

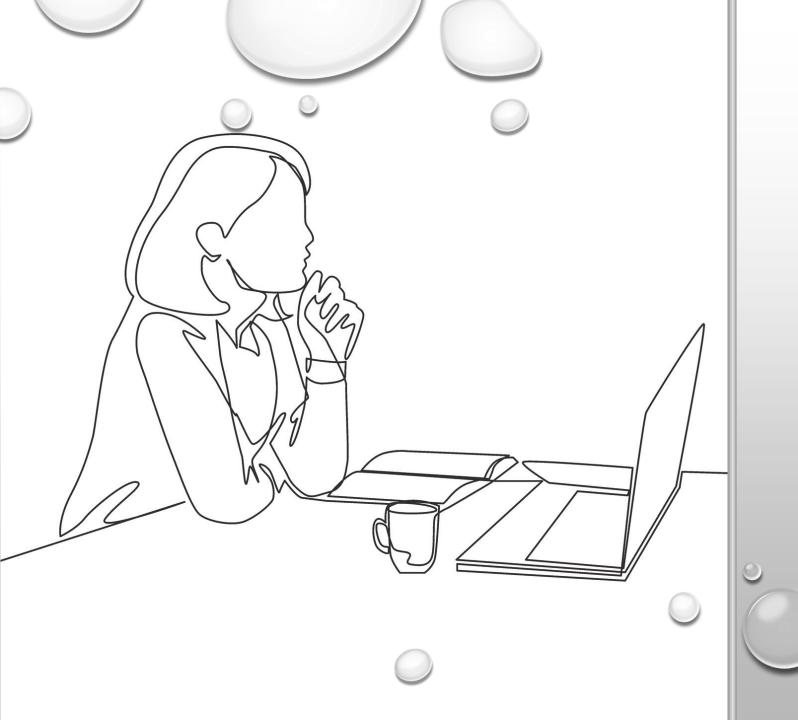
PLASMALOGENS

THE UNSUNG HEROES OF HEALTH & LONGEVITY



WHAT ARE PLASMALOGENS?

- PLASMALOGENS ARE A SPECIAL CLASS OF **PHOSPHOLIPIDS**, WHICH ARE KEY BUILDING BLOCKS OF CELL MEMBRANES. WHAT SETS PLASMALOGENS APART IS A UNIQUE **VINYL-ETHER BOND** AT THE FIRST POSITION OF THE GLYCEROL BACKBONE, WHICH MAKES THEM ESPECIALLY PRONE TO OXIDATION AND THAT TURNS OUT TO BE PART OF THEIR *FUNCTION*, NOT A FLAW.
- THEY'RE FOUND IN ABUNDANCE IN THE BRAIN, HEART, LUNGS, KIDNEYS, AND IMMUNE CELLS, WHERE MEMBRANES NEED BOTH STABILITY AND FLEXIBILITY, AND WHERE OXIDATIVE STRESS IS A CONSTANT THREAT.



THINK OF PLASMALOGENS THIS WAY...



PLASMALOGENS: THE CELL'S UNSUNG SWISS ARMY KNIFE

PLASMALOGENS ARE LIKE THE **SWISS ARMY KNIFE OF YOUR CELL MEMBRANES** — COMPACT, VERSATILE, AND READY FOR ANYTHING.

THEY PATCH HOLES, DEFUSE OXIDATIVE BOMBS, REINFORCE STRUCTURE, AND EVEN RALLY THE IMMUNE TROOPS — ALL FROM THE QUIET CORNERS OF YOUR BRAIN, HEART, AND MITOCHONDRIA. YOU DON'T ALWAYS NOTICE THEM WORKING... UNTIL THEY'RE GONE.

THE SHOCK ABSORBERS OF THE CELL

PLASMALOGENS ARE LIKE THE SHOCK

ABSORBERS ON A CAR — YOU DON'T

THINK ABOUT THEM WHEN THEY'RE

WORKING, BUT THEY CUSHION EVERY

BUMP YOUR CELLS TAKE FROM

OXIDATIVE STRESS, INFLAMMATION,

AND DAILY WEAR-AND-TEAR.

WHEN THEY BREAK DOWN OR RUN LOW, THE "RIDE" GETS ROUGHER — MENTALLY, PHYSICALLY, AND METABOLICALLY.





E THE CELLULAR FIRE MARSHALS

PLASMALOGENS ARE LIKE FIRE MARSHALS STATIONED INSIDE YOUR CELLS.

THEIR UNIQUE CHEMICAL
STRUCTURE MEANS THEY
SACRIFICE THEMSELVES FIRST
WHEN OXIDATIVE FLAMES BREAK
OUT, PROTECTING MORE
VULNERABLE CELL STRUCTURES
— ESPECIALLY IN HIGH-RISK
AREAS LIKE THE BRAIN AND
HEART.

THE MITOCHONDRIAL INSULATION

THINK OF MITOCHONDRIA AS

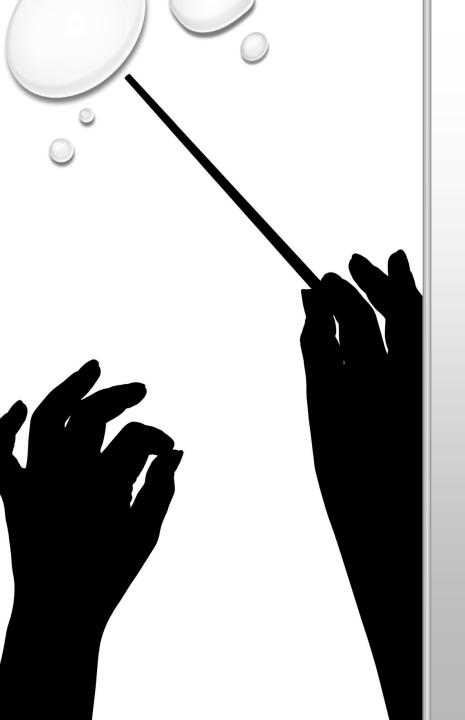
POWER PLANTS, AND

PLASMALOGENS AS THE HIGH
GRADE INSULATION THAT KEEPS

THEM RUNNING EFFICIENTLY.

WITHOUT THAT INSULATION, THE ENERGY LEAKS, SYSTEMS
OVERHEAT, AND THE GRID
STARTS TO FAIL — AKA FATIGUE,
BRAIN FOG, AND CHRONIC
DISEASE.





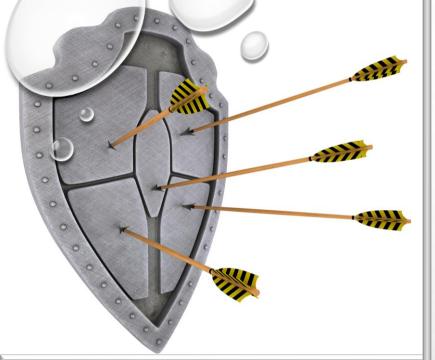
THE CONDUCTOR IN THE CELLULAR SYMPHONY

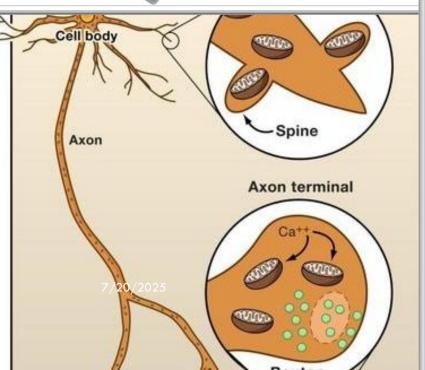
WHILE NOT THE LOUDEST PLAYER IN THE ORCHESTRA,
PLASMALOGENS ARE LIKE THE **CONDUCTOR** — ENSURING
TIMING, COMMUNICATION, AND HARMONY ACROSS THE
ENTIRE CELL.

WHEN THEY FALTER, EVERYTHING FROM MEMORY TO METABOLISM STARTS PLAYING OUT OF TUNE.

FUNCTIONS OF PLASMALOGENS

THINK OF THEM AS MULTIFUNCTIONAL BODYGUARDS





1. ANTIOXIDANT SHIELD

- THAT VULNERABLE VINYL-ETHER BOND? IT **SACRIFICES ITSELF** TO PROTECT OTHER LIPIDS FROM OXIDATION —

 LIKE CELLULAR MARTYRS.
- PARTICULARLY IMPORTANT IN NEURONS AND MITOCHONDRIA, WHERE OXIDATIVE STRESS IS HIGH.





- THEY MAINTAIN **MEMBRANE FLUIDITY** AND ARE INVOLVED IN **LIPID RAFT FORMATION**, WHICH AFFECTS SIGNAL TRANSDUCTION.
- CRITICAL FOR SYNAPTIC TRANSMISSION, MYELINATION, AND NEUROPLASTICITY.

DICTIONARY DIVE

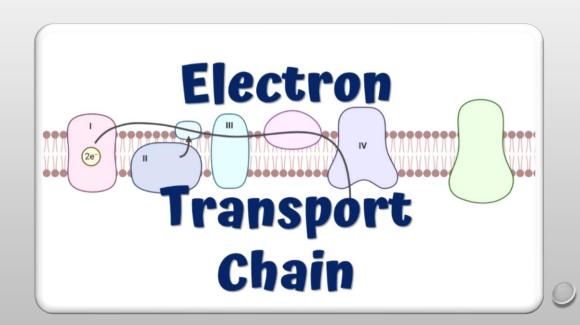
- SYNAPTIC TRANSMISSION: THE PROCESS BY WHICH NERVE CELLS COMMUNICATE BY SENDING CHEMICAL OR ELECTRICAL SIGNALS ACROSS A SYNAPSE.
- MYELINATION: THE FORMATION OF A PROTECTIVE, FATTY COATING (MYELIN) AROUND NERVE FIBERS THAT SPEEDS UP SIGNAL TRANSMISSION.
- **NEUROPLASTICITY**: THE BRAIN'S ABILITY TO REORGANIZE AND ADAPT BY FORMING NEW NEURAL CONNECTIONS THROUGHOUT LIFE.



