defense against viruses, bacteria, foreign substances, pathogens (our immune response)
- Help protect the body against things like bacteria, viruses—it "adapts" to the specific danger it encounters (adaptive immune response)
- Regulate blood pressure
- Regulate wound healing
- Regulate the body's inflammatory response
- & More

Mast Cell



White Blood Cell

Function: These cells release granules filled with chemicals that cause inflammation, such as histamine. Inflammation involves increased blood flow that allows more immune cells and other helpful particles in the blood to reach a site of infection or injury more easily.

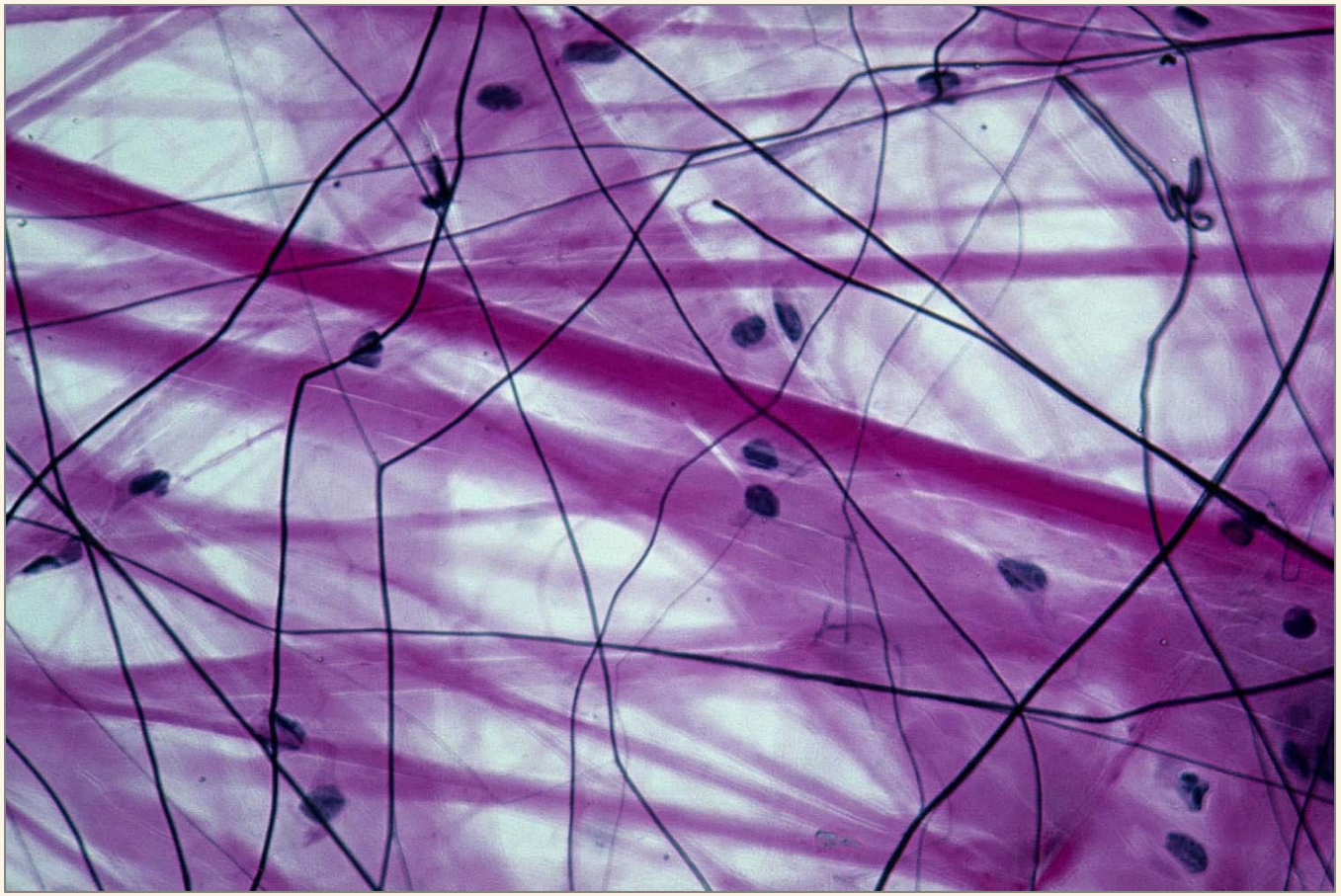
Disease: The inflammatory chemicals released by mast cells can cause allergy symptoms when the immune system reacts inappropriately to an otherwise harmless substance–like proteins from house dust mites or a certain food. People can also experience persistent problems with inflammation if they are born with or develop too many mast cells in a rare condition called mastocytosis.

Location: Mast cells reside outside the bloodstream in the tissues, especially in skin, lung tissue, lymph nodes, the liver and the spleen. Basophils, another immune cell type that also plays a large role in allergies, are located in the blood.

NIH National Institute of Allergy and Infectious Diseases

Mast Cells: They're Everywhere

Mast Cells Are: In the Connective Tissue



Connective Tissue

What is Connective Tissue?

Connective tissue is one of the 4 primary types of tissue in the body---along with epithelial, muscle, and nervous tissue. It is made up of cells, fibers, and a ground substance that, together, form the extracellular matrix.

What is the extracellular matrix?

It's a structural support network that surrounds cells in tissues and provides essential physical scaffolding for the body, initiating crucial biochemical and biomechanical cues and signals that are required for tissue function, differentiation, and homeostasis. The extracellular matrix orchestrates cellular and tissue organization and functions, and influences a wide number of cellular processes including wound healing and cell differentiation.

What is cell differentiation?

Cell differentiation is the process through which a less specialized cell develops into a more specialized cell type with specific structures and functions. This process is crucial for the development, growth, reproduction, and longevity of all multicellular organisms. Cells become specialized to carry out distinct functions such as the transporting of oxygen by red blood cells or the white blood cells defense against pathogens.

Connective Tissue

What does it do?

Connective tissue connects, supports, and helps throughout the entire body:

- Supports the body's organs and structures
- Provides a framework that holds the body's parts together
- Protects the body's parts Plays roles in immune function
- Transports nutrients and wastes
- Stores fat
- Repairs tissue damage

There are two basic connective tissue categories:

