

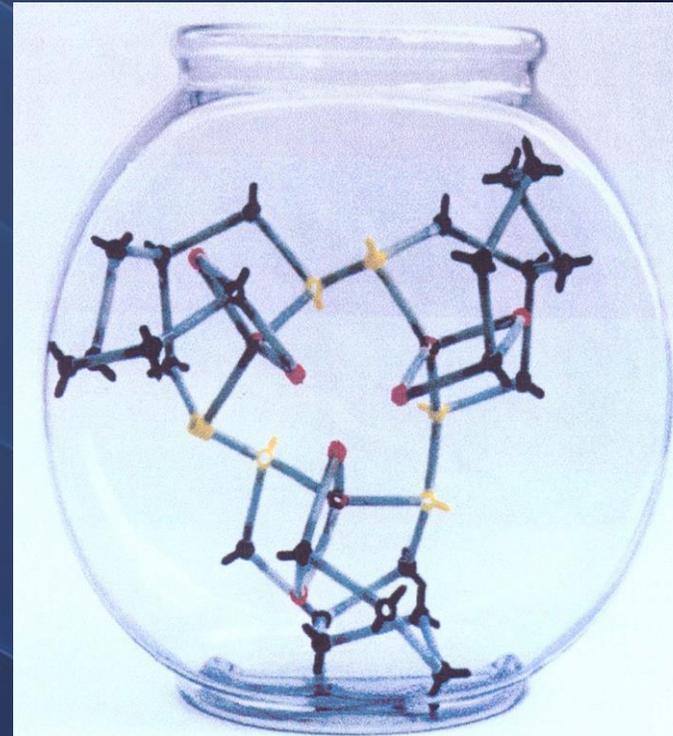
POLY-MVA[®]

LIPOIC ACID MINERAL COMPLEX[™]

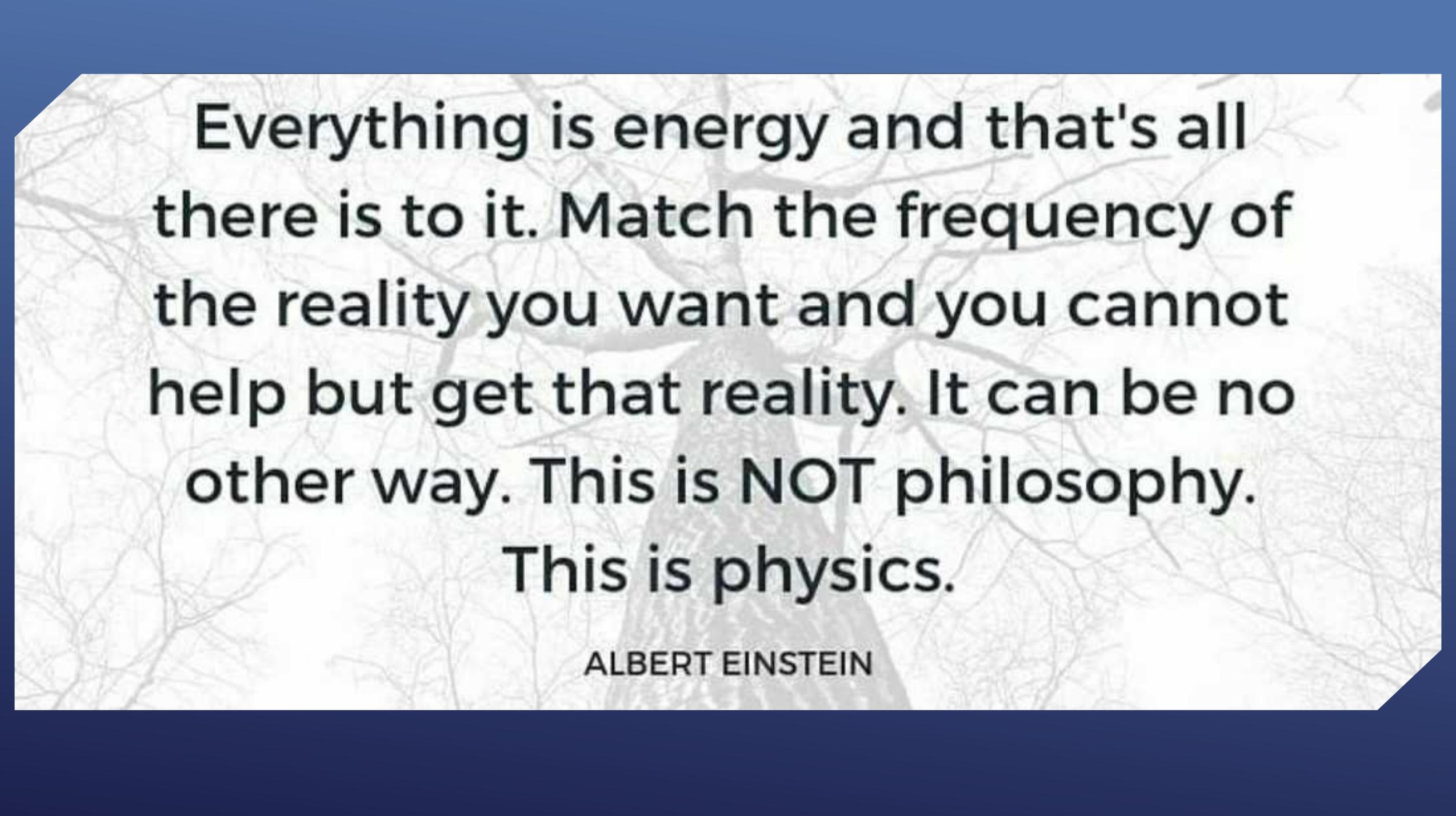
Mitochondrial Medicine

Aka Energy Medicine

“Is it really ALL about
the Mitochondria??”



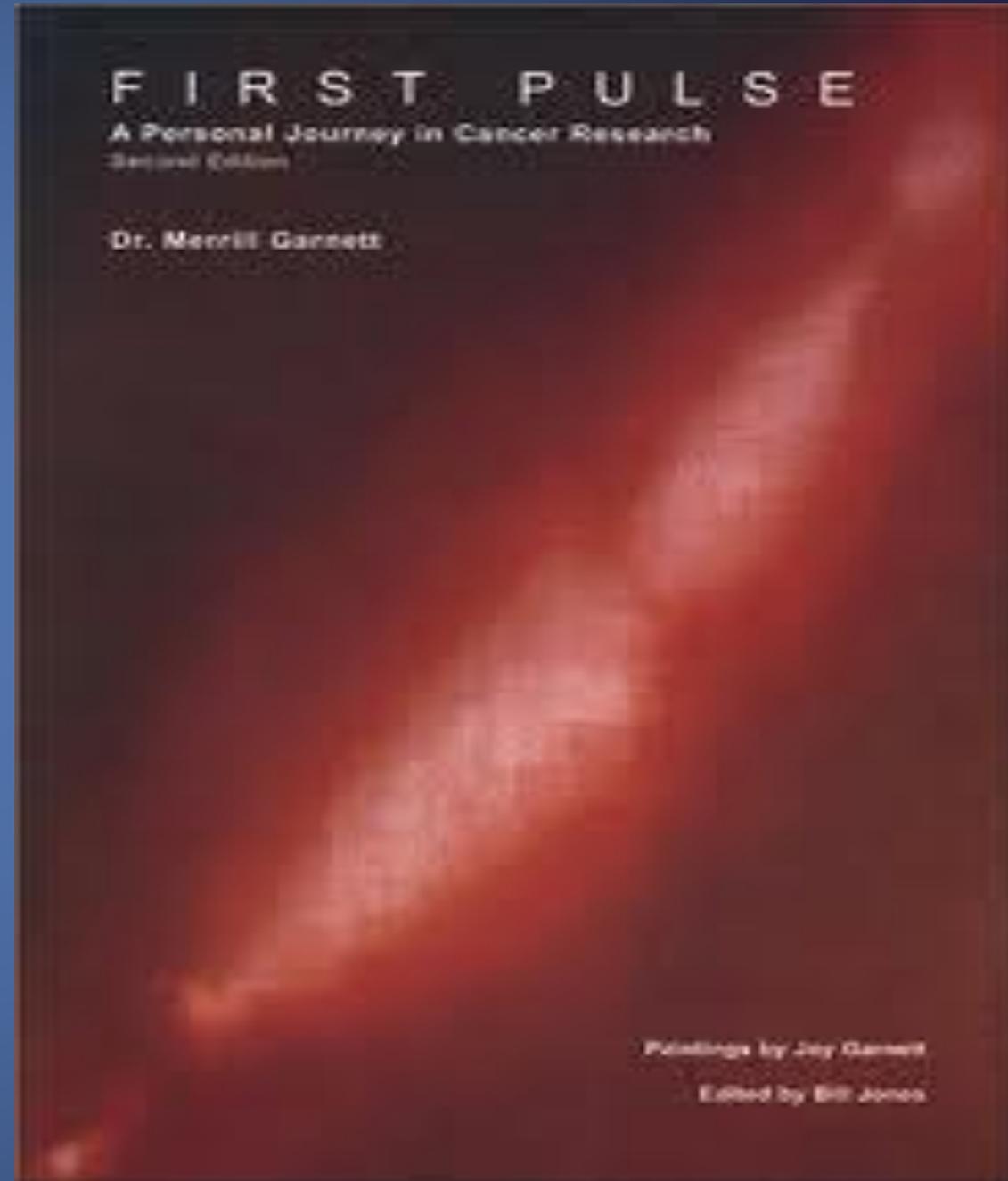
Trimeric Palladium Lipoic Complex



Everything is energy and that's all there is to it. Match the frequency of the reality you want and you cannot help but get that reality. It can be no other way. This is NOT philosophy. This is physics.