3. MITOCHONDRIAL FUNCTION

PLASMALOGENS SUPPORT **ELECTRON TRANSPORT**, STABILIZE MITOCHONDRIAL MEMBRANES, AND MAY ENHANCE **ATP PRODUCTION**.

The electron transport chain is the final step in your cells' energy production process. Located in the mitochondria, it takes electrons from nutrients and uses them to create a flow of protons, which powers the production of ATP — the main energy currency of the body. It's like a microscopic power plant, and healthy mitochondrial membranes (rich in plasmalogens) are essential to keep this system running smoothly.



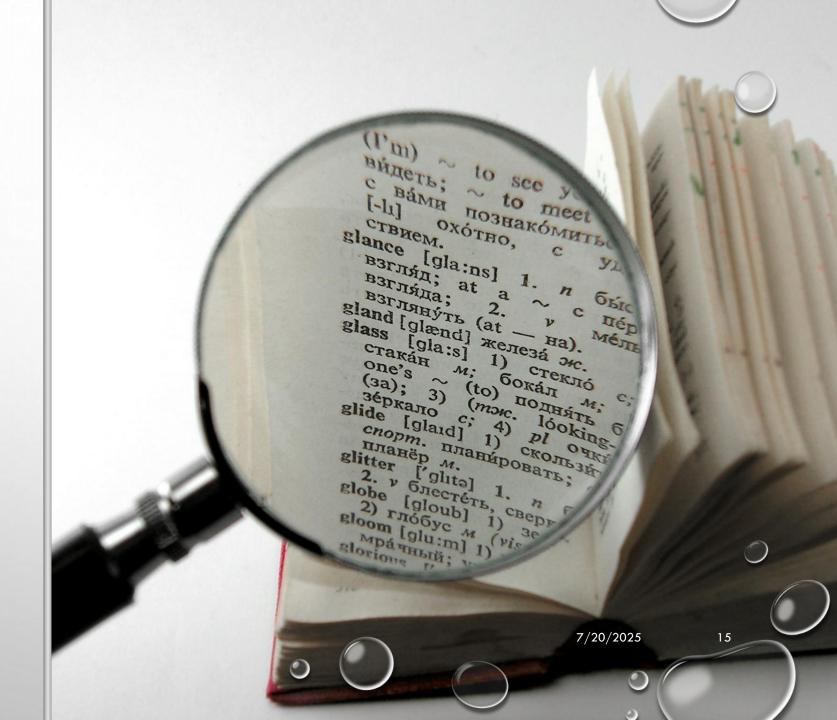
4. IMMUNE MODULATION

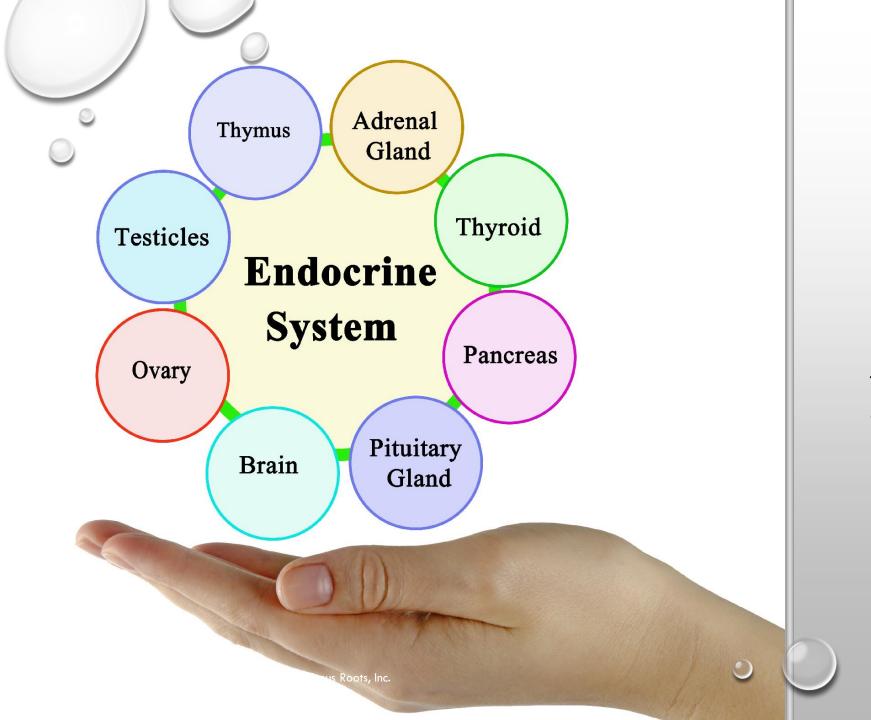
- FOUND IN HIGH
 CONCENTRATIONS IN WHITE
 BLOOD CELLS, ESPECIALLY
 MACROPHAGES.
- MODULATE INFLAMMATION
 AND MAY INFLUENCE
 PHAGOCYTOSIS AND
 CYTOKINE SIGNALING.

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DICTIONARY DIVE

MACROPHAGES: SPECIALIZED
IMMUNE CELLS THAT ACT AS THE
BODY'S CLEANUP CREW — THEY
ENGULF AND DIGEST
PATHOGENS, DEAD CELLS, AND
DEBRIS, AND HELP COORDINATE
THE IMMUNE RESPONSE.





5. HORMONE SENSITIVITY

RESPOND TO INSULIN, THYROID HORMONE, AND SEX STEROIDS

— A POTENTIAL LINK TO METABOLIC AND ENDOCRINE HEALTH.

PLASMALOGENS & HORMONES

PLASMALOGENS PLAY A SUBTLE BUT IMPORTANT ROLE IN THE ENDOCRINE SYSTEM BY SUPPORTING THE STRUCTURE AND FUNCTION OF HORMONE-SENSITIVE CELLS. THEY HELP MAINTAIN THE INTEGRITY AND FLUIDITY OF CELL MEMBRANES, WHICH IS CRUCIAL FOR PROPER HORMONE SIGNALING — ESPECIALLY FOR RECEPTORS THAT RESPOND TO THYROID HORMONES, INSULIN, AND SEX HORMONES LIKE ESTROGEN AND TESTOSTERONE. BY SUPPORTING MEMBRANE HEALTH AND REDUCING OXIDATIVE STRESS, PLASMALOGENS HELP ENSURE THAT HORMONAL MESSAGES ARE RECEIVED CLEARLY AND EFFECTIVELY, CONTRIBUTING TO OVERALL ENDOCRINE BALANCE.





WHAT HAPPENS WHEN PLASMALOGENS **DECLINE?**

PLASMALOGEN LEVELS NATURALLY **DECLINE WITH AGE**, AND LOW LEVELS HAVE BEEN LINKED TO:

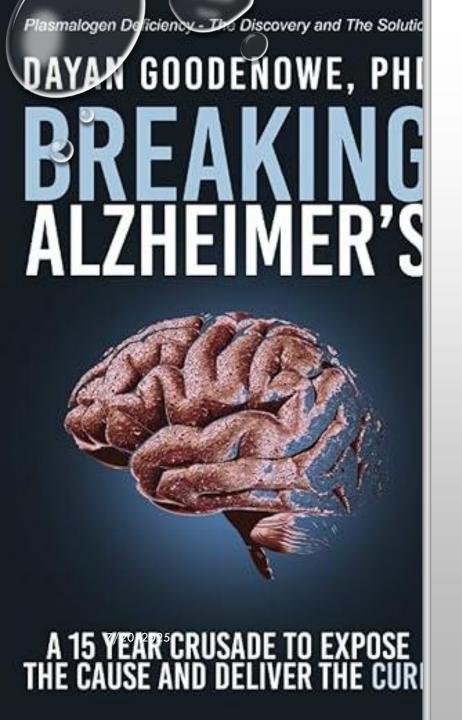
- **NEURODEGENERATIVE DISEASES** (ALZHEIMER'S, PARKINSON'S, MS)
- CARDIOVASCULAR DISEASE
- **IMMUNE DYSREGULATION**
- MITOCHONDRIAL DYSFUNCTION
- **AUTISM SPECTRUM DISORDERS**
- **MACULAR DEGENERATION**
- **METABOLIC SYNDROME & DIABETES**

WHY ARE WE JUST HEARING ABOUT THEM NOW?

BECAUSE PLASMALOGENS ARE FRAGILE AND HARD TO
 MEASURE, THEY WERE HISTORICALLY UNDER THE RADAR. BUT
 WITH THE PIONEERING WORK OF RESEARCHERS LIKE DR.
 DAYAN GOODENOWE, WE NOW HAVE BETTER TESTING AND
 EVEN PLASMALOGEN PRECURSORS FOR SUPPLEMENTATION
 (E.G., PRODROMEGLIA, PRODROMENEURO).



7/20/2025



GOODENOWE'S THEORY IS BOLD:

OF DISEASE, NOT JUST A

CONSEQUENCE — AND RESTORING

THEM MAY REVERSE DECLINE.

PHYSICIAN TESTIMONIAL

ALZHEIMER'S DEMENTIA

"A brilliant and ground-breaking text on the science and clinical application of plasmalogens for the therapeutic amelioration of Alzheimer's Dementia. I have had the good fortune of observing firsthand the significant, clinical benefits in my patients with neurodegenerative disorders for whom I've prescribed plasmalogen therapy."