- Specialized Connective Tissue
- Connective Tissue Proper

Connective Tissue

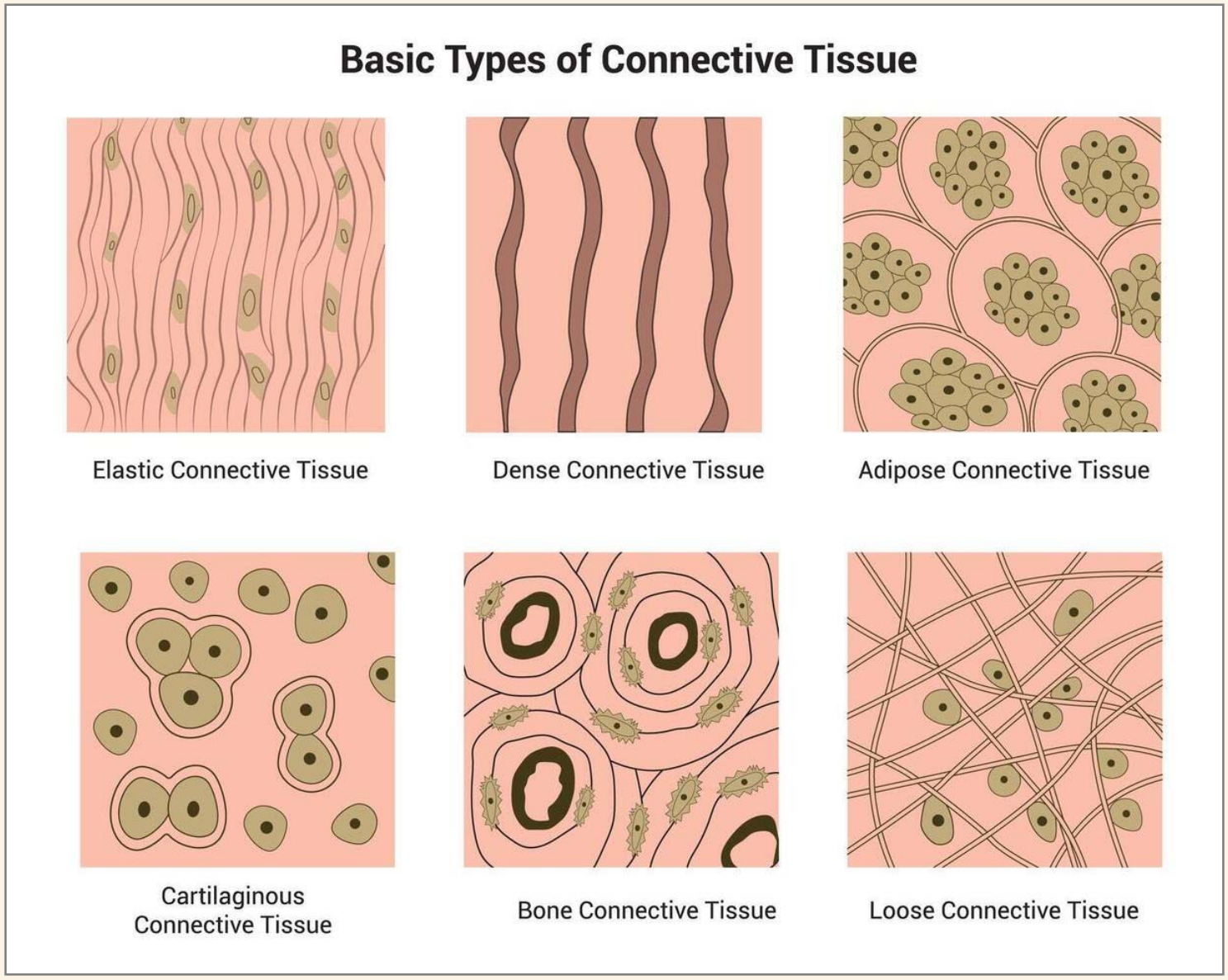
Specialized Connective Tissue:

- Adipose (body fat)
- Cartilage
- Bone
- Blood
- Reticular (found around the kidney, liver, spleen, and lymph nodes)

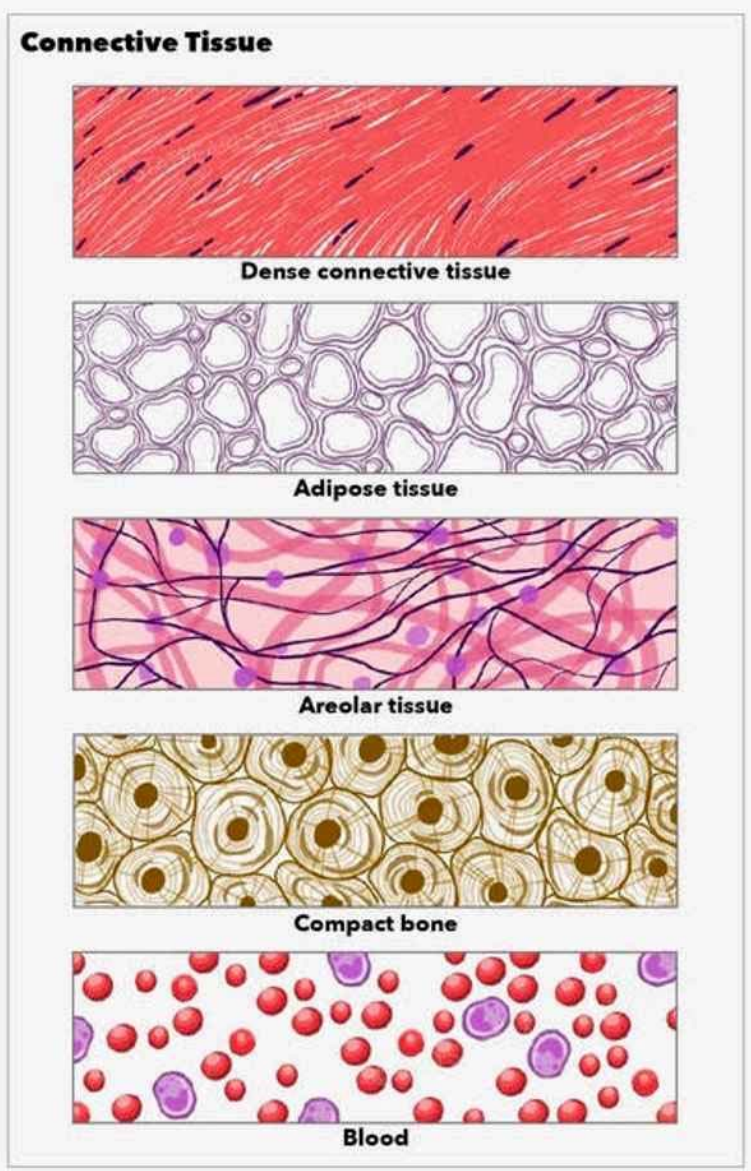
Connective Tissue Proper (2 types – "loose" and "dense"):

- Loose – holds organs, anatomic structures, and tissues in place
- Dense – higher density **regular** with parallel fibers such as that of tendons and ligaments
- Dense – higher density **irregular** with multidirectional fibers such as that of the pericardium (the sac containing the heart and roots of the great vessels that bring blood to and from the heart: superior veina cava, inferior vena cava, pulmonary arteries, pulmonary veins, and the aorta)
- Dense – higher density **elastic** with significant embedded elastin such as that of the arteries

Connective Tissue



Connective Tissue



Embryonic connective tissue – present in the umbilical cord and embryo.

Blood supply & lymphatics – different types of connective tissue have considerable variation in blood supply although most are well vascularized (plenty of blood vessels)

Nerves – all peripheral nerve fibers consist of three connective tissue layers which serve as a protective sheath

Muscles – individual muscle cells are grouped to form a fiber. These fibers are further bundled together to form a fascicle. Several of these fascicles get further grouped to create the entire muscle. Connective tissue exists between every muscle cell, fiber, and fascicle.

Tendons – collagen and elastin make up the dry mass of tendon connective tissue. Tendons are connective tissue structures. The complex multidimensional arrangement of the collagen fibers of tendons makes its function possible.

Connective tissue pathologies include: tendon tears; bony fractures; muscular compartment syndromes; cartilaginous injury; surgical disruption; direct inflammation of connective tissues.