ALBERT EINSTEIN

Dr. Merrill Garnett



MITOCHONDRIAL ROLE IN HEALTH AGING AND DISEASE

- ▶ Power Plant
- ▶ ATP for Function & Active Transport
- ▶ Mitochondrial DNA - NO defenses
- ▶ Oxidative Balance is necessary
- ▶ Recycling and support of Antioxidants
 - Protection of DNA
 - Cell membrane

CELLULAR DYSFUNCTIONS

- ▶ Protein synthesis
- ▶ Sense environmental triggers
 - ▶ nutrient availability
 - ▶ regulating cell growth
 - ▶ cell cycle progression
 - ▶ organelle homeostasis
- ▶ Energy Output (mitochondria)
- ▶ DNA
 - ▶ repair mechanisms
 - ▶ signal transduction

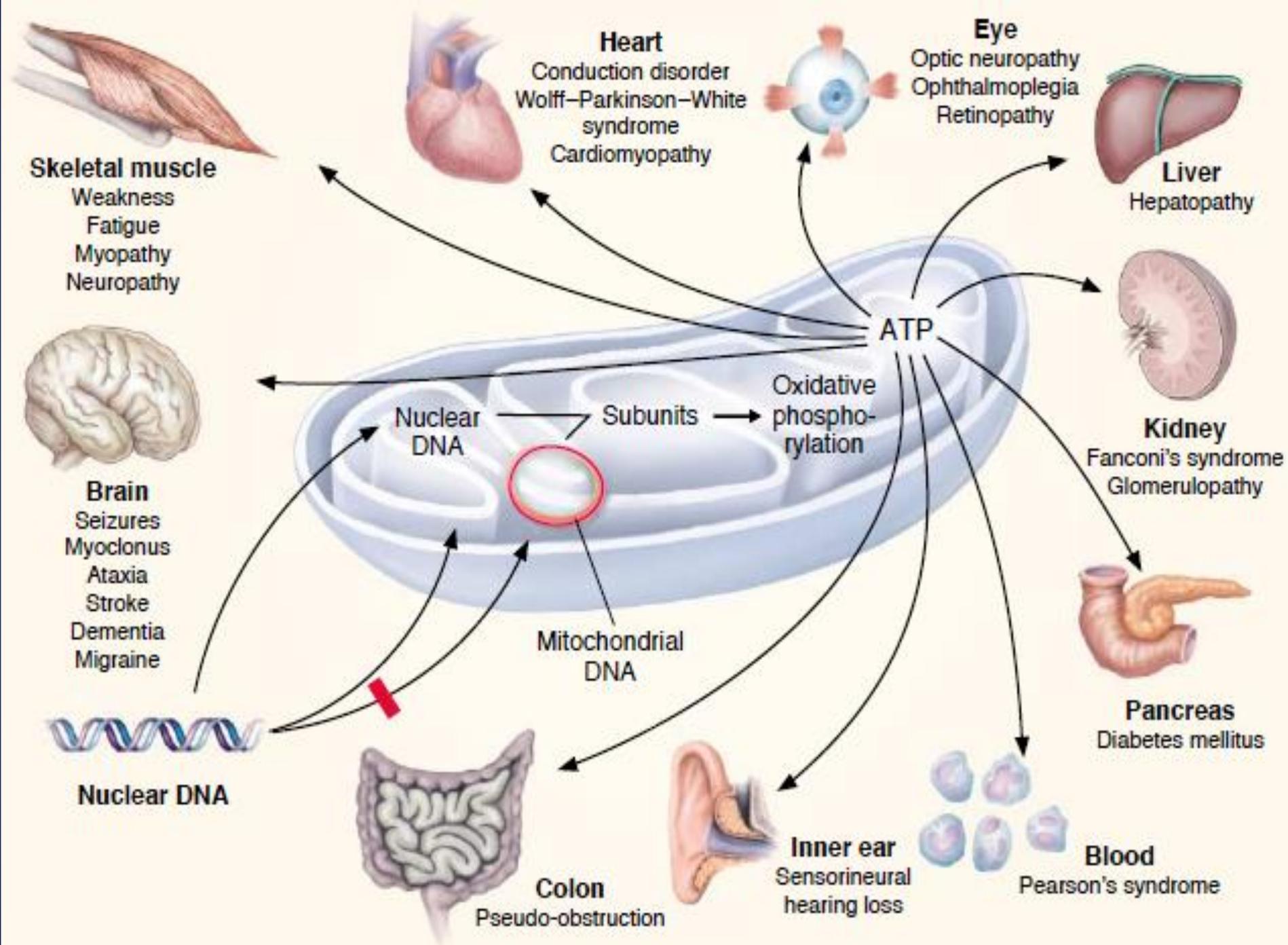
AGING

- ▶ **Fundamental biological process accompanied by a general decline in tissue function**
 - ▶ **the accumulation of cellular damage.**
- ▶ **Largest Influencer of age-related concerns**
- ▶ **molecular mechanisms involved in aging**
 - ▶ **adenosine monophosphate-activated kinase (AMPK)**
AMP/ATP Ratio
 - ▶ **homeostasis, stress response, growth, death autophagy**
 - ▶ **Sirtuin 1 (SIRT1)**
 - ▶ **target of rapamycin (mTOR) pathways;**