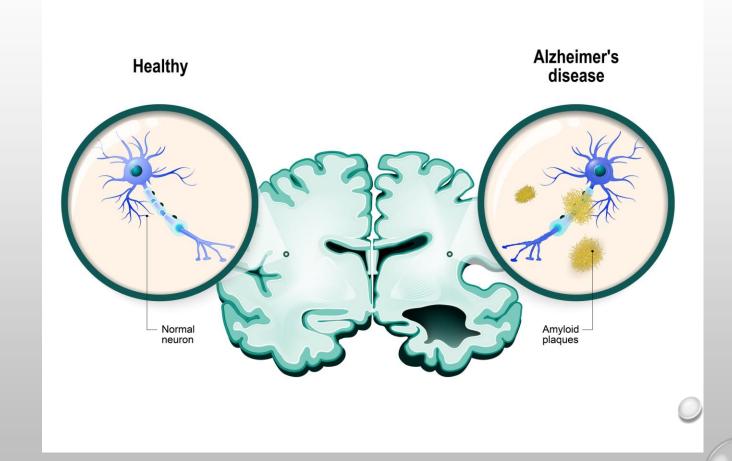
Mitchel Fleisher M.D., D.Ht., D.A.B.F.M., Dc.A.B.C.T. Medical Director, Center for Integrative & Regenerative Medicine



PLASMALOGENS & ALZHEIMER'S — REBUILDING THE BRAIN'S DEFENSE SYSTEM

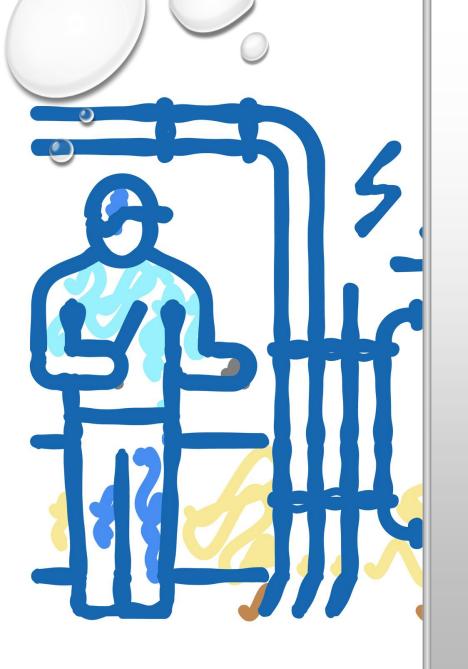
WHAT GOES WRONG IN ALZHEIMER'S?

- SEVERE PLASMALOGEN DEFICIENCY,
 ESPECIALLY IN THE HIPPOCAMPUS
- LOSS OF SYNAPSES AND MYELIN
- INCREASED **OXIDATIVE STRESS** & INFLAMMATION
- IMPAIRED ACETYLCHOLINE SIGNALING (MEMORY NEUROTRANSMITTER)



PLASMALOGENS TO THE RESCUE:

- REPLENISH DEPLETED BRAIN LIPIDS
- STABILIZE SYNAPTIC MEMBRANES AND MYELIN SHEATHS
- NEUTRALIZE OXIDATIVE STRESS WITH THEIR UNIQUE STRUCTURE
- SUPPORT ACETYLCHOLINE FUNCTION
 FOR MEMORY AND COGNITION
- ENHANCE NEUROPLASTICITY & NEURONAL SURVIVAL





ALZHEIMER'S BRAIN: FROM BURNOUT TO **BRIGHTNESS**

IN ALZHEIMER'S, THE BRAIN'S CIRCUITRY DIMS. CONNECTIONS FADE. ENERGY WANES.

PLASMALOGENS ACT LIKE AN INTERNAL **REWIRING CREW**— RECONNECTING MEMORY PATHWAYS, ENERGIZING CELLS, AND RESTORING COMMUNICATION.

THINK OF PLASMALOGENS AS THE BRAIN'S ELECTRICIANS, ANTIOXIDANT FIREFIGHTERS, AND RECONSTRUCTION CREW—ALL IN ONE LIPID.



CAN WE BOOST PLASMALOGENS NATURALLY?

THE SHORT ANSWER IS YES! THIS AREA IS STILL EMERGING, BUT PROMISING APPROACHES INCLUDE:

- **DIETARY SOURCES**: MARINE FOODS (SCALLOPS, SEA SQUIRTS, CERTAIN FISH), THOUGH LIMITED.
- **PRECURSORS**: ALKYLGLYCEROLS FROM SHARK LIVER OIL, OR SYNTHETIC COMPOUNDS LIKE **PPI-1011**.
- SUPPORT NUTRIENTS:
 - CHOLINE (FOR PHOSPHOLIPID SYNTHESIS)
 - B12 & FOLATE (METHYLATION FOR SAME AND MEMBRANE TURNOVER)
 - ANTIOXIDANTS (TO REDUCE DEMAND ON PLASMALOGENS)
 - DHA (OFTEN INCORPORATED INTO PLASMALOGEN TAILS)

Phosphatidy-Tail 1 ethanolamine with vinyl-ether head bond Phosphate – O Tail 2 Plasmalogen

WHAT ARE PLASMALOGEN TAILS?

LIKE ALL PHOSPHOLIPIDS, PLASMALOGENS HAVE A STRUCTURE WITH A "HEAD" AND TWO "TAILS":

- THE "HEAD" IS HYDROPHILIC (WATER-LOVING)
 AND FACES OUTWARD IN CELL MEMBRANES.
- THE "TAILS" ARE HYDROPHOBIC (WATER-REPELLING) FATTY ACID CHAINS THAT TUCK INWARD, FORMING THE INTERIOR OF THE MEMBRANE.

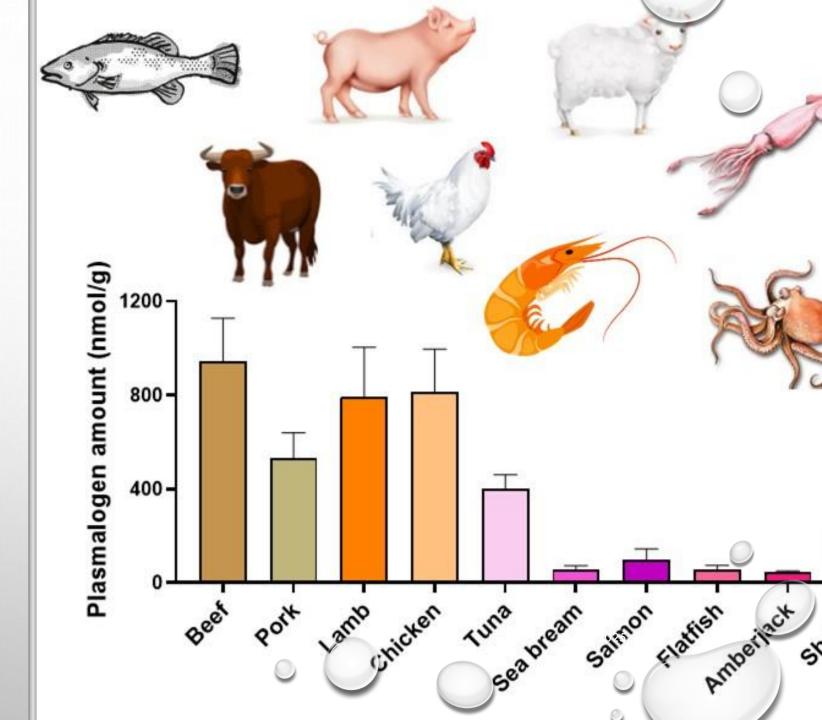
"MARINE FOODS?"

I STUMBLED ON THIS, AND IT CONFUSED ME FOR A BIT...

"QUANTIFICATION OF PLASMALOGENS IN ANIMAL-DERIVED FOODS BY HPLC-ELSD"

FOODS 2021, 10(1), 124

DOI: 10.3390/FOODS10010124



MAIN TAKEAWAYS:

***** TOP PLASMALOGEN-RICH FOODS:

- BEEF, LAMB, AND CHICKEN SHOWED THE HIGHEST CONCENTRATIONS OF PLASMALOGENS.
- THESE MEATS HAD OVER 800 NMOL/G,
 WITH BEEF LEADING THE CHART.

MANY SEAFOODS:

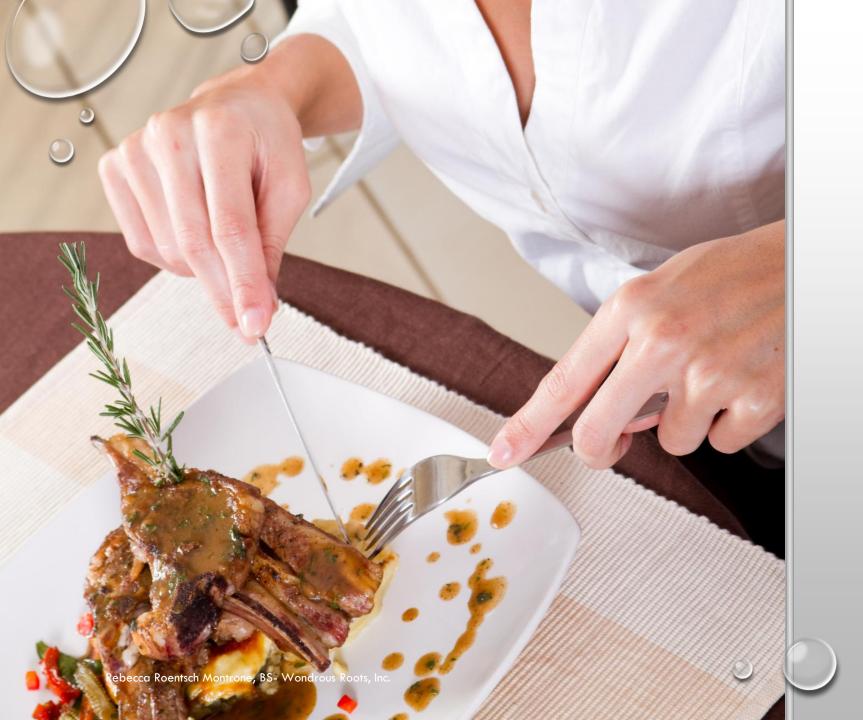
- MOST FISH AND SHELLFISH (E.G., SALMON, SEA BREAM, SCALLOP)
 CONTAINED SIGNIFICANTLY LOWER AMOUNTS.
- SQUID AND OCTOPUS WERE HIGHER AMONG SEAFOODS BUT STILL LOWER THAN BEEF OR LAMB.