Connective Tissue

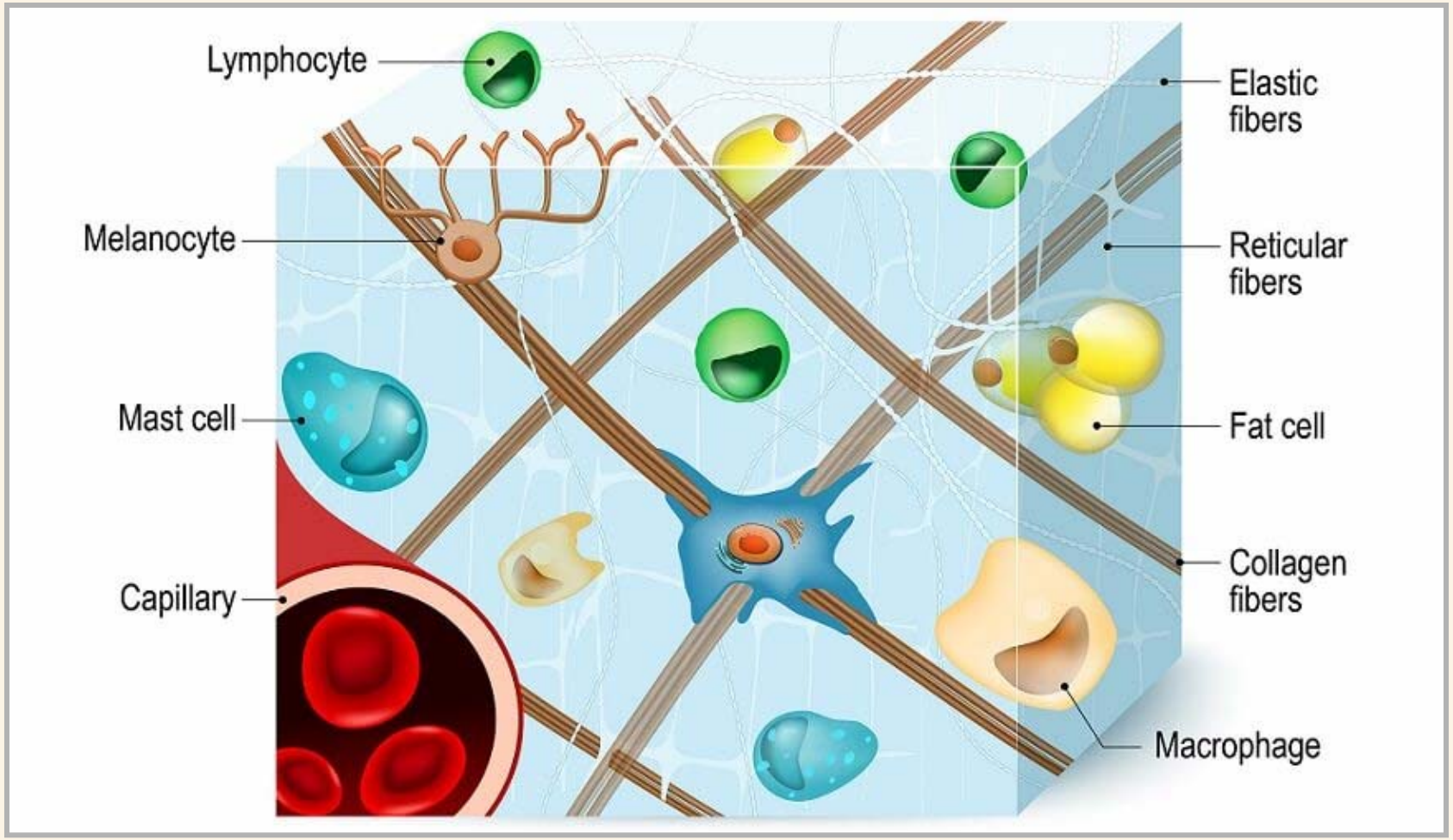
Connective Tissue & Mast Cells:

Mast cells are found in connective tissue throughout the body and virtually in every organ.

Mast cells play a crucial role in immune responses and inflammation.

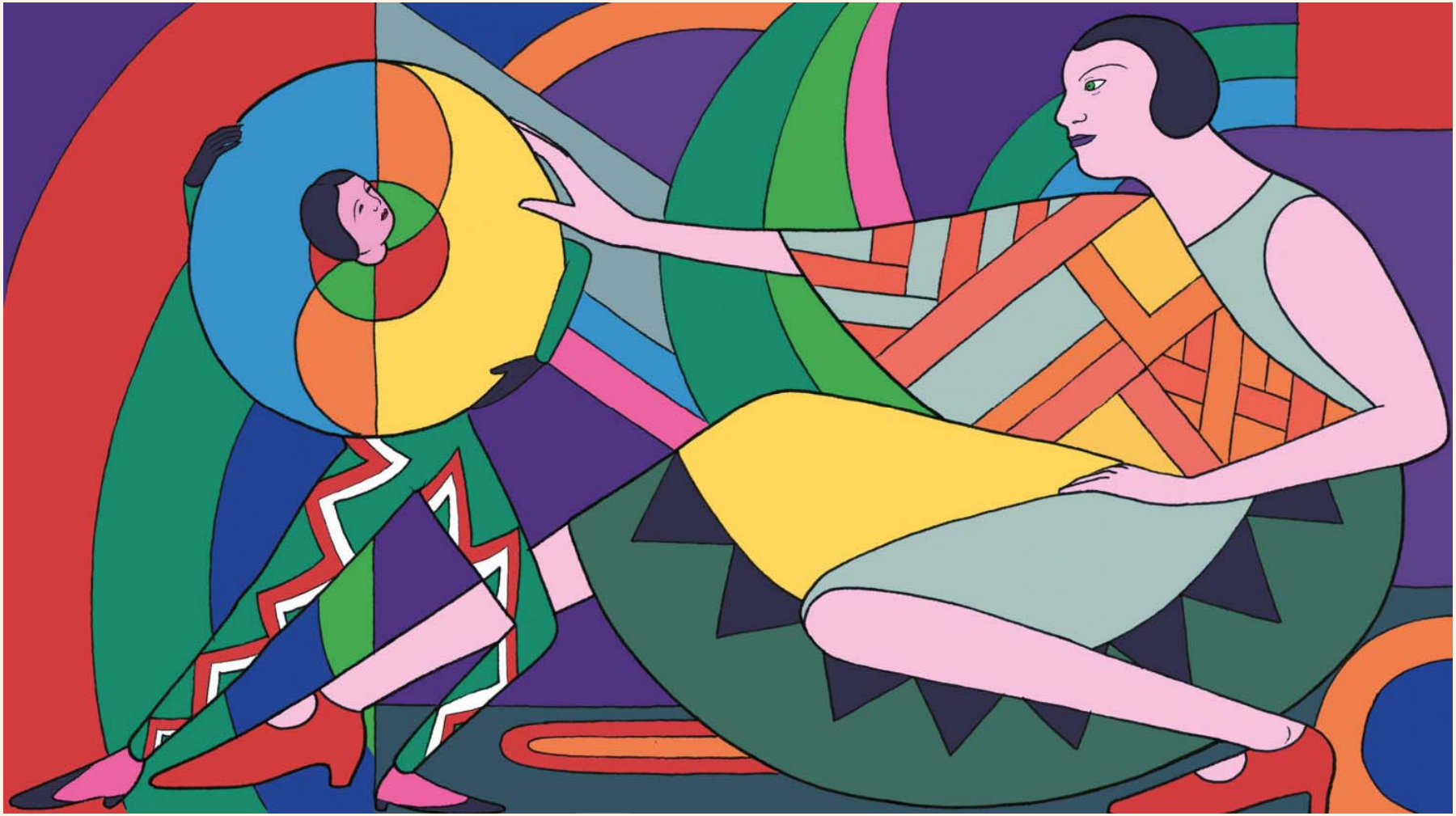
Mast cells in connective tissues contain numerous granules that store a variety of bioactive molecules—mediators—including histamine, heparin, proteases, cytokines that are essential for the cell's function in immune responses and inflammation.

Connective Tissue & Mast Cells



A Closer Look: at the Cellular Level

Mast Cells & their Mediators



Important Terminology

CHEMICAL vs. MEDIATOR

In the human body, a “chemical” and a chemical “mediator” are two different things. They’re related but they are two distinct and separate concepts.

Chemicals are a broad range of substances that can be involved in biological processes.

Mediators can be chemicals or other substances. They play a role in various physiological processes including inflammation and immune responses. These mediators can be: (1) chemicals such as histamine and serotonin (vasoacitive amines); (2) bradykinin (peptide); and (3) prostaglandins, leukotrienes, and thromboxanes (eicosanoids).

Not all mediators are strictly chemicals. For example, in the context of inflammation, mediators can also include enzymes (proteins that act as catalysts and accelerate chemical reactions in the body.)

Chemical mediators are molecules produced by a cell that act on another cell which has specific receptors (doors) for that chemical mediator. Chemical mediators include but aren’t limited to: hormones, cytokines, neurotransmitters, which are involved in various physiological processes and cell-to-cell communication.