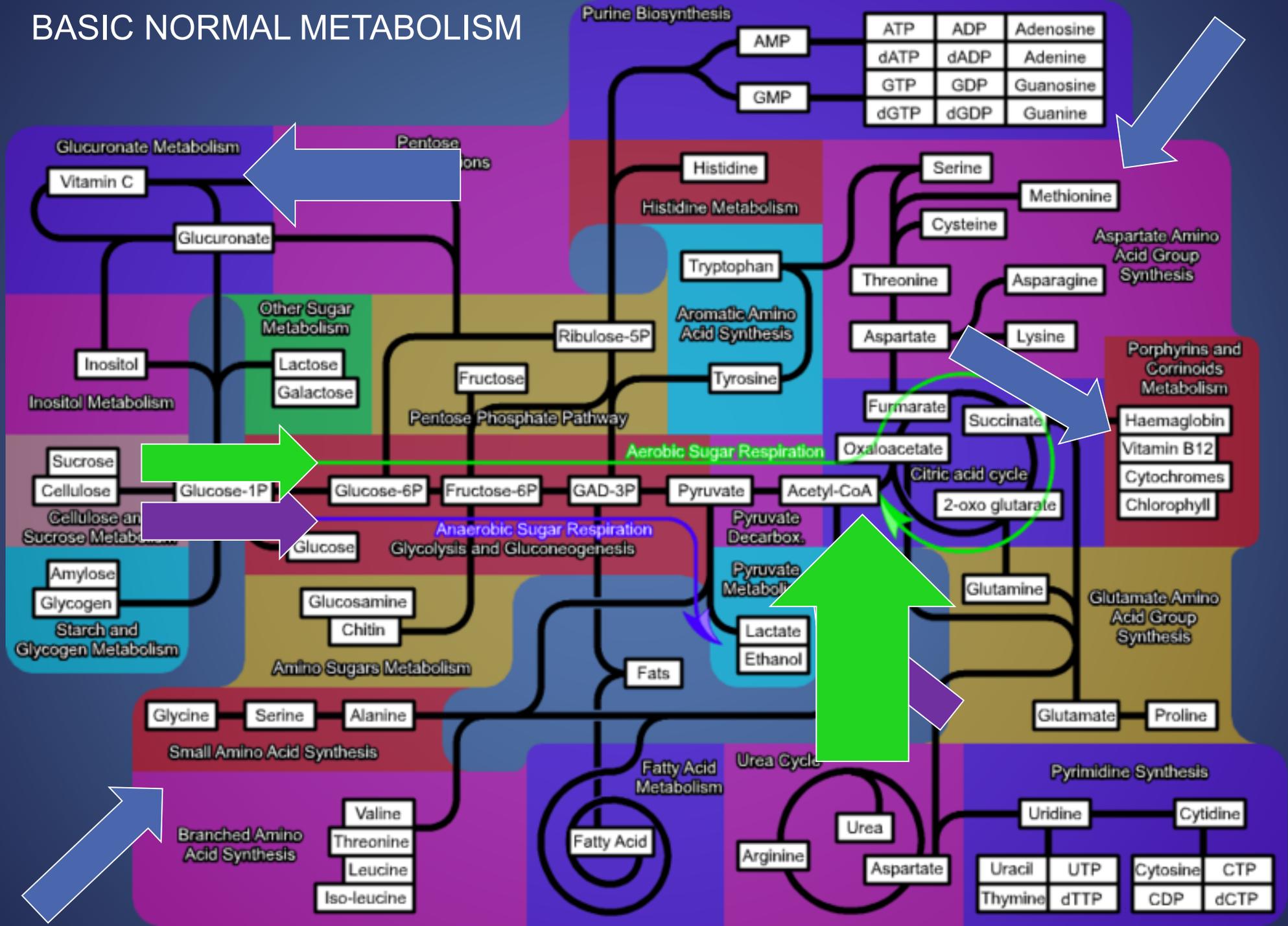
HALLMARKS OF AGING

- ▶ mitochondrial dysfunction/failure
- ▶ genomic instability
- ▶ telomere attrition
- ▶ epigenetic alterations
- ▶ loss of proteostasis-
- ▶ deregulated nutrient-sensing
- ▶ cellular senescence
- ▶ stem cell exhaustion
- ▶ altered intercellular communication

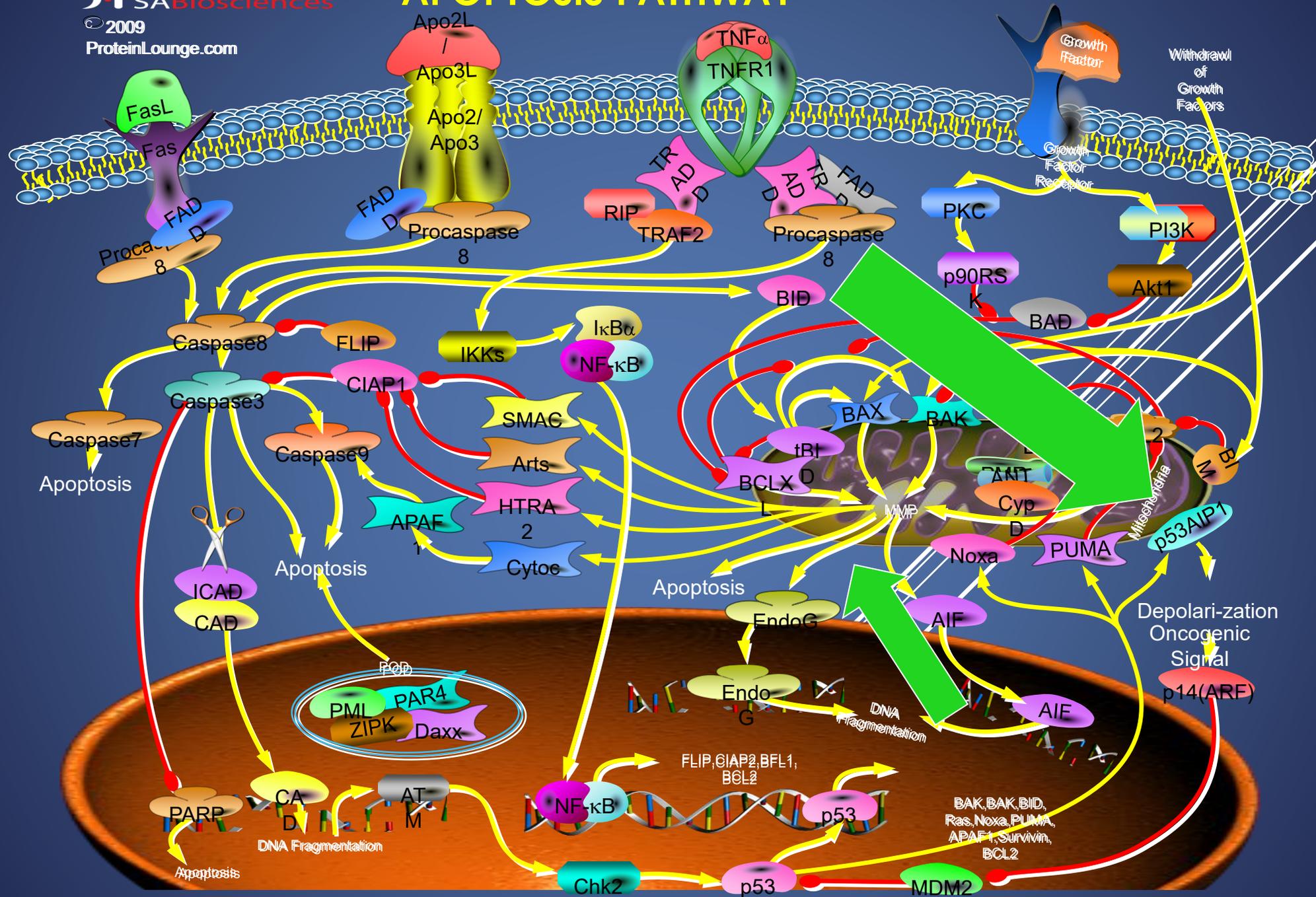
“Dissect the interconnectedness”