WHY FOOD ISN'T ENOUGH

WHILE A WHOLE-FOOD DIET RICH IN HEALTHY FATS AND NUTRIENTS SUPPORTS PLASMALOGEN MAINTENANCE, IT IS NOT SUFFICIENT TO RESTORE LOW LEVELS. THERAPEUTIC REPLENISHMENT REQUIRES TARGETED SUPPLEMENTATION WITH PLASMALOGEN PRECURSORS OR SPECIALIZED FORMULATIONS.



1. LIMITED QUANTITY IN DIET

EVEN THE RICHEST NATURAL SOURCES — BEEF, LAMB, CHICKEN — CONTAIN MICROGRAM-TO-LOW-MILLIGRAM AMOUNTS PER SERVING. THESE ARE HELPFUL FOR MAINTENANCE BUT NOT ENOUGH TO CORRECT DEFICIENCIES.

2. FRAGILITY DURING COOKING & DIGESTION

PLASMALOGENS ARE **DELICATE** MOLECULES AND EASILY DAMAGED BY HEAT AND OXIDATION — **COOKING AND DIGESTIVE** PROCESSES CAN SIGNIFICANTLY REDUCE THEIR BIOAVAILABILITY. PLASMALOGENS ARE **DELICATE** MOLECULES AND EASILY DAMAGED BY HEAT AND OXIDATION — COOKING AND DIGESTIVE PROCESSES CAN SIGNIFICANTLY REDUCE THEIR BIOAVAILABILITY.



3. THERAPEUTIC NEEDS FAR EXCEED DIETARY CAPACITY

PROTOCOLS RELY ON DIRECT
PRECURSORS (LIKE
ALKYLGLYCEROLS OR SYNTHETIC
PLASMALOGEN MIMETICS) AT
TARGETED DOSAGES TO
BYPASS IMPAIRED BIOSYNTHESIS
OR ACCELERATE REPLENISHMENT
— SOMETHING FOOD SIMPLY
CAN'T MATCH.



Rebecca Roentsch Montrone, BS- Wondrous Roots, Inc.

7/20/2025

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FOOD ALONE IS NOT ADEQUATE TO THERAPEUTICALLY INCREASE PLASMALOGENS, ESPECIALLY WHEN TRYING TO RESTORE OR OPTIMIZE LEVELS IN THE CONTEXT OF:

Aging

Neurodegenerative diseases

Cardiovascular disease

Chronic inflammation

Mitochondrial dysfunction

Plasmalogen deficiency (as confirmed by testing)

WHY MARINE PLASMALOGENS ARE PREFERRED IN SUPPLEMENTS

- 1. OMEGA-3-RICH TAILS

 MARINE-DERIVED PLASMALOGENS OFTEN

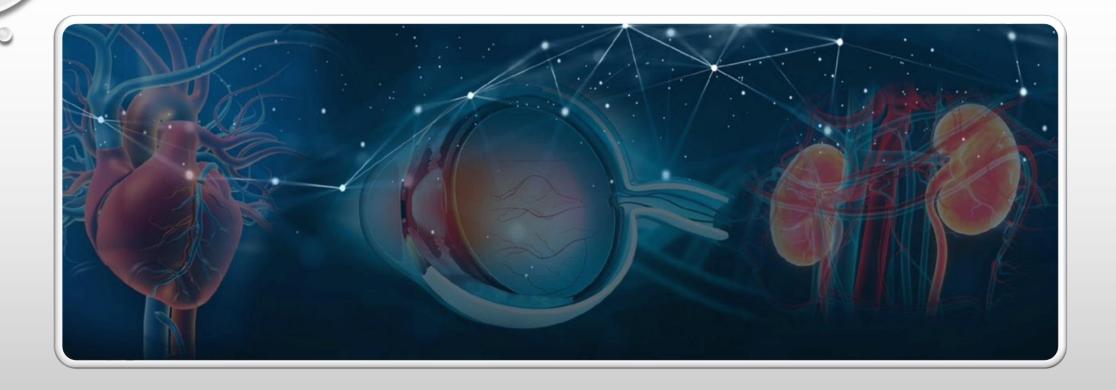
 CONTAIN LONG-CHAIN POLYUNSATURATED

 FATTY ACIDS (PUFAS) LIKE DHA HIGHLY

 ANTI-INFLAMMATORY AND CRUCIAL FOR

 BRAIN AND RETINA FUNCTION.
- 2. MEMBRANE FLUIDITY & NEUROPROTECTION
 DHA-ENRICHED PLASMALOGENS HELP
 MAINTAIN MEMBRANE FLEXIBILITY AND
 NEUROPLASTICITY, WHICH ARE ESSENTIAL IN
 AGING AND NEURODEGENERATION.
- 3. MORE SIMILAR TO HUMAN BRAIN LIPIDS
 HUMAN BRAIN PLASMALOGENS ARE
 PARTICULARLY RICH IN PLSETN WITH DHA OR
 OTHER OMEGA-3S MAKING MARINE
 SOURCES MORE "BRAIN-MIMETIC."

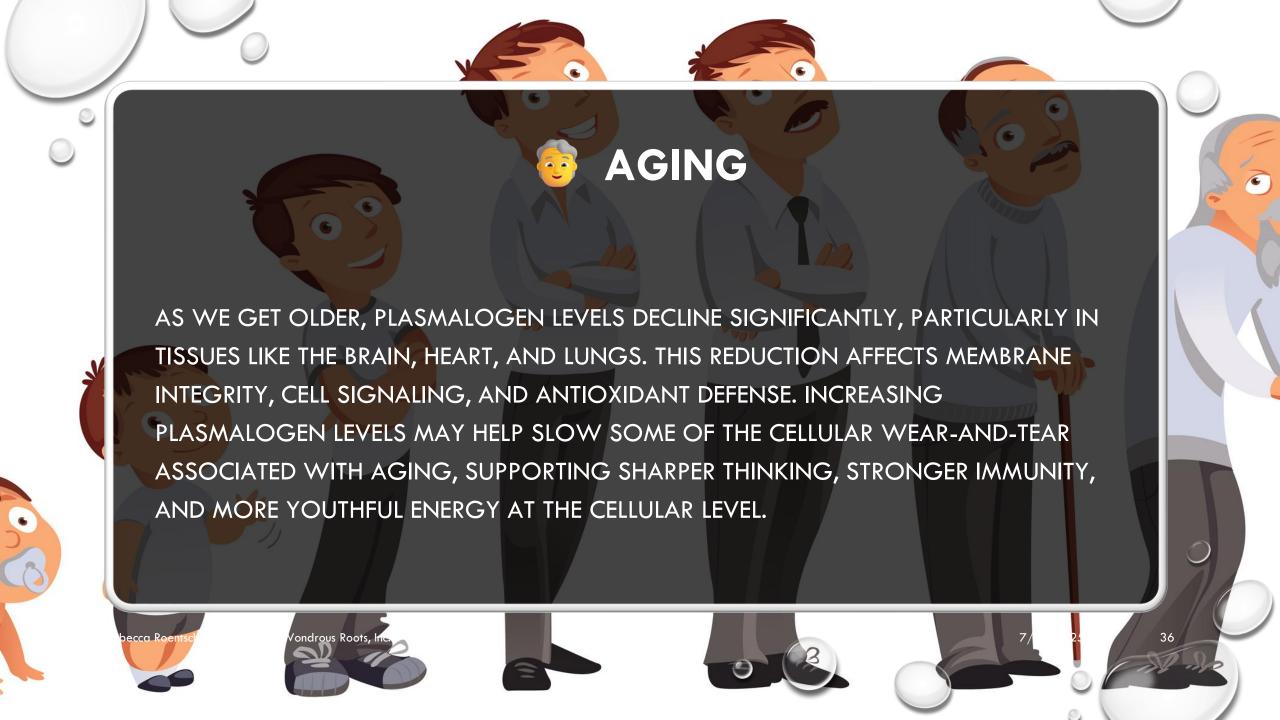




PLASMALOGENS & YOU

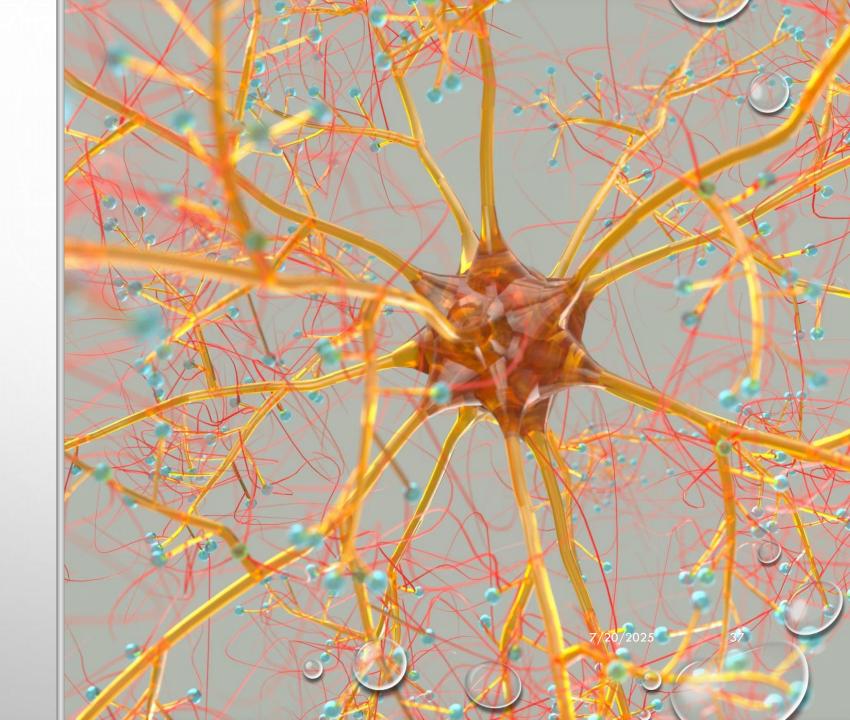
LET'S TAKE A CLOSER LOOK!