SO, REMEMBER: chemicals include molecules that act as mediators as well as substances that don’t act as mediators. All chemical mediators are chemicals, but not all chemicals are chemical mediators. Although *many* mediators are chemicals, *not all* mediators are chemicals.

Important Terminology

MAST CELL ACTIVATION IN 4 STEPS:

Step 1: Activation
The mast cells have encountered a perceived threat or possible danger. They're sensitized then—bang!—they're activated;

Step 2: Degranulate
The activated mast cells degranulate, they crumble;

Step 3: Mediators
The degranulating mast cells pump out hundreds of mediators (chemicals) into the body. These mediators flood the body;

Step 4: Receptors
When mast cell-specific mediators hit their mast cell receptors ("doors") those substances get in and interact with the body.

Mast Cells & their Mediators

Histamine - skin symptoms (hives, flushing, angioedema, itching); respiratory (cough, wheezing); GI (diarrhea, gastritis); pain (headache); acts as neurotransmitter

Neuromedan B - induction of acute itch

Leukotrienes – respiratory (shortness of breath, airway inflammation)

VGF Nerve Growth Factor Inducible - chronic pain; has influence on neuroplasticity (the brain's ability to change and grow as a result of experience) associated with learning, memory, depression, and chronic pain

Prostaglandins – skin (flushing); cardiovascular (hypo or hypertension, vasodilation or vasoconstriction depending on amount of prostaglandins); pain (bone pain, cramping); cognitive (brainfog)

Interleukins - regulates the immune system; fatigue; weight loss; enlarged lymph nodes

Tryptase - skin lesions; osteoporosis

Serotonin - direct activation of pain nerve fibers

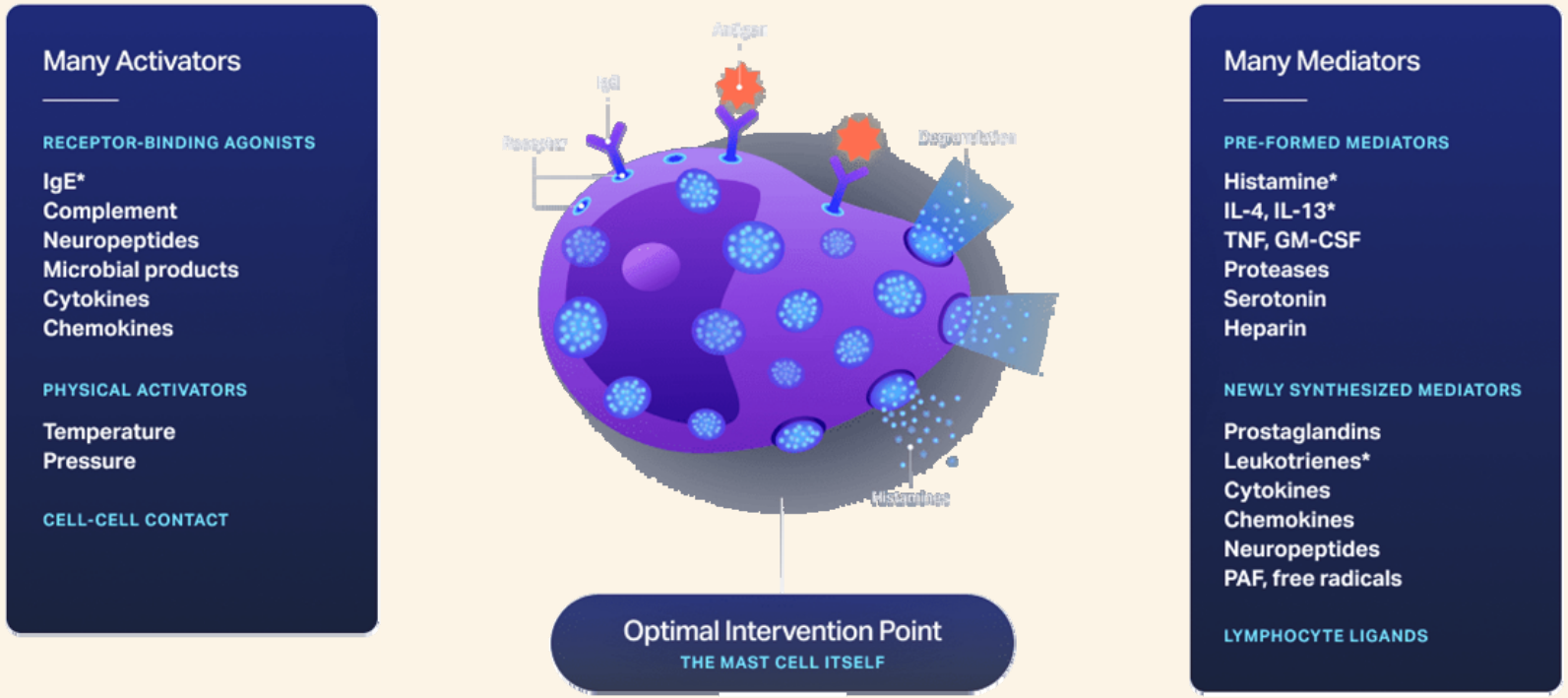
Acetylcholinesterase - muscle weakness (myasthenia)

(continued)

Mast Cells & their Mediators

Galanin and GMAP Prepropetide – mast cell mediators can activate the sensory neurons (called nociceptors) that send information about pain to our brain and make us aware of it, leading to pain perception as in, for example, fibromyalgia, migraines, and Complex Regional Pain Syndrome.

Corticotropin Releasing Hormone - mediates autonomic, behavioral, and neuroendocrine responses to stress




The Nervous System
& Autonomic Nervous
System

Nervous System Divisions:

The Nervous System

The nervous system (NS) is a complex network of cells that send and receive electrical and chemical signals throughout the body. It controls various functions both consciously and unconsciously. The NS is divided into:

- The Central Nervous System (CNS) – the brain and the spinal cord
- The Peripheral Nervous System (PNS) – everything else (all the neurons that are not part of the brain or spinal cord)

The Autonomic Nervous System

The autonomic nervous system (ANS) is a division of the peripheral nervous system (PNS). The ANS is responsible for things the body does unconsciously. It regulates and supports such body processes as: heart rate; digestion; respiratory rate; salivation; perspiration; pupillary dilation; urination; and sexual arousal.

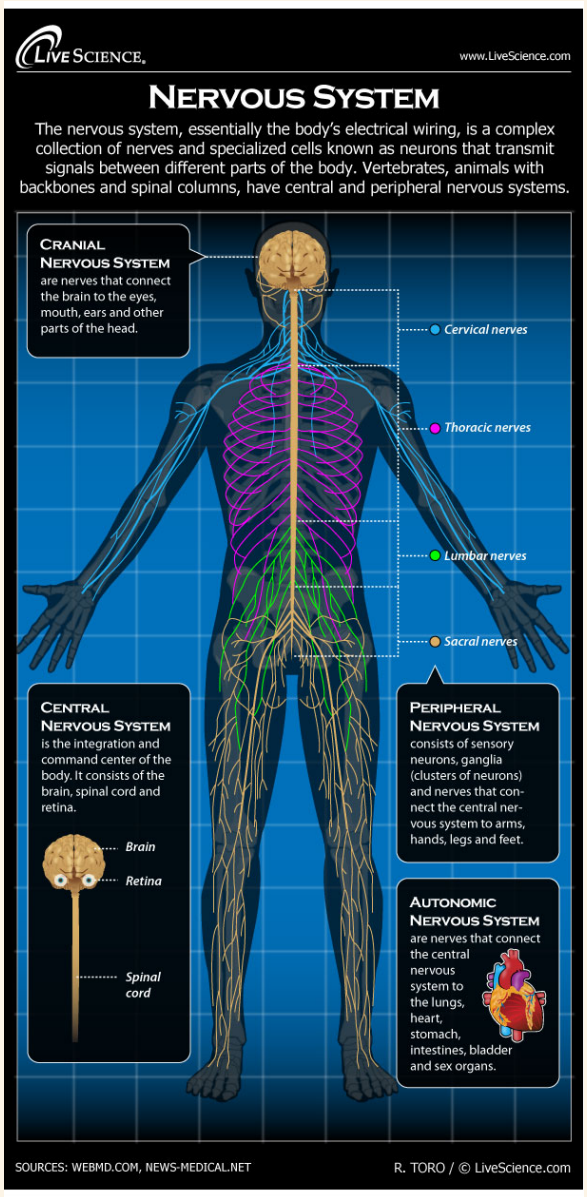
The ANS is further divided into the Sympathetic Nervous System (SNS) and the Parasympathetic Nervous System (PSNS). These two systems often have opposite actions on targeted organs of the body, for example, one system may activate a particular response while the other system shuts down that response.