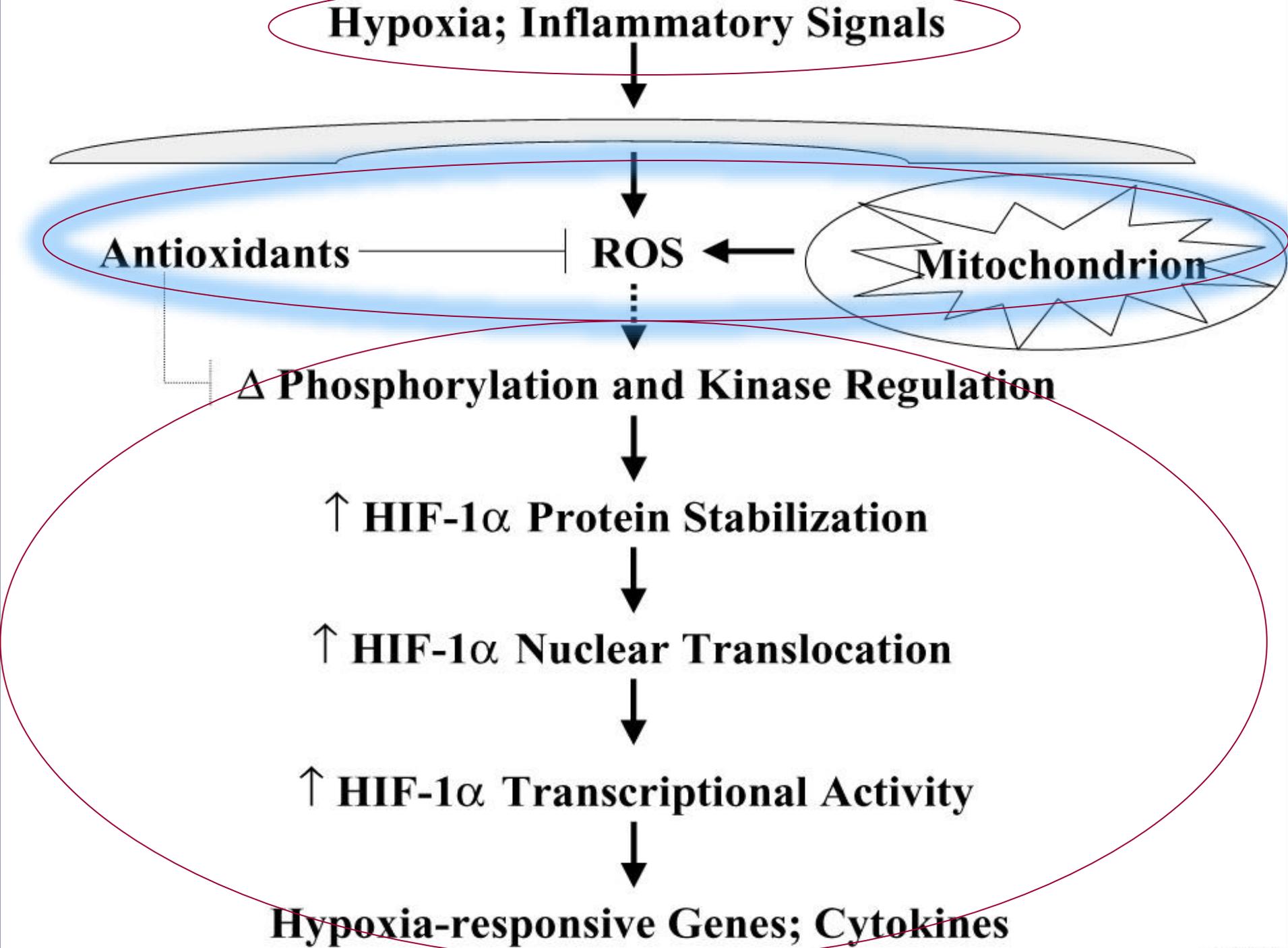


BASIC NORMAL METABOLISM

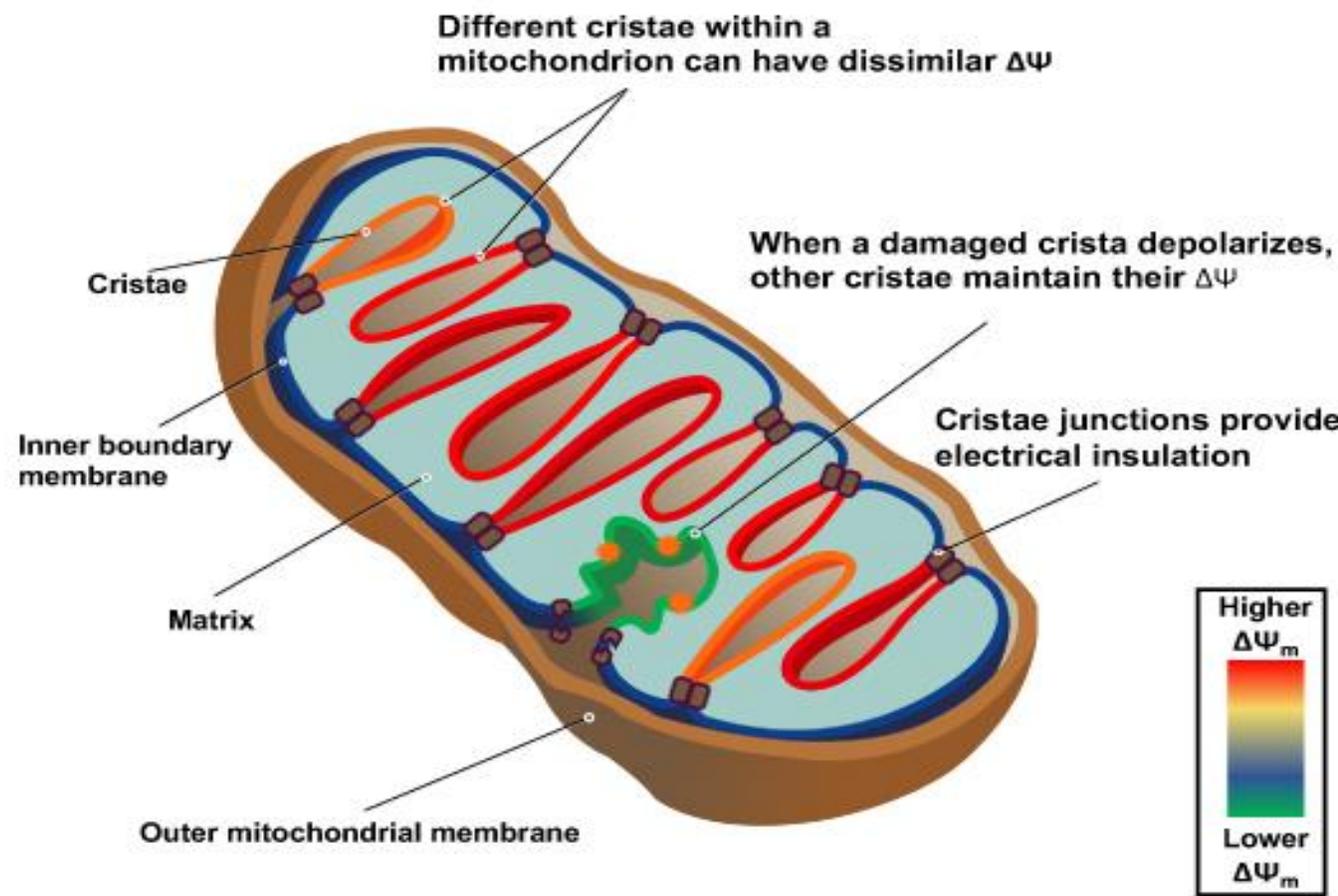
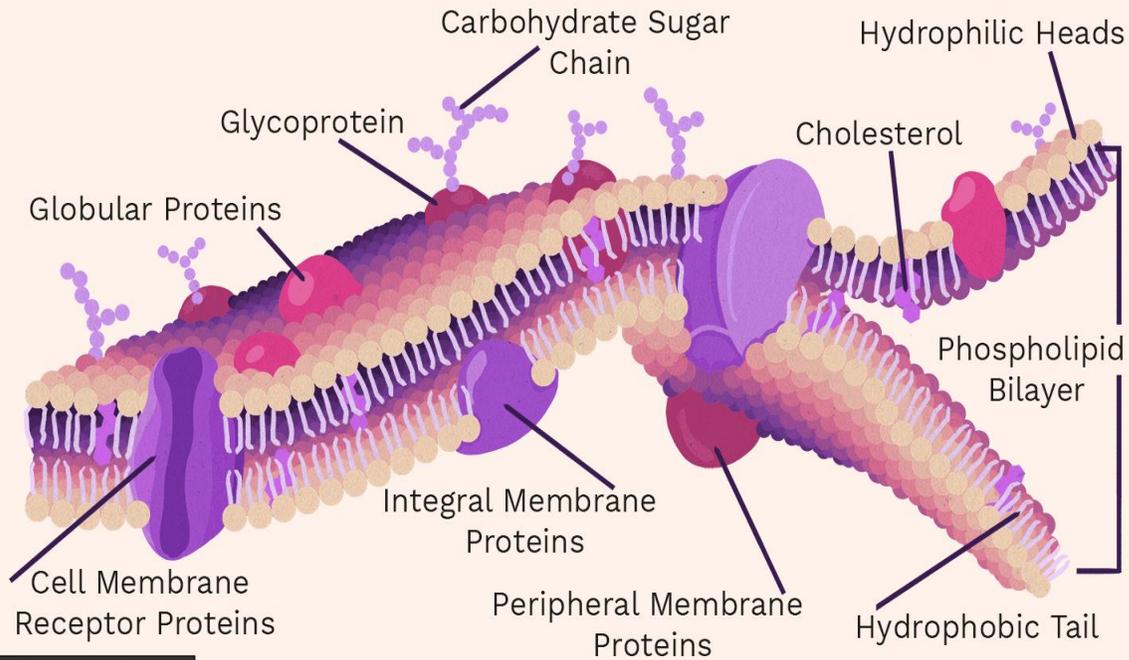