NEURODEGENERATIVE DISEASES

LOW PLASMALOGEN LEVELS ARE A
CONSISTENT FINDING IN ALZHEIMER'S,
PARKINSON'S, AND OTHER
NEURODEGENERATIVE DISORDERS.
PLASMALOGENS PROTECT NEURONS
FROM OXIDATIVE DAMAGE, SUPPORT
THE FUNCTION OF SYNAPSES, AND
HELP MAINTAIN HEALTHY MYELIN
SHEATHS. REPLENISHING THEM MAY
SLOW PROGRESSION, IMPROVE
COGNITIVE CLARITY, AND SUPPORT
MEMORY, MOOD, AND FOCUS IN
AGING OR AT-RISK BRAINS.



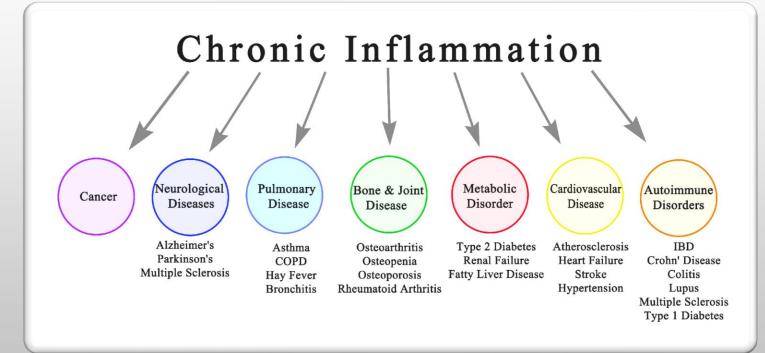




CARDIOVASCULAR DISEASE

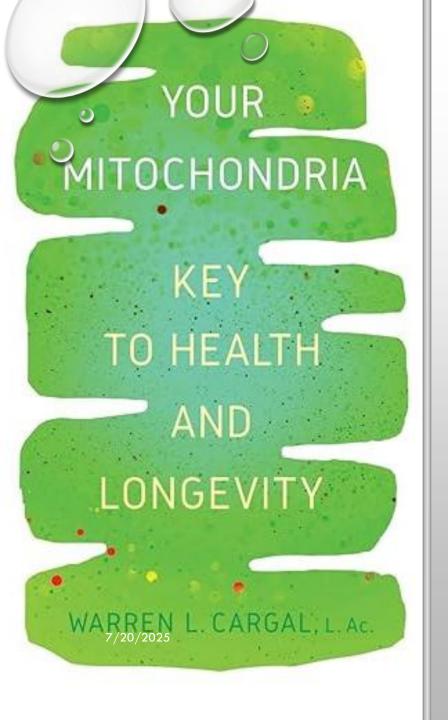
PLASMALOGENS PLAY A CRITICAL ROLE IN MAINTAINING HEALTHY BLOOD VESSELS AND HEART TISSUE. THEY REDUCE OXIDATIVE STRESS, SUPPORT CHOLESTEROL TRANSPORT, AND PROMOTE SMOOTH, FLEXIBLE CELL MEMBRANES — ALL KEY IN PREVENTING PLAQUE BUILDUP AND MAINTAINING CIRCULATION. BOOSTING PLASMALOGEN LEVELS MAY SUPPORT OVERALL CARDIOVASCULAR HEALTH AND RESILIENCE, ESPECIALLY IN THOSE WITH EXISTING RISK FACTORS.





CHRONIC INFLAMMATION

BECAUSE PLASMALOGENS HELP MODULATE IMMUNE RESPONSES AND SCAVENGE REACTIVE OXYGEN SPECIES, LOW LEVELS CAN CONTRIBUTE TO ONGOING, LOW-GRADE INFLAMMATION. REPLENISHING PLASMALOGENS MAY HELP CALM CHRONIC INFLAMMATORY CONDITIONS BY RESTORING A NATURAL ANTIOXIDANT BUFFER AND **ENCOURAGING HEALTHIER** IMMUNE CELL SIGNALING.



MITOCHONDRIAL DYSFUNCTION

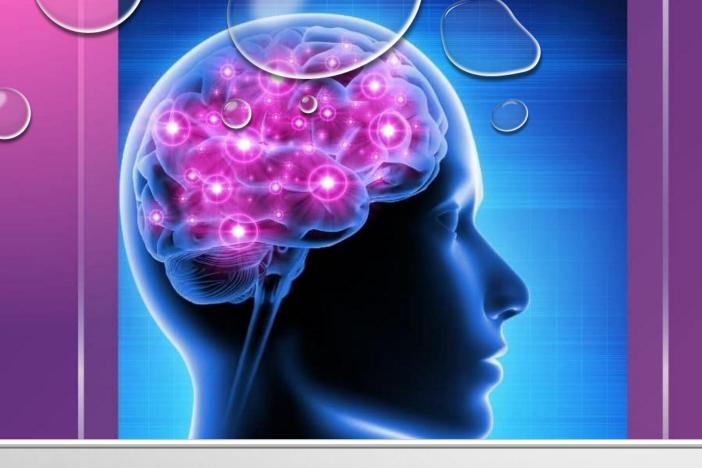
MITOCHONDRIA — YOUR CELL'S ENERGY FACTORIES — RELY ON HEALTHY MEMBRANES TO FUNCTION PROPERLY, AND PLASMALOGENS ARE KEY COMPONENTS OF THOSE MEMBRANES. WHEN PLASMALOGENS ARE LOW, MITOCHONDRIAL PERFORMANCE SUFFERS, LEADING TO FATIGUE AND SLUGGISH METABOLISM. RESTORING PLASMALOGEN LEVELS CAN STABILIZE MITOCHONDRIA, ENHANCE ATP PRODUCTION, AND IMPROVE CELLULAR ENERGY OUTPUT.



PLASMALOGEN DEFICIENCY

WHETHER DUE TO GENETICS, CHRONIC ILLNESS, OR AGING, TRUE PLASMALOGEN DEFICIENCY CREATES A RIPPLE EFFECT OF DYSFUNCTION THROUGHOUT THE BODY. FROM COGNITIVE DECLINE TO POOR IMMUNE FUNCTION AND REDUCED ENERGY, THE SYMPTOMS CAN BE FAR-REACHING. IN THESE CASES, SUPPLEMENTATION WITH PLASMALOGEN PRECURSORS OR FORMULATIONS CAN BE A POWERFUL TOOL TO REBUILD HEALTHY LEVELS AND RESTORE BALANCE.





DO PLASMALOGEN SUPPLEMENTS EXIST?

Learn why these lipids might be at the forefront of understanding dementia, Alzheimer's, and other aging-related diseases.

Find out how you can naturally raise plasmalogen

PLASMALOGEN PRECURSORS & SUPPLEMENTS

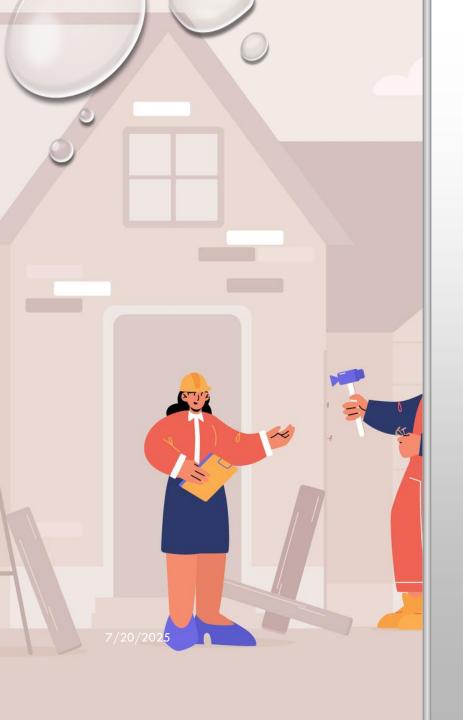


	Standard DHA	Plasmalogen Supplementation
Form	Free DHA (usually triglyceride or ethyl ester)	DHA embedded in plasmalogen structure
Absorption	Requires breakdown and reassembly in liver	Delivers directly in membrane- ready form
Target delivery	Low brain uptake; <1% makes it into neurons	Efficient brain uptake – plasmalogens cross BBB
Function	Antioxidant & structural, but passive	Actively replaces depleted neuronal lipids
Stability	Susceptible to oxidation	Built-in antioxidant properties via vinyl ether bond

PLASMALOGENS VS. STANDARD DHA – WHAT'S THE DIFFERENCE?

- DHA ALONE ≠ DHA WHERE IT COUNTS.
- P THINK OF STANDARD DHA
 LIKE RAW MATERIAL...
 PLASMALOGENS ARE THE
 FINISHED PRODUCT YOUR BRAIN
 IS DESPERATELY MISSING.





DHA/PLASMALOGEN ANALOGY

GIVING SOMEONE STANDARD DHA IS LIKE DROPPING OFF LUMBER AND NAILS AND HOPING A HOUSE GETS BUILT.

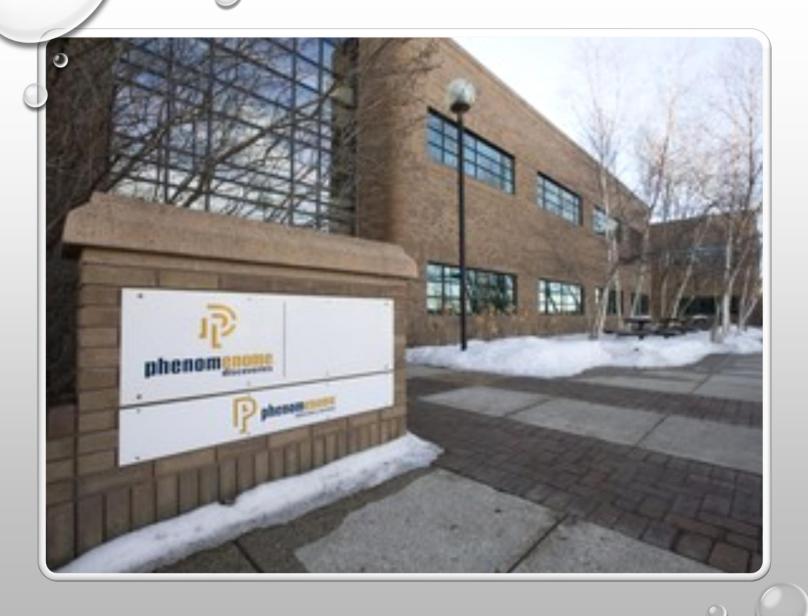
GIVING PLASMALOGENS IS LIKE DELIVERING A **PRE-FAB**, **BRAIN-READY REPAIR CREW**—FULLY EQUIPPED AND READY TO RESTORE STRUCTURE, FUNCTION, AND FIREPOWER.