The Nervous System

What it is and What it Does

Our nervous system (NS) is in charge. It runs everything and allows us to do everything---move, eat, feel, think, digest, breathe, have memories and remember, sleep, sense and interpret what we see, hear, taste, touch. It responds to stress, stressors, and to stressful situations.

The NS responsible for controlling and coordinating all body functions including movement, thought, and sensation. It sends messages between the brain and the rest of the body enabling it to do everything our bodies do at all levels include: breathing, walking, speaking, feeling, interpreting sensory information and reacting to it (e.g., pulling your hand away when you touch a hot surface.)



The Autonomic Nervous System

Our autonomic nervous system (ANS) is part of the nervous system (NS). The ANS controls the functions of our body that are automatic---functions that we need to survive. These processes are ones that we don't think about. Our brain manages them while we're awake and asleep.

The overall NS is made up of the CNS (brain and spinal cord) and the PNS (every part of the NS that isn't the brain or the spinal cord.

Two Divisions of the PNS:

- **Somatic Nervous System** – includes muscles you can control plus all the nerves throughout your body that carry information from your senses (includes sound, smell, taste and touch. Vision isn't included here because your eyes that manage your sight are part of your brain.)

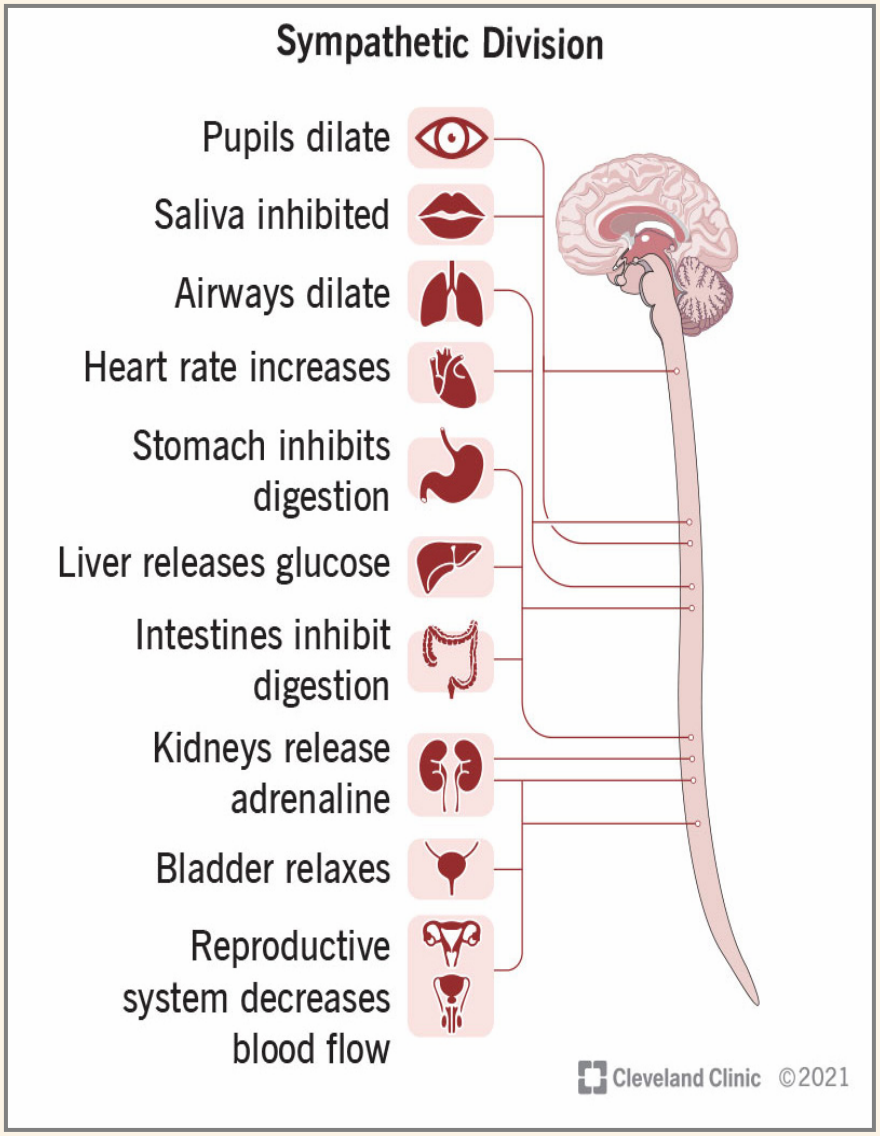
- **Autonomic Nervous System** – connects your brain to most of your internal organs

What does the Autonomic Nervous System (ANS) do?

The ANS breaks down into 3 divisions:

- Sympathetic nervous system (SNS)
- Parasympathetic nervous system (PSNS)
- Enteric nervous system (ENS)

Sympathetic Nervous System (SNS)

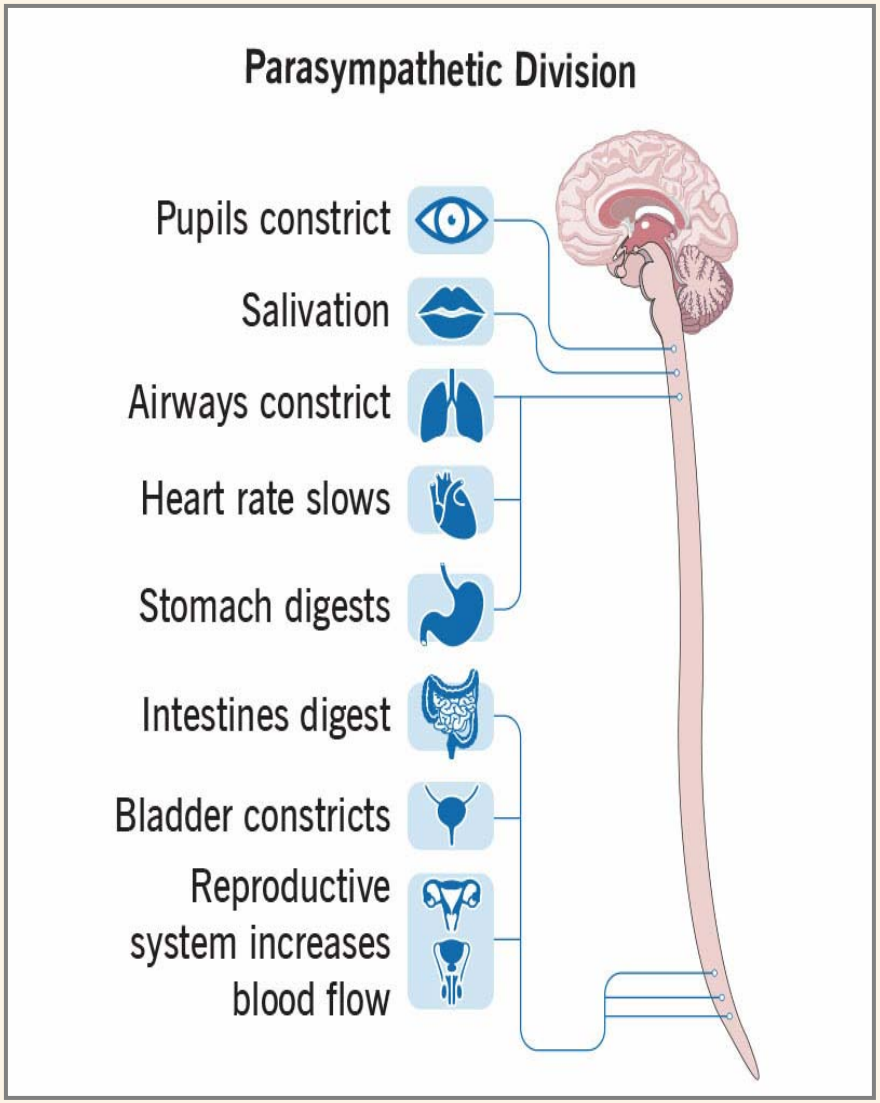


The SNS and PSNS together do a balancing act with the sympathetic nervous system (SNS) activating body processes and the parasympathetic nervous system (PSNS) deactivating or lowering them. This balance is Key to the body's well-being and our ongoing survival.