APOPTOSIS PATHWAY





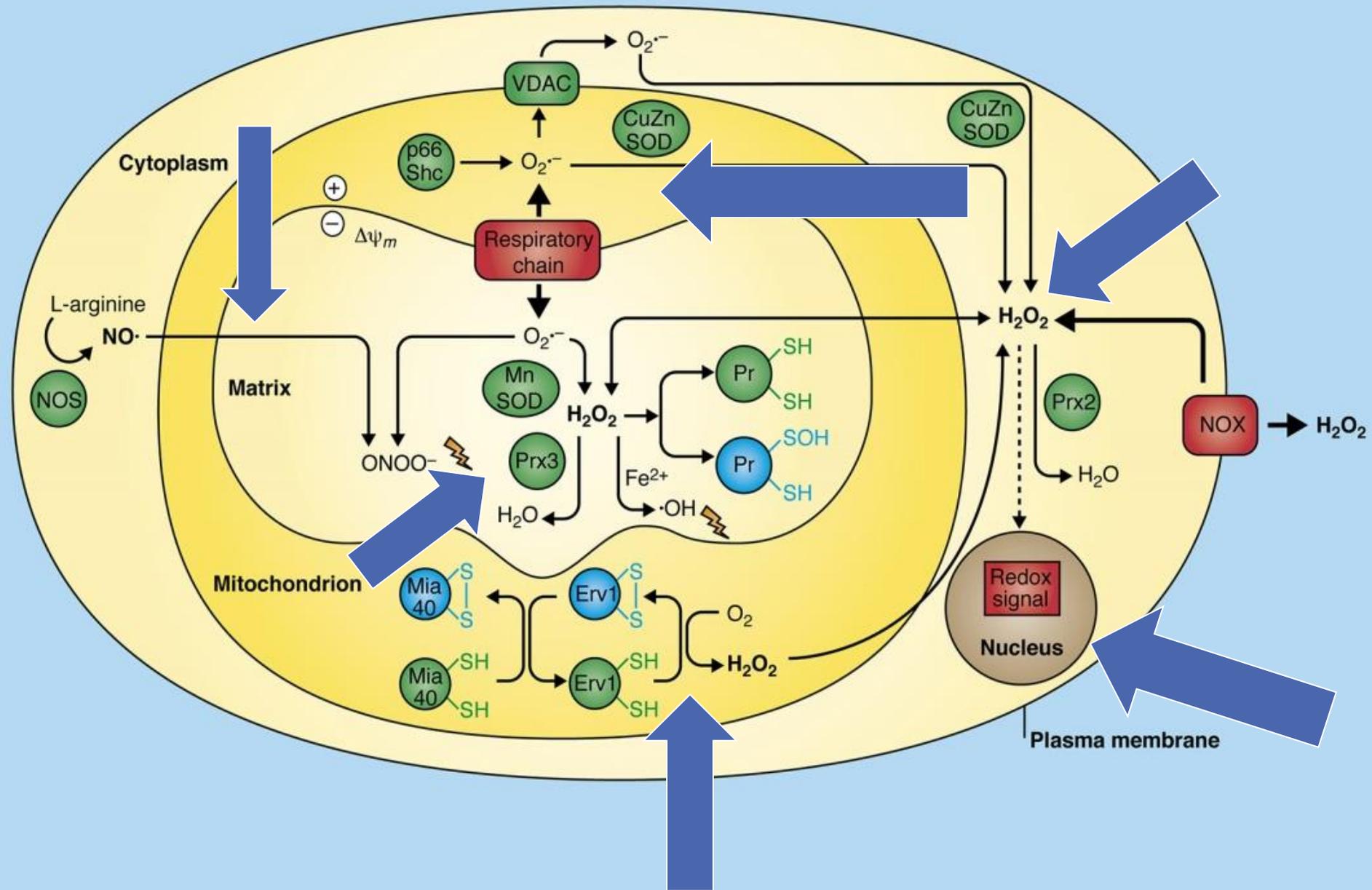
Cell Membrane Structure



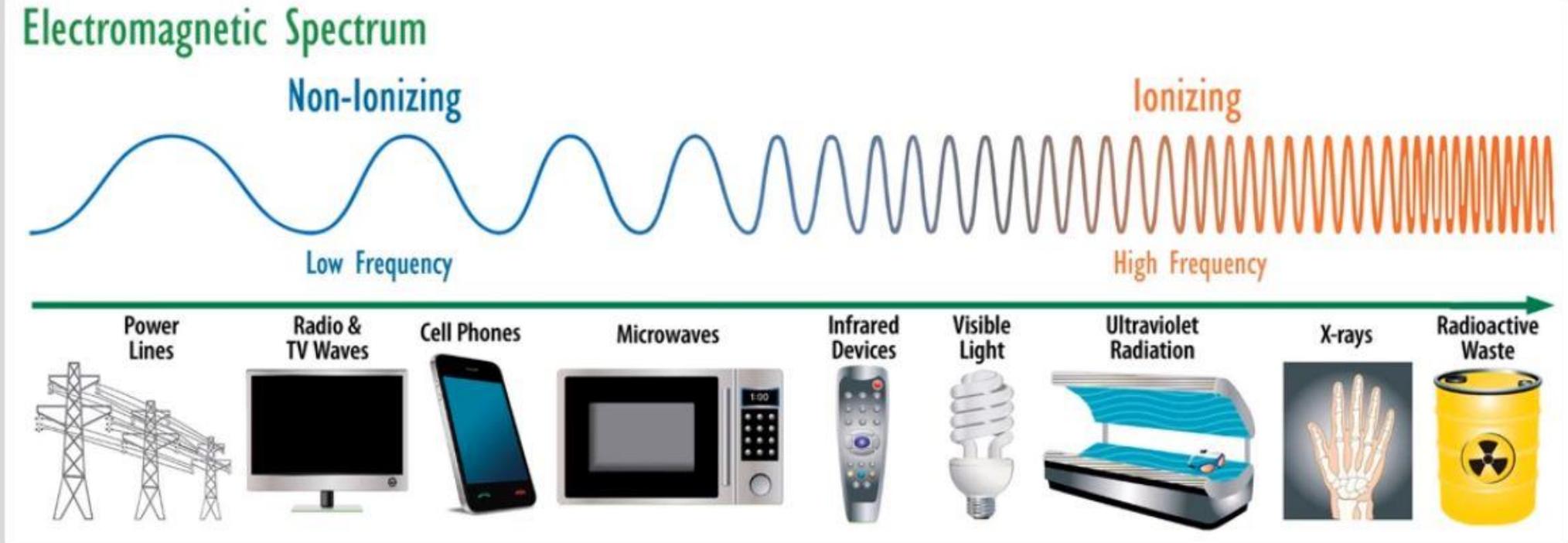
ThoughtCo.

- ▶ Cell membranes, organelles, Nuclear Envelope :
A liquid crystalline structure with gates and channels
- ▶ Early definition of computer chip: a crystal semiconductor with gates and channels. LCD's CPU's, all composed of Transistors

Reactive oxygen species (ROS) as redox signals to and from mitochondria



What is Electronic Product Radiation?



Radiation produced by a circuit, that may be EM, particulate or acoustic.

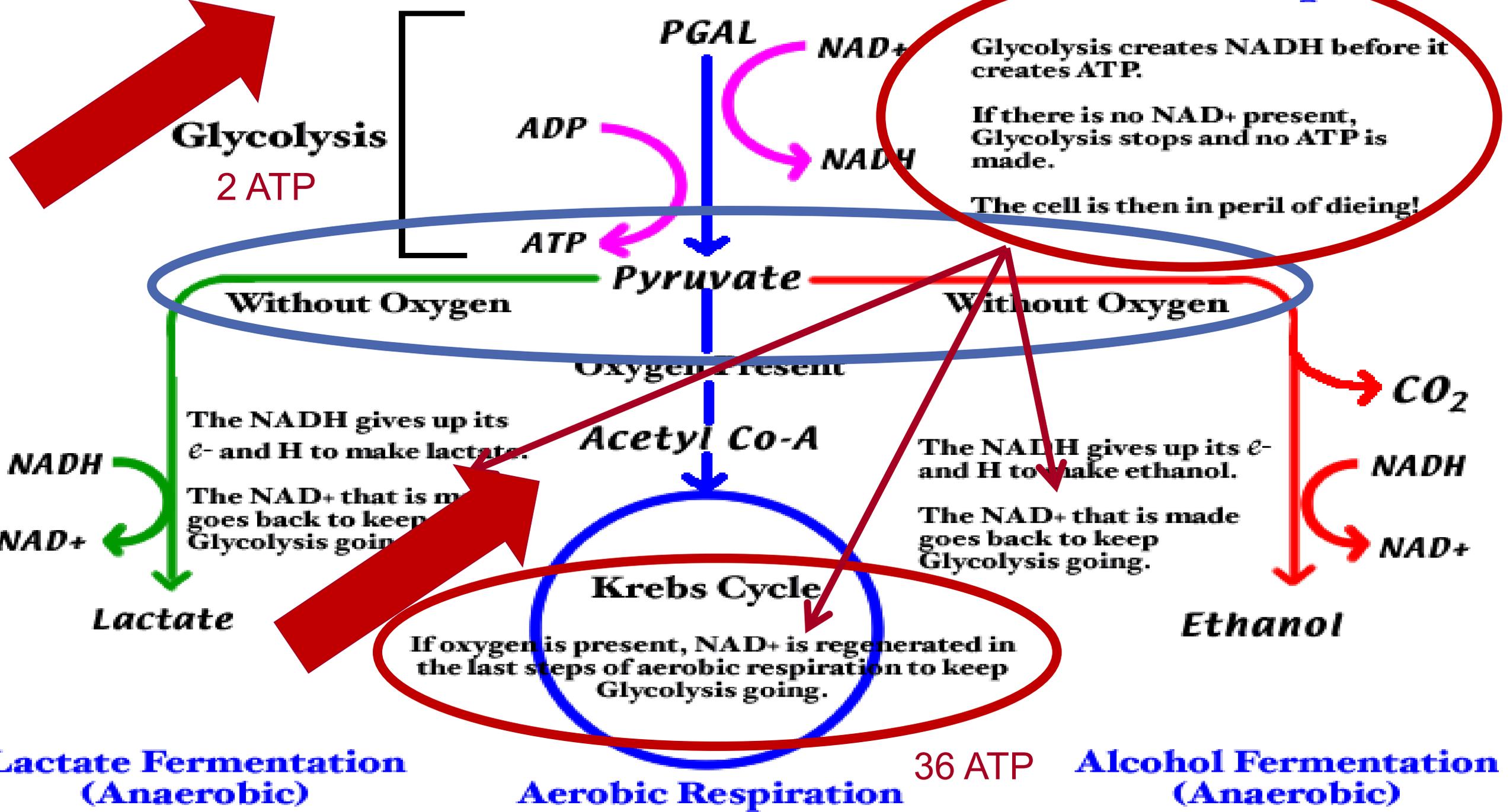
Photo Credit: [National Institute of Environmental Health Sciences](#)