PPI-1011 (PHARMACEUTICAL-GRADE PRECURSOR)

FIRST-IN-HUMAN SAFETY, TOLERABILITY, AND PHARMACOKINETICS
OF PPI-1011, A SYNTHETIC PLASMALOGEN PRECURSOR

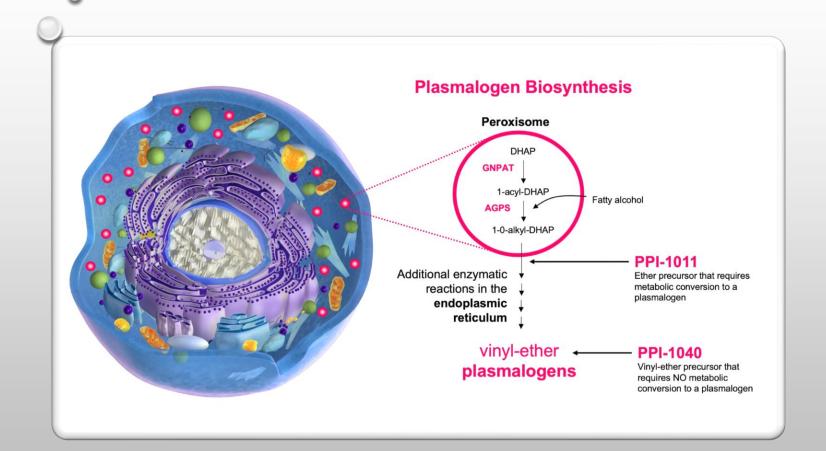
"PLASMALOGEN DEFICIENCY IS THE UNDERLYING CAUSE OF THE ULTRARARE PEDIATRIC DISORDER RHIZOMELIC CHONDRODYSPLASIA PUNCTATA
(RCDP) AND HAS ALSO BEEN ASSOCIATED WITH OTHER
NEURODEGENERATIVE DISEASES, INCLUDING ALZHEIMER'S DISEASE.
PHARMACOLOGICAL PLASMALOGEN AUGMENTATION USING PPI-1011,
A FIRST-IN-CLASS SYNTHETIC PLASMALOGEN PRECURSOR DESIGNED TO
AUGMENT PLASMALOGEN LEVELS FOLLOWING ORAL ADMINISTRATION,
REPRESENTS A NOVEL TREATMENT OPTION FOR INDIVIDUALS WITH
RCDP." MORE ON THIS CONDITION AND PLASMALOGEN THERAPY

7/20/2025



WHAT IS PPI-1011?

PPI-1011 IS A **SYNTHETIC PLASMALOGEN PRECURSOR** DEVELOPED BY **PHENOMENOME DISCOVERIES INC., INTENDED TO** BYPASS DEFECTS IN THE BODY'S NATURAL PLASMALOGEN SYNTHESIS PATHWAY. IT'S STRUCTURED TO DELIVER C16:0 **ALKYL-DHAP** (A KEY INTERMEDIATE) EFFICIENTLY TO TISSUES.



STATUS: NOT OTC

- PPI-1011 IS STILL CONSIDERED AN INVESTIGATIONAL COMPOUND.
- IT HAS BEEN USED IN CLINICAL TRIALS FOR ALZHEIMER'S AND PARKINSON'S, BUT IT IS NOT FDA-APPROVED, NOT COMMERCIALLY AVAILABLE, AND NOT SOLD AS A DIETARY SUPPLEMENT.
- IT FALLS IN THE CATEGORY OF

 PHARMACEUTICAL-GRADE

 RESEARCH COMPOUNDS NOT

 SOMETHING YOU'LL FIND ON

 SHELVES OR THROUGH

 PRACTITIONER CHANNELS.



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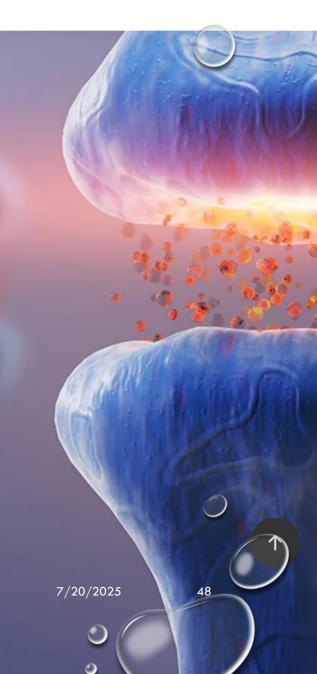


Fuel Your Brain. Protect Your Future.

Unlock sharper thinking, better memory, and long-lasting brain power with the science of plasmalogens.

Shop Brain Health Products

Watch How It Works





PRODROMEGLIA TM (SOFTGELS)

BRAIN AND NERVE SUPPORT HELPS BRING CALM AND FOCUS TO THE BODY AND MIND.

- DISCOVER THE POWER OF ADVANCED NEUROLOGICAL SUPPORT WITH PRODROMEGLIA™, A REVOLUTIONARY SUPPLEMENT SCIENTIFICALLY DESIGNED BY DR. DAYAN GOODENOWE. BUILT ON OVER TWO DECADES OF DEDICATED PLASMALOGEN RESEARCH, THIS OMEGA-9 (OLEIC ACID) PLASMALOGEN PRECURSOR IS FORMULATED TO HELP RESTORE AND OPTIMIZE CELLULAR FUNCTION IN CRITICAL AREAS SUCH AS BRAIN WHITE MATTER, MYELIN, AND HEART MEMBRANES.
- PRODROMEGLIA™ OMEGA-9 PLASMALOGEN
 PRECURSORS ARE THE MOST EXTENSIVELY RESEARCHED
 AND ONLY PATENTED AND VALIDATED METHOD TO
 RESTORE OMEGA-9 PLASMALOGENS. THESE
 PRECURSORS MAY HELP PREVENT DEMYELINATION AND
 NEURODEGENERATION AND REDUCE LIPID
 PEROXIDATION.



PRODROMEGLIATM (OIL)

BRAIN AND NERVE SUPPORT HELPS BRING CALM AND FOCUS TO THE BODY AND MIND.

- DISCOVER THE POWER OF ADVANCED NEUROLOGICAL SUPPORT WITH PRODROMEGLIA™, A REVOLUTIONARY SUPPLEMENT SCIENTIFICALLY DESIGNED BY DR. DAYAN GOODENOWE. BUILT ON OVER TWO DECADES OF DEDICATED PLASMALOGEN RESEARCH, THIS OMEGA-9 (OLEIC ACID) PLASMALOGEN PRECURSOR IS FORMULATED TO HELP RESTORE AND OPTIMIZE CELLULAR FUNCTION IN CRITICAL AREAS SUCH AS BRAIN WHITE MATTER, MYELIN, AND HEART MEMBRANES.
- PRODROMEGLIA[™] OMEGA-9 PLASMALOGEN PRECURSORS ARE THE MOST EXTENSIVELY RESEARCHED AND ONLY PATENTED AND VALIDATED METHOD TO RESTORE OMEGA-9 PLASMALOGENS. THESE PRECURSORS MAY PREVENT DEMYELINATION AND NEURODEGENERATION AND REDUCE LIPID PEROXIDATION.*





PRODROMENEURO™ (SOFTGELS)

BRAIN & NERVE BOOST FOR MAXIMIZING BODY AND MIND PERFORMANCE.

- PRODROMENEURO™ IS AN OMEGA-3 (DHA) PLASMALOGEN PRECURSOR
 DESIGNED TO HELP RESTORE AND OPTIMIZE CELLULAR FUNCTIONS THAT
 REQUIRE HIGH LEVELS OF DHA PLASMALOGENS, SUCH AS BRAIN GRAY
 MATTER, NEURON AND NEUROMUSCULAR SYNAPTIC FUNCTION, REVERSE
 CHOLESTEROL TRANSPORT, AND MAINTAINING LOW BRAIN AMYLOID LEVELS.
- PRODROMENEURO™ DHA-PLASMALOGEN PRECURSORS ARE THE MOST EXTENSIVELY RESEARCHED AND ARE THE ONLY PATENTED AND VALIDATED WAY TO RESTORE DHA PLASMALOGENS. THESE PRECURSORS MAY HELP TO PREVENT NEURODEGENERATION, INCREASE REVERSE CHOLESTEROL TRANSPORT, REDUCE AMYLOID FORMATION, IMPROVE COGNITION, IMPROVE MOBILITY, REDUCE LIPID PEROXIDATION, AND INCREASE ANTI-OXIDANT CAPACITY.*



PRODROMENEUROTM (OIL)

BRAIN & NERVE BOOST FOR MAXIMIZING BODY AND MIND PERFORMANCE.