Under stress conditions, the entire SNS is activated. This produces an immune response—the fight or flight response—preparing the person for what is perceived as an imminent danger or threat. When this is triggered, the body responds with: the release of large quantities of epinephrine; increased heart rate; increased cardiac output; skeletal muscle vasodilation; GI vasoconstriction; pupil dilation; bronchial dilation.

These responses occur together with other neurol or Hormonal stress responses including increases in corticotropin and cortisol (stress hormones.)

Parasympathetic Nervous System (PSNS)

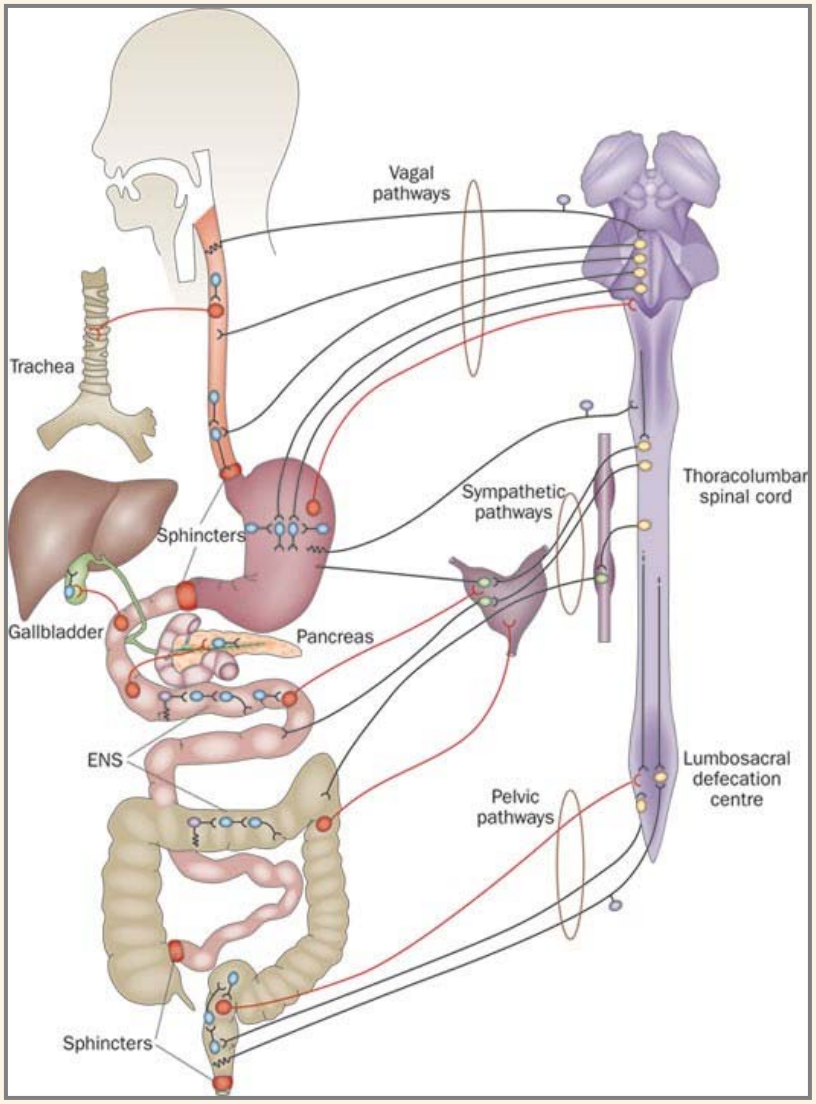


The parasympathetic nervous system (PSNS) is responsible for calming the body down and promoting rest and digestion. It helps the body to relax after a stressful situation by slowing the heart rate, bringing down blood pressure, and stimulating the digestive processes.

The PSNS also controls the dilation of blood vessels in the GI system to enhance blood flow, stimulates the salivary glands, and increases peristalsis which is the wave-like motion that moves food through the digestive tract.

The PSNS works the opposite way of the SNS. The SNS prepares and readies the body for action. The PSNS helps the body to return to a state of calm and relaxation. It also influences the immune system and can help reduce inflammation.

Enteric Nervous System (ENS)



The enteric nervous system (ENS) manages how the body digests food. It is very complex. Some experts describe it as part of the overall nervous system instead of the autonomic nervous system. This is because there are as many neurons (the specialized cells that make up your brain, spinal cord, and nerves) in the enteric nervous system as there are in the spinal cord.

The ENS controls digestion from swallowing to the release of enzymes that breakdown food to the control of blood flow that helps with nutrient absorption to elimination.

The ENS communicates back and forth with our brain and may even trigger big emotional shifts that people who are coping with bowel/digestive issues (such as irritable bowel syndrome, constipation, diarrhea, bloating, pain, and stomach upset) may have.

According to Johns Hopkins, new research has found that irritation in the GI system may send signals to the CNS that trigger mood changes.

Dysautonomia

Dysautonomia

What actually *is* Dysautonomia?

Dysautonomia (aka autonomic neuropathy) refers to a group of medical disorders caused by problems with your autonomic nervous system (ANS). Dysautonomia is not a specific medical diagnosis. The term is used to describe a wide range of ANS disorders.

The ANS controls the cardiovascular, endocrine, GI, and metabolic systems. When something goes wrong, the symptoms can be incapacitating.

Some ANS disorders include diabetes, Parkinson's, some Celiac diseases, alcoholism, genetic disorders. These are often thought of additional or underlying conditions. Many types of ANS disorders are chronic and progressive.

Dysautonomia

Disorders of and/or associated with the ANS include:

Guillain-Barre syndrome – rapid-onset muscle weakness caused by immune system damaging the PNS

Holmes-Adie syndrome – neurological disorder of tonically dilated pupil that reacts slowly to light

Multiple system atrophy (MSA) – causes people to become slow and stiff; changes in speech; loss of control of other bodily functions; sometimes shares symptoms with Parkinson's disease

Horner syndrome – rare neurological disorder that affects the nerves controlling the eye, eyelid, and sweat glands on one side of the face. It is caused by a disruption in the sympathetic nerve pathway which is responsible for the fight-or-flight response

Neurocardiogenic syncope (NCS) – a common condition that causes sudden LOC and drop in blood pressure and heart rate

Postural orthostatic tachycardia syndrome (POTS) – excessive increase in heart rate upon standing or sitting