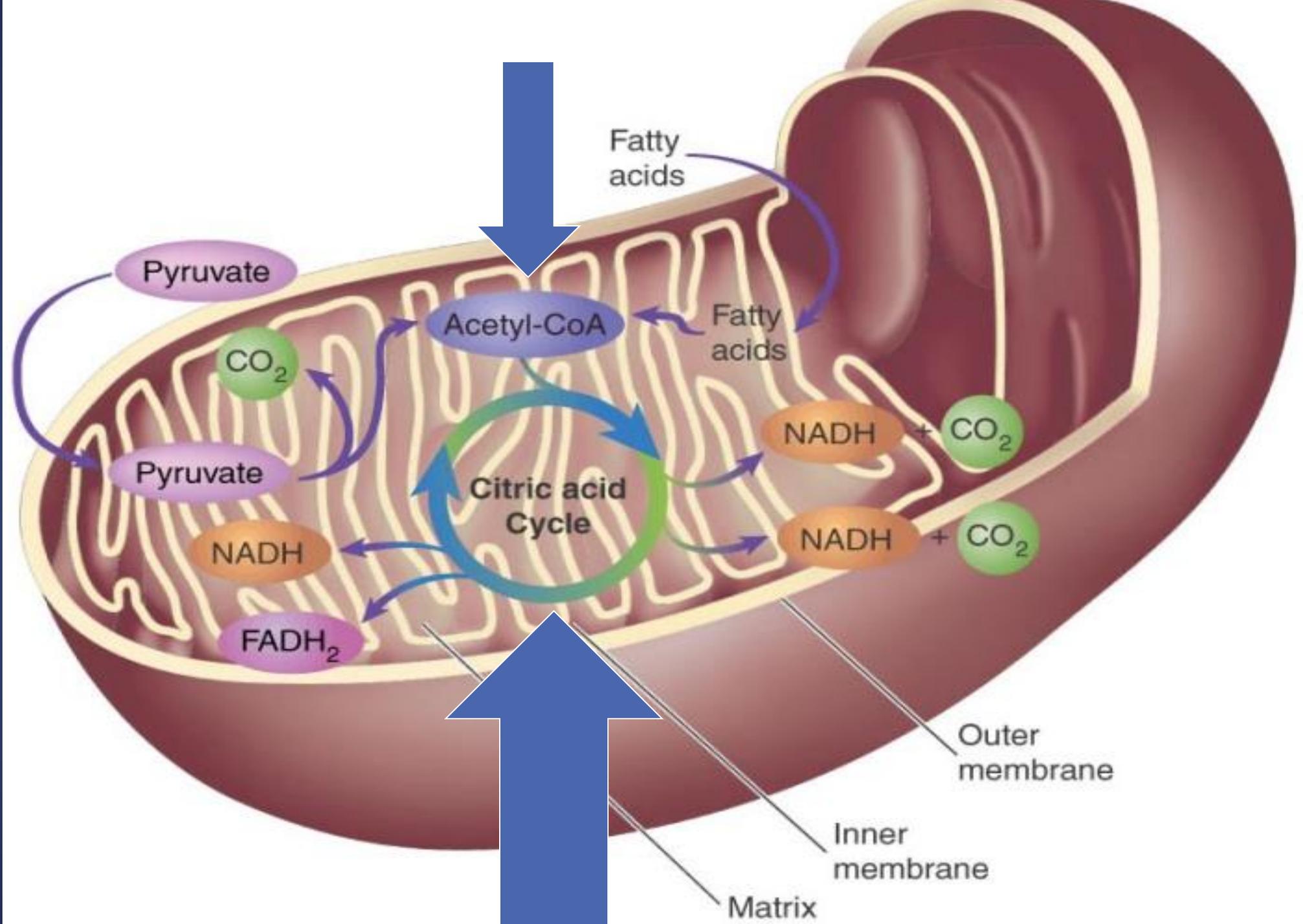
HUMAN CIRCUIT



SICKI
science

A Cell's Decision: When to do Aerobic or Anaerobic Respiration?



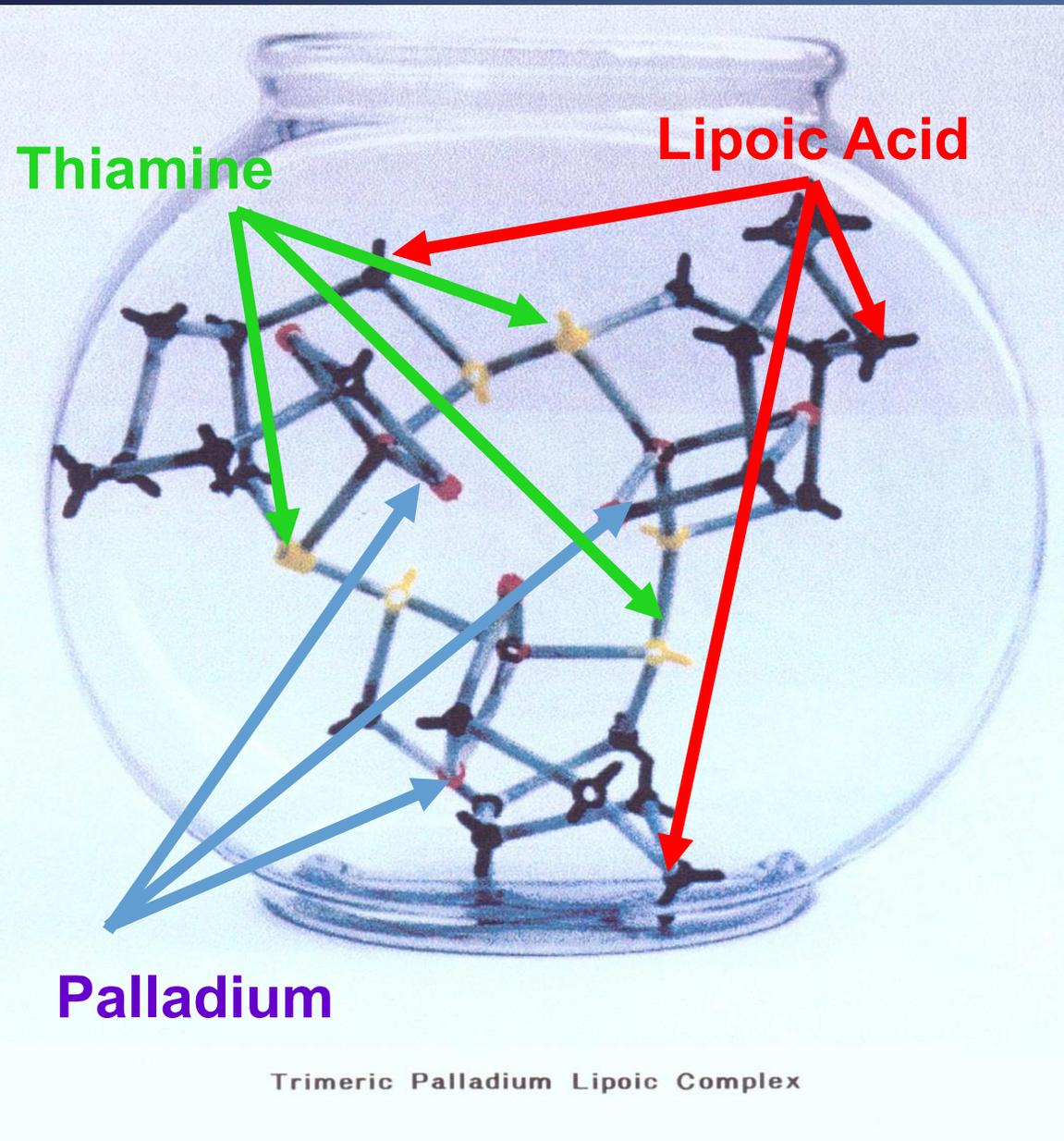


TAKING ADVANTAGE OF METABOLIC FUNCTION



- ❖ Oxygen is the final electron acceptor
- ❖ Hypothesis: Providing **Alternative ENERGY Source**
 - ❖ Normal cells are supplemented by it and thrive
 - ❖ Hypoxic and/or abnormal pathways are repaired or shut off.

LIPOIC ACID MINERAL COMPLEX (TRIMER)



- **Alpha-Lipoic Acid**
water/fat soluble (anti-oxidant & coenzyme)
- **B1-Thiamin** (cofactor for 2 enzymes in oxidative glycolysis A-CoA and akg to succinyl-CoA)
- **Unique bonded mineral that accepts and donates electrons**
- **Creation of a Redox Molecule!**
 - **Repair – Restore - Revitalize**

➤ What is in POLY-MVA?