- PRODROMENEURO™ IS AN OMEGA-3 (DHA) PLASMALOGEN PRECURSOR DESIGNED
 TO HELP RESTORE AND OPTIMIZE CELLULAR FUNCTIONS THAT REQUIRE HIGH LEVELS
 OF DHA PLASMALOGENS, SUCH AS BRAIN GRAY MATTER, NEURON AND
 NEUROMUSCULAR SYNAPTIC FUNCTION, REVERSE CHOLESTEROL TRANSPORT, AND
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 PEROXIDATION, AND INCREASE ANTI-OXIDANT CAPACITY.*







NEURO PC+

PLASMALOGEN-ENRICHED EGG YOLK OIL

- PRODROMENEURO-PC+ DELIVERS A SUPERCHARGED
 COMBINATION OF NATURALLY OCCURRING EGG YOLK
 LIPIDS, PHOSPHATIDYLCHOLINE, AND FAT-SOLUBLE VITAMINS
 ENRICHED WITH EXTRA COQ10, VITAMINS D3, E, AND K2,
 AND PRODROMENEURO OMEGA-3 PLASMALOGENS TO
 SUPPORT OPTIMAL HEART AND BRAIN FUNCTION.
- LIMITED TO 4 PER CUSTOMER
- CURRENTLY, THIS ITEM IS AVAILABLE ONLY TO CUSTOMERS LOCATED IN THE UNITED STATES





28 YEARS OLD-12 WEEKS PREGNANT WITH 2ND CHILD

- Visual snow
- Migratory nerve pain
- Paresthesia
- Chest pain
- Heart palpitations/PVCs
- Muscle fatigue and pain
- •Insomnia
- Anxiety
- Jaw and back pain
- •POTS
- History of chronic Lyme and mold toxicity



Plasmalogens are crucial phospholipids involved in:

Mitochondrial function and energy metabolism – especially important in POTS, fatigue, muscle weakness, and neurological dysfunction

Neuroprotection and membrane stability – supporting conditions like **visual snow**, neuropathic pain, and anxiety

Synaptic transmission and neuroplasticity – relevant for **mood disorders**, cognitive complaints, and neurorepair

Anti-inflammatory and antioxidant activity — beneficial for post-infectious syndromes, such as Lyme and mold recovery

Myelination – supporting nerve insulation, which is relevant for paresthesia, migrating nerve pain, and neurological hypersensitivity

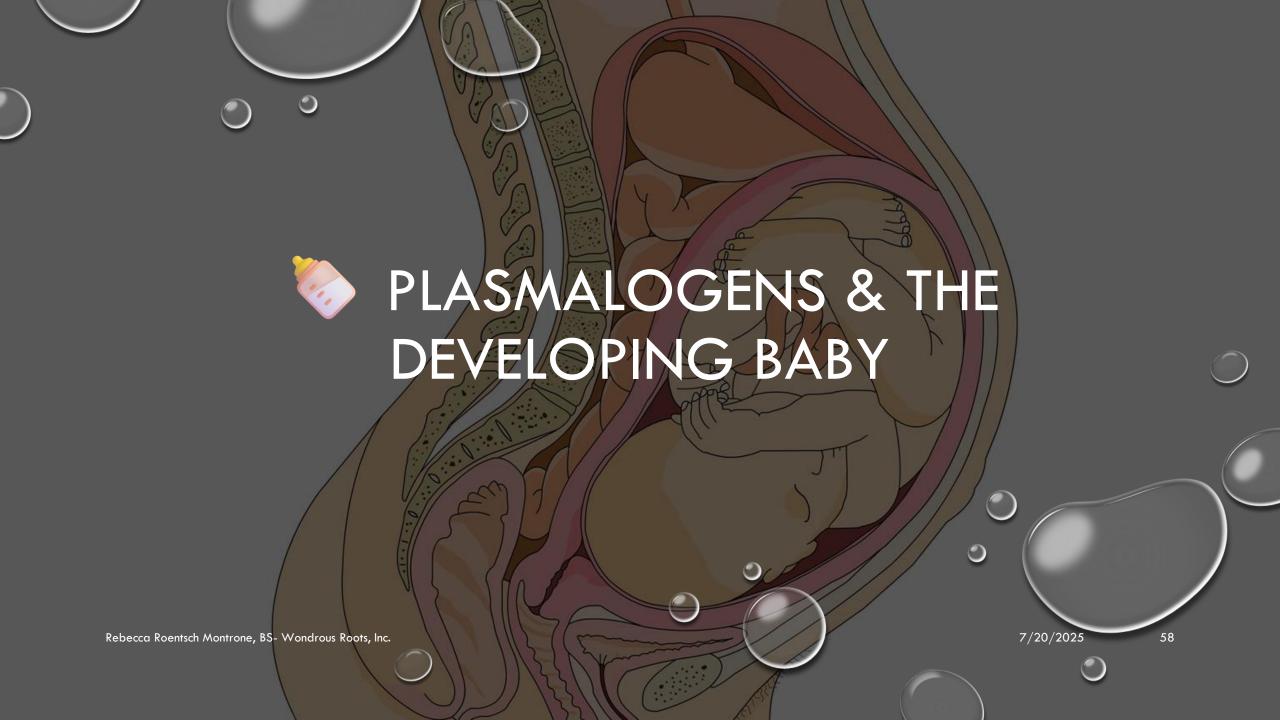
Hormonal and cardiovascular balance – especially during **pregnancy**, when endocrine and cardiac demand increases

Cell membrane fluidity and function – across every organ system impacted in her case



WE ALSO DISCUSSED THAT...

PLASMALOGEN DEFICIENCY IS A **CENTRAL FEATURE** IN MANY CHRONIC, MULTISYSTEMIC ILLNESSES. IN SOMEONE WITH MITOCHONDRIAL STRAIN, SYSTEMIC INFLAMMATION, NEUROIMMUNE DYSFUNCTION, AND CARDIOVASCULAR SYMPTOMS—**ALL INTENSIFIED BY PREGNANCY**—THIS MAKES PLASMALOGENS A POWERFULLY FOUNDATIONAL INTERVENTION.





BRAIN & NERVOUS SYSTEM DEVELOPMENT

- PLASMALOGENS ARE **MAJOR COMPONENTS OF FETAL BRAIN TISSUE**, ESPECIALLY IN **MYELIN** AND **NEURONAL MEMBRANES**.
- THEY SUPPORT **SYNAPTIC FORMATION**, **NEURONAL SIGNALING**, AND **NEUROPLASTICITY**—CRITICAL DURING RAPID BRAIN GROWTH IN UTERO.
- DEFICIENCY MAY CONTRIBUTE TO ABNORMAL NEURODEVELOPMENT OR INCREASE VULNERABILITY TO FUTURE NEURODEVELOPMENTAL DISORDERS.



VISION AND SENSORY SYSTEM FORMATION

THEY'RE ABUNDANT IN THE RETINA AND OPTIC NERVE, PLAYING A ROLE IN VISUAL SYSTEM DEVELOPMENT AND RETINAL PROTECTION FROM OXIDATIVE STRESS.

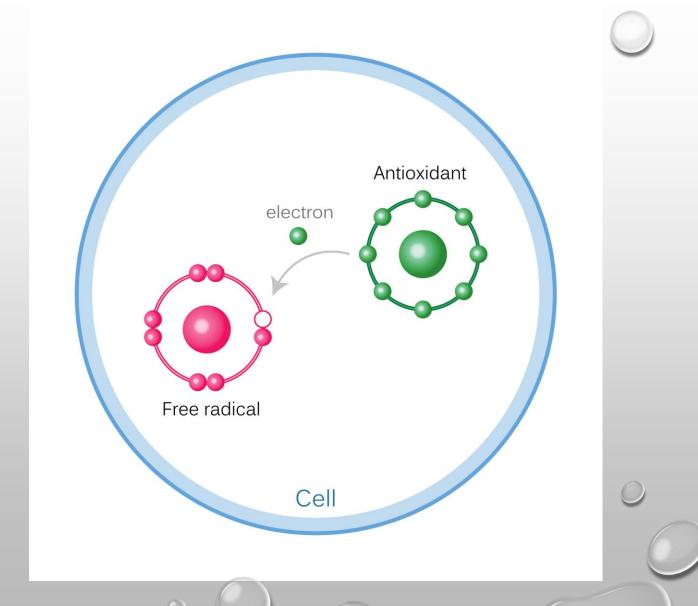


CARDIAC AND MUSCULAR DEVELOPMENT

PLASMALOGENS ARE HIGHLY
CONCENTRATED IN HEART AND
SKELETAL MUSCLE, SUPPORTING
STRUCTURAL INTEGRITY AND
MITOCHONDRIAL ENERGY
METABOLISM NEEDED FOR
TISSUE FORMATION.

ANTIOXIDANT PROTECTION

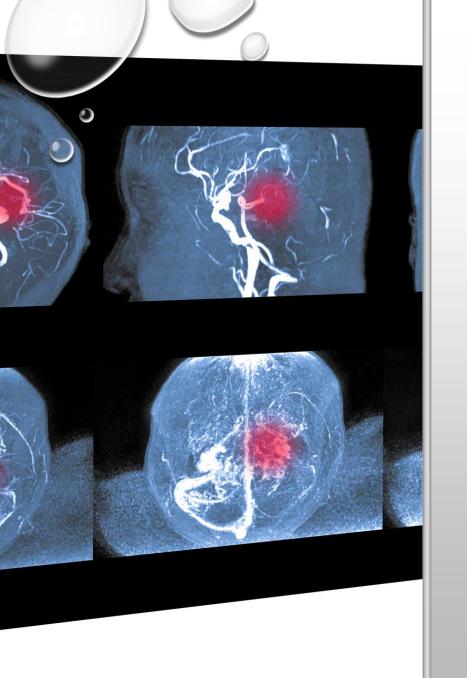
- THEY HELP QUENCH FREE
 RADICALS, ESPECIALLY REACTIVE
 OXYGEN SPECIES (ROS), WHICH
 ARE NATURALLY HIGH IN THE
 GROWING FETUS DUE TO INTENSE
 METABOLIC ACTIVITY.
- THIS ANTIOXIDANT CAPACITY
 PROTECTS FETAL TISSUES FROM
 OXIDATIVE DAMAGE AND
 SUPPORTS HEALTHY PLACENTAL
 FUNCTION.