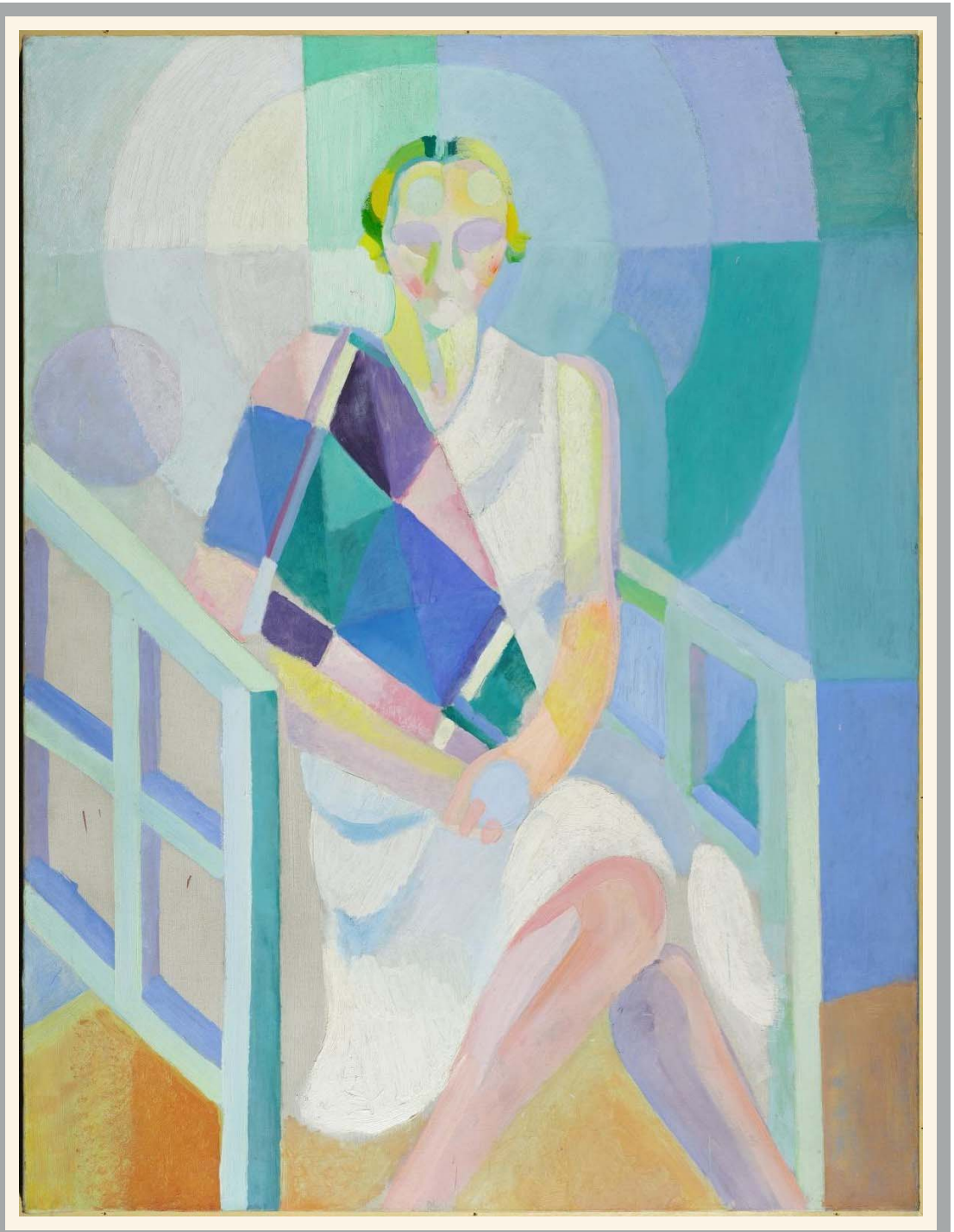
Parkinson's disease – progressive movement disorder of the NS, loss of brain cells that produce dopamine

Dysautonomia

Common symptoms of ANS/dysautonomia disorders and dysfunction include:

- Dizziness and fainting (syncope) especially upon standing up
- Orthostatic hypotension
- Heart rhythm problems
- Exercise intolerance
- Digestive difficulties (e.g., loss of appetite, bloating, diarrhea, constipation, difficulty swallowing, heartburn)
- Urinary problems (e.g., difficulty starting urination, incontinence, inability to completely empty bladder)
- Vision problems (e.g., blurred vision)
- Sweating problems (either too much or not enough)
- Problems tolerating the heat/hot temperatures
- Muscle tremors, weakness
- Headaches
- Fatigue
- Sleep disorders
- Anxiety
- Shortness of breath

Enter Mast Cells



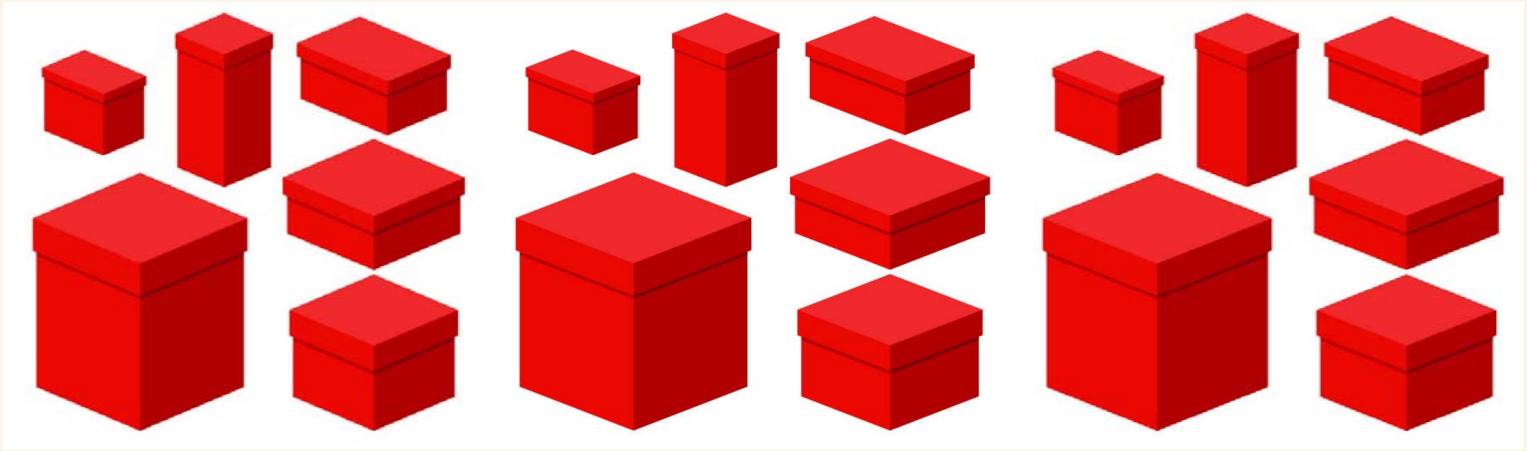
Our Compartmentalized World

What is Compartmentalization?

Compartmentalization of medical care refers to the specialization of medical practices into smaller, more highly focused disciplines. This approach has led to increased specialization within medicine resulting in a fragmentation of knowledge.

Compartmentalization can hinder the integration and sharing of knowledge, research, and experience across different medical and therapeutic disciplines, making an holistic and truly integrative approach to client care extremely difficult.

Through focusing so closely on each “compartment” or specialty area, we lose the broader picture, dots aren’t connected, and, ultimately, patients suffer. How can doctors and medical professionals correctly diagnose and appropriately treat something they haven’t been trained to recognize and that they don’t fully understand?



Mast Cells

Common symptoms of mast cell activation issues and disorders include:

- Dizziness and fainting (syncope) especially upon standing up
- Orthostatic hypotension
- Heart rhythm problems
- Exercise intolerance
- Digestive difficulties (e.g., loss of appetite, bloating, diarrhea, constipation, difficulty swallowing, heartburn)
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- Problems tolerating the heat/hot temperatures
- Muscle tremors, weakness
- Headaches
- Fatigue
- Sleep disorders
- Anxiety
- Shortness of breath
- & more

Dysautonomia & Connective Tissues

Dysautonomia is a general term for disorders that disrupt the ANS. Symptoms can be widespread and may not seem connected.

ANS disorders can affect various body functions including those related to the connective tissues.

Connective tissue disorders can cause autonomic neuropathy which affects the ANS and can lead to symptoms such as dizziness, fainting, and urinary problems.