- **POLY: Lipoic Acid Thiamin Complex**
- **M-inerals: Molybdenum and Ruthenium**
- **V-itamins: B2 and B12**
 - Vitamin A (water soluble Retonic Acid) Poly-PLUS for Doctors
- **A-mino Acid: Formyl Methionine**

**Designed to support and promote
cellular energy production**

- ▶ Differs from free radical scavengers (e.g. α lipoic acid) no free lipoic acid or B1
- ▶ Irreversibly bound together resulting in a complex that is both water and fat soluble.
- ▶ Poly-MVA is a polymer (liquid crystal) rather than a single molecule.
- ▶ Therefore, provides a unified redox reaction, accept and donate electron/charge

An extremely effective energy transferring molecule

ORAC VALUE COMPARISONS

ORAC/ Oxygen Radical Absorbance Capacity

(expressed as Trolox equivalent per gram)

Vitamin C = 1.12 (1,890)

Melatonin = 2.04 (3,468)

Lipoic Acid = 1.4 (2,400)

LAMC = 5.65 (9,605)

Brunswick Labs, Wareham, MA

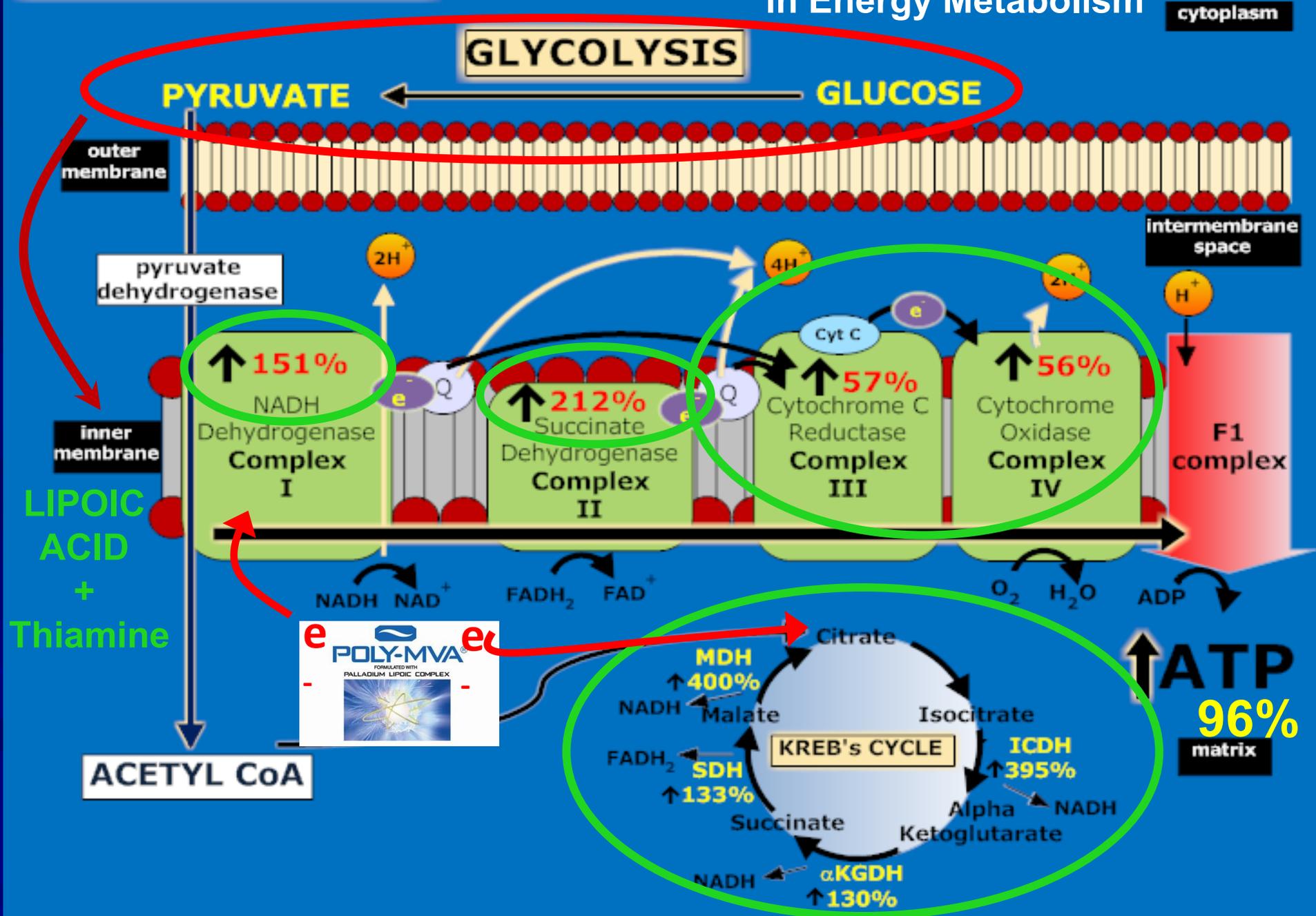
HOW DOES LIPOIC COMPLEX WORK?

- **Redox molecule** (not just redox reaction)
 - **Facilitates energy charge transfer**
- **Therefore:**
 - **Protects** (accepts electrons)
 - **Provides energy source** (donates electrons)

Mimics the electron transport chain

MITOCHONDRIA

Poly-MVA- Mechanism of Action in Energy Metabolism



Complex I-IV upregulation:

- Complex I : 151%
- Complex II : 212%
- Complex III : 57%
- Complex IV : 56%

KREB's Cycle Enzyme Increases

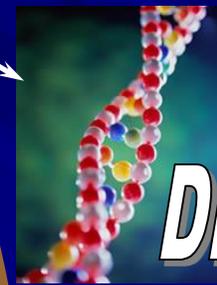
- MDH 400%
- ICDH 395%
- SDH 133%
- KGDH 130%