EPIGENETIC AND METABOLIC PROGRAMMING

EMERGING RESEARCH SUGGESTS PLASMALOGENS INFLUENCE **CELL SIGNALING PATHWAYS AND GENE EXPRESSION**, HELPING TO SET LONG-TERM PATTERNS IN IMMUNITY, COGNITION, AND METABOLISM.



WHY PLASMALOGENS MATTER AFTER STROKE

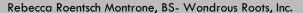
STROKE = OXIDATIVE STRESS + INFLAMMATION + CELLULAR DAMAGE PLASMALOGENS TO THE RESCUE!

- POTENT ANTIOXIDANTS: THEIR VINYL ETHER BOND SCAVENGES FREE RADICALS—PROTECTING NEURONS FROM OXIDATIVE DAMAGE
- ANTI-INFLAMMATORY EFFECTS: REDUCE NEUROINFLAMMATION AND DAMPEN OVERACTIVE IMMUNE RESPONSE
- MEMBRANE REPAIR & FLUIDITY: REBUILD AND STABILIZE DAMAGED CELL MEMBRANES, ESPECIALLY
 IN THE BRAIN
- MITOCHONDRIAL SUPPORT: RESTORE ENERGY PRODUCTION WHERE THE BRAIN NEEDS IT MOST
- NEUROGENESIS & SYNAPTIC REPAIR: SUPPORT FORMATION OF NEW NEURONAL CONNECTIONS AND PLASTICITY



REAL POTENTIAL FOR STROKE RECOVERY

- POST-STROKE GOALS:
 - REDUCE FURTHER DAMAGE
 - RESTORE FUNCTION
 - ✓ PREVENT RECURRENCE
- PLASMALOGENS HAVE SHOWN PROMISE IN:
- ENHANCING WHITE MATTER INTEGRITY
- SUPPORTING VASCULAR HEALTH AND CIRCULATION
- PROMOTING NEUROPLASTICITY IN KEY BRAIN AREAS
- BONUS: MAY HELP WITH POST-STROKE FATIGUE, MOOD CHANGES, AND COGNITIVE FOG.
- PLASMALOGENS = FOUNDATIONAL LIPID THERAPY FOR BRAIN REGENERATION.



PLASMALOGENS – LIKE A PHOENIX FOR THE BRAIN

AFTER A STROKE, THE BRAIN CAN FEEL LIKE A SCORCHED LANDSCAPE—DAMAGED NEURONS, DISRUPTED COMMUNICATION, DEPLETED ENERGY.

PLASMALOGENS ARE LIKE THE *PHOENIX RISING FROM THE ASHES*—REBUILDING, RESTORING, AND REIGNITING THE BRAIN'S INNER FIRE.



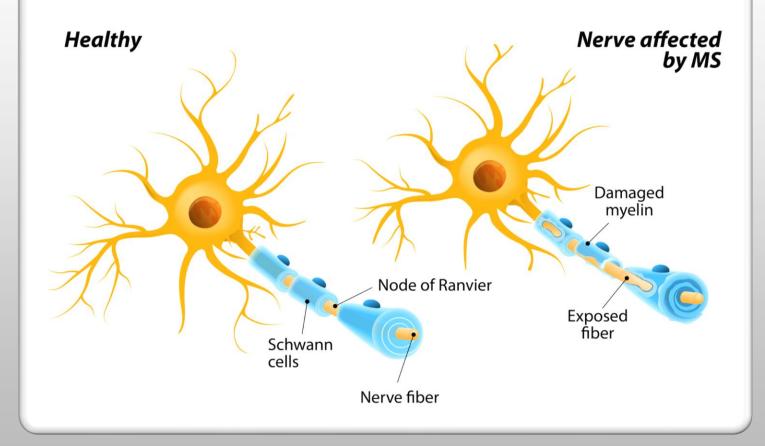
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WHY THE PHOENIX FITS:

- ANTIOXIDANT POWER: SWEEPS AWAY OXIDATIVE "ASHES"
- MEMBRANE RENEWAL: REBUILDS THE CELLULAR ARCHITECTURE
- MITOCHONDRIAL IGNITION: SPARKS NEW ENERGY
- **NEUROPLASTICITY**: WINGS OF ADAPTATION AND REGENERATION
- FROM DAMAGED TO DYNAMIC. FROM INJURY TO IGNITION. THAT'S THE PLASMALOGEN PROMISE.

MULTIPLE SCLEROSIS



WHAT ABOUT PLASMALOGENS & MS? RESTORING THE BRAIN'S INSULATION

WHAT HAPPENS IN MS?

- ATTACKS THE PROTECTIVE SHEATH
 AROUND NERVES
- NEUROINFLAMMATION CHRONIC, DAMAGING INFLAMMATION IN THE BRAIN AND SPINAL CORD
- MITOCHONDRIAL DYSFUNCTION –
 ENERGY-STARVED NEURONS
- OXIDATIVE STRESS FURTHER
 INJURY TO ALREADY VULNERABLE
 TISSUE





ENTER PLASMALOGENS:



PLASMALOGENS ARE
RICH IN MYELIN AND HELP
RESTORE ITS STRUCTURE



COOL
INFLAMMATION –
NATURALLY ANTIINFLAMMATORY



FUEL THE
MITOCHONDRIA –
RESTORE NEURONAL
ENERGY



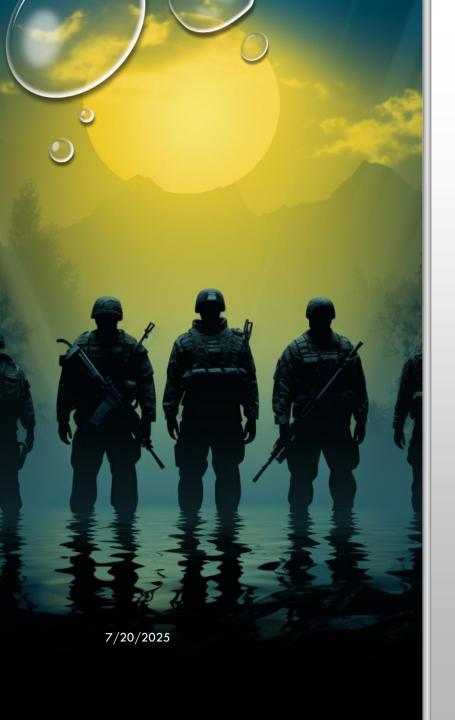
PROTECT FROM
OXIDATIVE DAMAGE —
THEIR STRUCTURE ACTS
LIKE A FREE RADICAL
SPONGE



SUPPORT REMYELINATION AND REPAIR



A FOUNDATIONAL LIPID FOR HEALING, NOT JUST COPING.

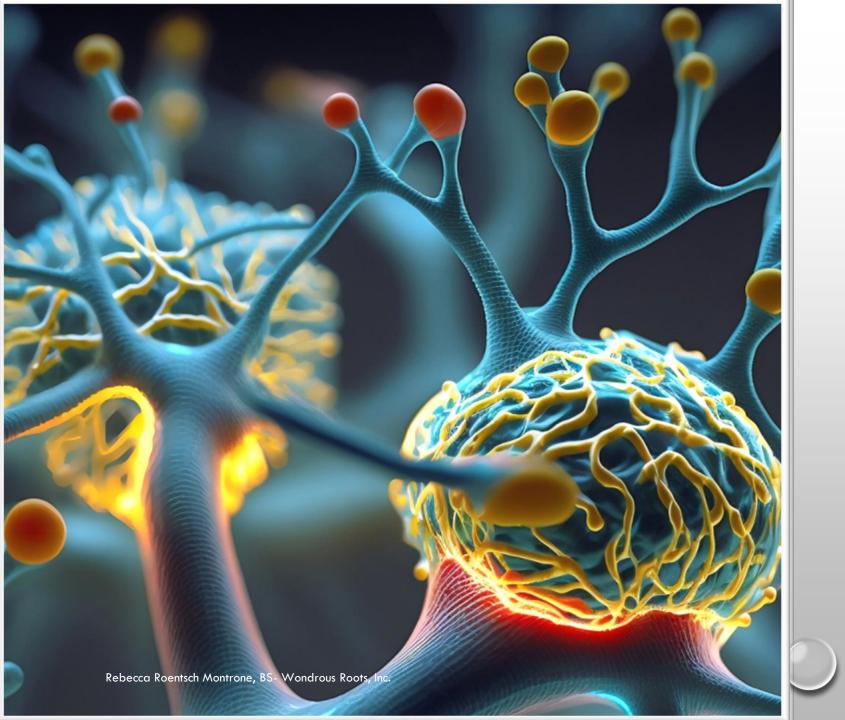


IN SUMMARY: WHY PLASMALOGENS MATTER — FOR ALL OF US

- ◆ PLASMALOGENS ARE THE UNSUNG STEWARDS OF HEALTH DEFENDING, DIRECTING, AND FINE-TUNING NEARLY EVERY MAJOR SYSTEM IN THE BODY.
- ◆ THEY AREN'T JUST PASSENGERS ON THE AGING TRAIN THEY'RE PART OF THE BRAKES, THE ENGINE, AND THE SHOCK ABSORBERS.
- FROM NEURONS TO HORMONES, MITOCHONDRIA TO IMMUNITY, AND FROM BIRTH TO OLD AGE THESE HUMBLE LIPIDS WHISPER STABILITY WHERE THERE COULD BE CHAOS.
- WHETHER YOU'RE NURTURING A DEVELOPING BRAIN, NAVIGATING CHRONIC ILLNESS, OR SIMPLY STRIVING TO AGE WELL, **PLASMALOGENS DESERVE A SEAT AT THE TABLE.**

BOTTOM LINE?

DON'T WAIT UNTIL THEY'RE GONE TO REALIZE HOW MUCH THEY WERE DOING.



THANK YOU!

- REBECCA MONTRONE, BS
- WONDROUS ROOTS | HOLISTIC NUTRITION | KEENE, NH, USA
- WELCOME TO THE
 WONDROUS ROOTS ONLINE
 STORE!