These disorders car arise from diseases that directly impact autonomic nerves such as diabetes mellitus or they can be secondary to other systemic diseases (e.g., lupus, rheumatoid arthritis, Sjogren's disorder, progressive sclerosis.)

Research has found that autonomic neruopathy, which is a specific dysautonomia/ANS disorder that occurs when there has been damage to the nerves of the ANS, may be present in any kind of connective tissue disorder even in preclinical stages.

Diagnosing and managing these conditions can be complex.

Dysautonomia & Mast Cells

Mast cells are involved in the pathophysiology of dysautonomia/ANS disorders and neuroinflammatory disorders.

There are mast cells located close to nerve endings and sites such as the carotid bodies, heart, hypythalamus, pineal gland, and the adrenal gland which allows them to both regulate and be affected by the ANS.

Mast cells secrete histamine and multiple pro-inflammatory mediators which play a role in the regulation of homeostatic functions that seem dysfunctional in conditions such as POTS, autism spectrum disorders (ASD), chronic fatigue syndrome (CFS), and long-COVID syndrome.

The parasympathetic nervous system (PSNS) enhances mast cell degranulation, while the sympathetic nervous system (SNS) suppresses mast cell degranulation. This interaction can influence heart rate, blood pressure, digestion, and immune function and can contribute to symptoms.

Mast cells interact with the vagus nerve which is a major component of the parasympathetic nervous system

(continued)

Dysautonomia & Mast Cells

Mast cell activation can contribute to the symptoms of dysautonomia/ANS disorders including brainfog, cognitive dysfunction, fatigue in both chronic fatigue syndrome and long-COVID, mood disorders, anxiety, sensory sensitivities in ASD, migraines and central pain syndromes associated with autonomic dysfunction.

A large number of mast cell activation disorder patients carry concurrent diagnoses of conditions associated with dysfunction of the autonomic nervous system/dysautonomia.

The interaction between the ANS and mast cells/mast cell disorders is complex with mast cells playing a significant role in the regulation of homeostatic functions and contributing to the symptoms that are observed in people with ANS issues and disorders, collectively referred to as dysautonomia.

Strategies & Supports


LAUGHING
with a friend
is the BEST kind
of laughing
there is.

Strategies that Support ANS Health:

Stress management is a primary solution. Stress can significantly affect ANS health. Strategies for stress management include running, dancing, reading, napping. Use what works best for you.

A parasympathetic nervous system (PSNS) informed and supporting diet that includes probiotics. Probiotics can cultivate healthy intestinal bacteria and stimulate the nervous system.

Regular physical activity, especially light cardio—as you are able and with awareness of not having physical activity bring on mast cell reactions—because it has a calming effect on the heart which allows the PSNS to regulate properly.

Good nutrition can help reduce stress by minimizing or eliminating stimulants like caffeine and sugar. This can help avoid overstimulation of the sympathetic nervous system which can lead to imbalances in the ANS.

Staying well hydrated is important for the ANS as it helps maintain blood volume and pressure, which are key functions regulated by the ANS.

Sleep is crucial for health. During sleep, blood flow increases to muscles providing the necessary oxygen and nutrients for repair and has a positive impact on the PSNS.

Posture and positioning can impact the ANS. For example, lying down (supine position) can increase parasympathetic activity and reduce autonomic responses compared to sitting or standing.

Heart rate variability (HRV) is the measure in time between heart beats. A high HRV often means better heart fitness and resistance to stress. A low HRV score is often associated with poor sleep, chronic stress, fatigue, and an overall dis-regulated nervous system (see https://www.health.harvard.edu/blog/heart-rate-variability-new-way-track-well-2017112212789).

Strategies that Help Regulate the NS:

- Deep breathing exercises, yoga, meditation
- Mindfulness
- Spend time with calm and supportive people
- Eat a balanced diet – foods rich in omega-3's, B6, B12, and folate. Always check with your doctor or primary care provider before taking any vitamins to see what's right for you
- Stay as physically active as possible
- Regular aerobic exercise (always being mindful of your physical exertion level to not bring on or intensify mast cell reactions) such as walking or running, cycling, swimming. It improves blood flow to the brain, stimulates neurogenesis, and increases the production of brain-derived neurotrophic factor (BDNF) which supports neuron growth and survival
- Moderate sun exposure can boost mood and reduce stress. If it's not going outdoors weather or you don't feel up to it, try using a lamp or light bulbs that are full spectrum and spend a bit of time sitting in front of it each day as tolerated.
- Use all the tools in your toolbox as needed every day

Strategies that Support NS Health:

The Glymphatic System

The glymphatic system is an organ system for metabolic waste removal in the central nervous system (CNS). It plays a key role in regulating fluids and waste clearance in the brain, and potentially with brain immunity, as well.

The glymphatic system is also important in the context of neurodegenerative diseases (such as Alzheimer's disease, Parkinson's disease, Huntington's disease) as it may be necessary for the removal of substances from the brain.

Besides waste removal, the glymphatic system may also function to help distribute non-waste compounds (such as glucose, lipids, amino acids, and certain neurotransmitters) in the brain.

The glymphatic system functions mainly during NREM sleep and is largely disengaged during wakefulness. The biological need for sleep across all species may therefore reflect that the brain must enter a state of activity that enables elimination of potentially neurotoxic waste products (see https://ncbi.nlm.nih.gov/articles/PMC4636982/).

There is evidence of cross-talk among the glymphatic system, cardiovascular system, GI tract, and lymphatic system. Vagus nerve stimulation leads to increased glymphatic influx (a critical part of the glymphatic system.) The glymphatic system may act as a cornerstone in signaling between the brain and the body (see https://pmc.ncbi.gov/articles/MMC8603752/).

Strategies that Support NS Health:

Supporting Glymphatic System Health

Sleep quality – the glymphatic system is most active during sleep. Getting adequate and quality sleep is essential. Maintain a consistent sleep schedule can enhance glymphatic function.

Exercise – has been shown to enhance glymphatic flow. Exercise increases the pulsation of blood vessels which, in turn, supports the movement of the cerebrospinal fluid through the glymphatic system. Remember to stay mast cell aware when it comes to physical activity and exercise and only do what you're able to tolerate.

Hydration – proper hydration supports cerebral blood flow and helps maintain the volume of fluid within vessels which is crucial for glymphatic drainage.

Diet – rich in fiber helps reduce constipation, allowing more energy to be allocated to glymphatic drainage. Occasional use of electrolytes (such as powders) in water can help maintain intravascular volume. Always consult with your healthcare provider before taking any vitamins or supplements.

Posture during sleep – sleeping on your right side may optimize glymphatic flow due to reduced pressure on the heart and improved venous drainage.

Mast Cell Informed Strategies & Supports:

Supporting our health begins with awareness. Awareness includes understanding the details of our unique physical health, how highly individualized mast cell activation related issues and disorders are for each person, knowing when to stop and to not push ourselves into mast cell reactions, being wise and informed regarding our life, health and life-style choices.

Strategies for Self-care include:

- Food as medicine – understanding food and food choices as powerful tools to support health as well as potential triggers for mast cell reactions
- Circadian rhythms (mast cells have own circadian clock) – the importance of keeping to regular schedules for sleeping, eating, and exercise while understanding how our body works at these deeper, cellular levels to support our individualized health needs
- Retraining mast cells – it is possible to retrain our mast cells to bring down mast cell reactions. Many of these strategies center around giving our bodies the correct information and correct message for the mast cells to convey to the cells in our body; to over-ride the message of “Danger! Danger! Activate! Activate!” to “Chill. All things good here.” Interventions here include regular exercise as able, vagus nerve strategies, yoga.
- Medications (cromolyn sodium, H1 & H2 receptor blockers, famotidine (pepcid), aspirin, prednisone, ibuprofen, vitamin C, vitamin D3)
- Stress management interventions (mindfulness, yoga, tai chi, quigong, music, creative arts, exercise, walking)
- Sandra Den Braber, RN, masks