Healthy/Normal

Cell

LAMC

Energy

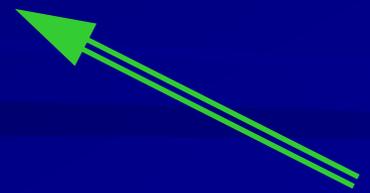


DNA

Mitochondria

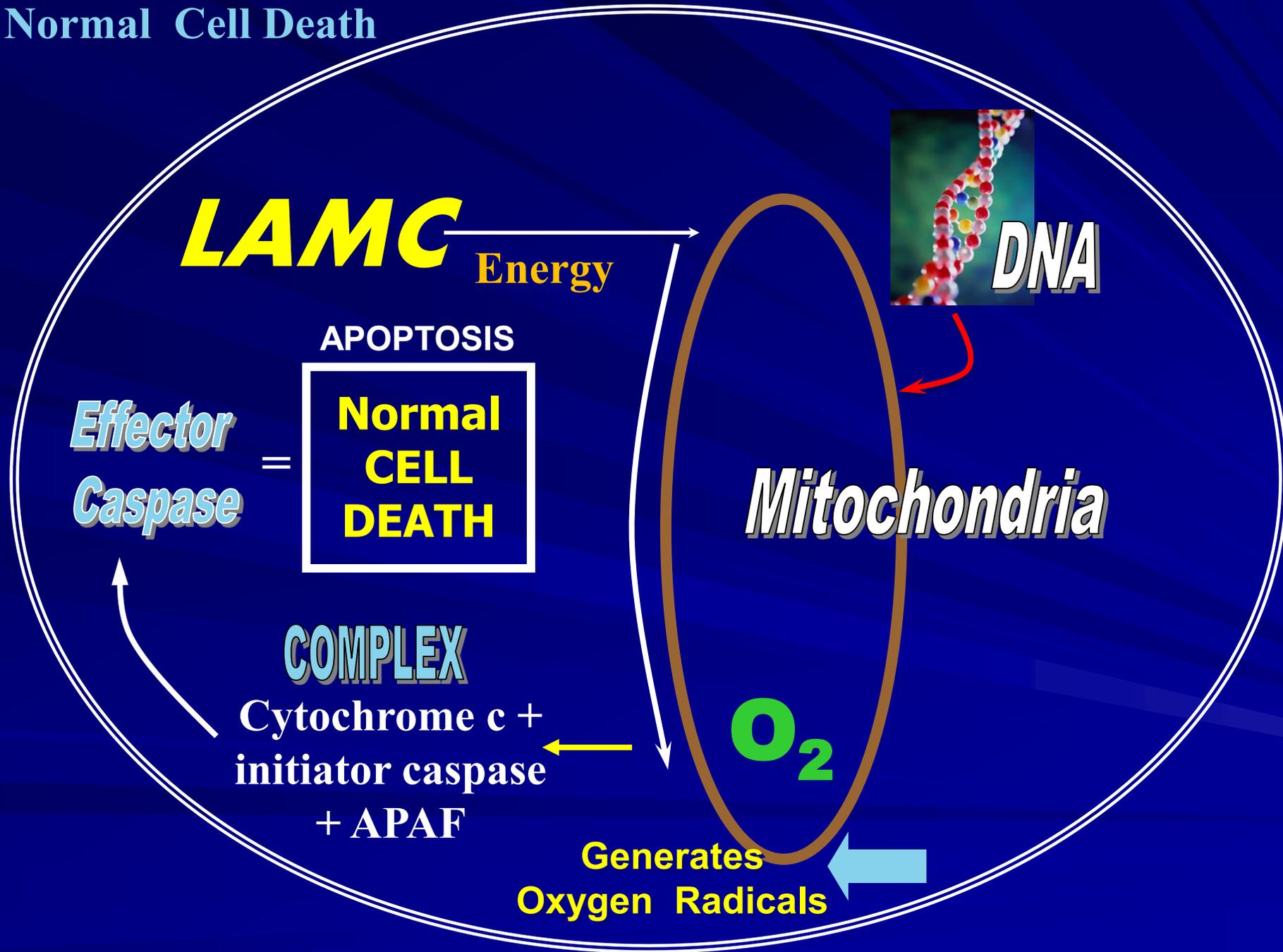
**Healthy -
Energized Cell**

O₂



Stabilize/Support Electron Transport Chain

Normal Cell Death



LAMC APPLICATION AND TARGETING

- ❖ Varying hypoxic conditions are associated with different types and level of dysfunction.
- ❖ Provides a mitochondrial ENERGY source
- ❖ Hypoxic state, abnormal cells move toward normalization or Apoptosis
- ❖ Normal cells are supplemented and thrive
 - ❖ Regardless of oxygen state

INTEGRATIVE APPLICATIONS

How to use LAMC

- **Nutrients**
- **Other Antioxidants/Oxidants**
- **Complementary and Integrative**

ACTIVE LAMC INGREDIENT	MG PER ML	5ml	10ml	20ml	40ml
ALA/Thiamin mg ≈	8/9mg	40 / 45mg	80/90mg	160/180g	320/360mg
Lipoic Acid Thiamin Mineral Complex ≈	21mg	105mg	210mg	420mg	840mg
Co-Factors					
B2 Riboflavin	.2mg	1 mg	2 mg	4 mg	8 mg
B12 as cobalamin	.2mg	1 mg	2 mg	4 mg	8 mg
Molybdenum	.1mg	.2mg	.4mg	.8mg	1.6mg
Rhodium	.1mg	.1mg	.2mg	.4mg	.8mg
Ruthenium	.1mg	.1mg	.1mg	.1mg	.1mg
Formyl Methionine	.1mg	.2mg	.4mg	.8mg	1.6mg
N-Acetylcysteine	.1mg	.1mg	.2mg	.4mg	.8mg
Poly Plus Vit A	50 IU	500IU	1000IU	2000IU	4000IU
Total Co-Factors ≈	0.5mg	1.25mg	2.5mg	5.0mg	10mg
Sodium (mg) ≈	3mg	15mg	30mg	60mg	120mg
ALA Equivalent ≈	40mg	200mg	400mg	800mg	1600mg

INTEGRATIVE METABOLIC PROTOCOLS

- CoQ10, D-ribose, L-Carnitine, NAD Magnesium, Potassium, B-Complex Glutathione, Vitamins - C, A, K, D etc.
- Increasing oxygen and metabolic production:
Supporting Metabolism
- LAMC brings Energy to the cell to stabilize and
enhance the electrical potential

➤ Applications and Research:

- Metabolically targeted therapies
- Alleviate mitochondrial damage
- Target Fatigue
- Potentiate chemo and radiotherapy
 - Attenuating their toxicity

RESTORE - REPAIR - REJUVINATE

Transform your Practice with Foundational Metabolic Protocol

■ Applications:

1. Oncology/Neurology/Cardiology
2. Quality of Life

Advancing protocols:

3. Chronic situations
4. Metabolic Inconsistencies/Dysfunction
5. Daily Protection/Support
6. Athletic Performance

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-  08 Complications.pdf
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-  12 IV Rx record blank drip.doc
-  13 Acknowledgement of Non-Insurance Coverage for Services Rendered.doc
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-  16 Intravenous_Therapy_Policy_and_Procedure.docx

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-  09 Safe and Effective Withdrawal from Vials.pptx.pdf
-  10 IV START PROCEDURE print version.pptx.pdf
-  11 butterfly image iv.jpg
-  12 Joining the IVMT on line chat gp .pptx
-  12 Joining the IVMT on line chat gp .pptx.pdf

-  All Chloride Protocols 2019.pdf
-  All sulfate Protocols 2019 ppt.pdf

LAMC Osmolarity:
0.12m Osmol/ml
pH is 7.4-7.6

CLINICAL FATIGUE STUDIES

- ❑ **Multiple Sclerosis associated fatigue**: Dr. Lauren Krupp, Stony Brook University,
 - 80% of subject demonstrated statistically significant
- ❑ **HIV associated fatigue**: Dr. Gary Blick, Circle Medical
 - improvement in QOL/Energy/Fatigue:
- ❑ **Palliative Care** - conducted by Pharmaceutical company CIPLA
 - Cognitive Functioning, Emotional Functioning, Social Functioning, Fatigue, Sleep Disturbances, and Appetite Loss.
- ❑ **Floroquinillian/Anti-biotic associated fatigue**:
Improved clinical outcome with LAMC with combination protocols
- ▶ **ALS associated fatigue**: Dr. Raghav Govindarajan, University of Missouri Medical Center
 - ▶ Improvement in fatigue score and depression scale early after treatment and used thru 6 months.

RADIATION RESEARCH

■ Summary:

- ❖ Peer-reviewed studies have demonstrated the ability of LAMC to: (20ml and 10ml dosages)
 - ❖ Anti-oxidant activity
 - ❖ DNA protection and repair
 - ❖ Chromosomal protection
 - ❖ Protected blood cells
 - ❖ Increased spleen colony formation
 - ❖ Attenuation of radiation-induced weight loss
 - ❖ Enhanced radiotherapy
 - ❖ Radiation-induced mitochondrial damage
 - ❖ 4 months after chest radiation: LAMC reduced inflammatory infiltration @ 10ml

Example: Advanced Application with LAMC

- Monday - NP IV + LAMC IV
- Tuesday - IPT + L - Glutathione IV - LAMC BID
- Wednesday - Super "C" – 60 grams + H2O2 IV - LAMC BID
- Thursday - IPT + L - Glutathione IV - LAMC BID
- Friday - NP IV + LAMC IV
- *Sat/Sun - LAMC 3x/day @10-15ml

Nutrient Protocol (NP)

Normal Saline

B-Complex

Pyridoxine

Vitamin B-12

Vitamin C

L-Lysine and Zinc

DMSO

Folic Acid

L-Glutathione

Magnesium Chloride

FATIGUE, MITOCHONDRIAL & NEURO-INFLAMMATORY DISORDERS

PAUL S. ANDERSON, NMD

Typical infusion series is (1) Vitamin-Mineral-Aminos
(2) Option (3) Option (4) LAMC
Use for 6-12 weeks & then reassess.

- 1) Vit-Mineral-Amino formula Co-factors for Mitochondria
- 2) Next Option: Glutathione/L-Carnitine/MB/Vit C low dose
- 3) Next Option: Phosphatidylcholine/NAD/Ozone or other
- 4) Fourth: Lipoic Acid Mineral Complex (LAMC)

- **Multi-agent IV therapy**
 - ▶ well tolerated
 - ▶ positive symptomatic and quality of life
- **LAMC in place of the alpha lipoic acid**
- **Oral and IV doses can be 5 to 40mL (1-8 tsp) BID minimum**
- **Targeted support between IV or stand-alone.**
- **Generally this is dosed 2 IV/week, oral on the off days 6-12 weeks, then re-evaluate/establish maintenance**
 - **Option for only oral daily 10-40ml for 6-12 weeks**

Fatigue - Neurological - Cancer – Lyme - Palliative Care

Chronic disease, Mitochondrial damage and Dysfunction



- Start with a 5ml TEST DOSE
- Ramp up as tolerated, usually to 20-40 mL.
- *Doses in the fatigue (mitochondrial injured) neurodegenerative population need to be lower and ramped up slower than in the oncology patient.*
- IV dose can be mixed in 100 – 1000 mL Normal Saline or D5W and administered over 20 to 600 minutes.
- For Children use Clark's rule.
- Give in series with other nutrients as a separate bag, with no other additives mixed in.
- IV's can be taken one to five times weekly.
- Frequency options and dosage can vary

Specific IV body weight dosing as referred to in the above protocol outline:

FIRST IV ADMINISTERED: Poly-MVA [Note: dilute 1–15 mL in 250 NS / 16 – 40 mL in 500 NS]

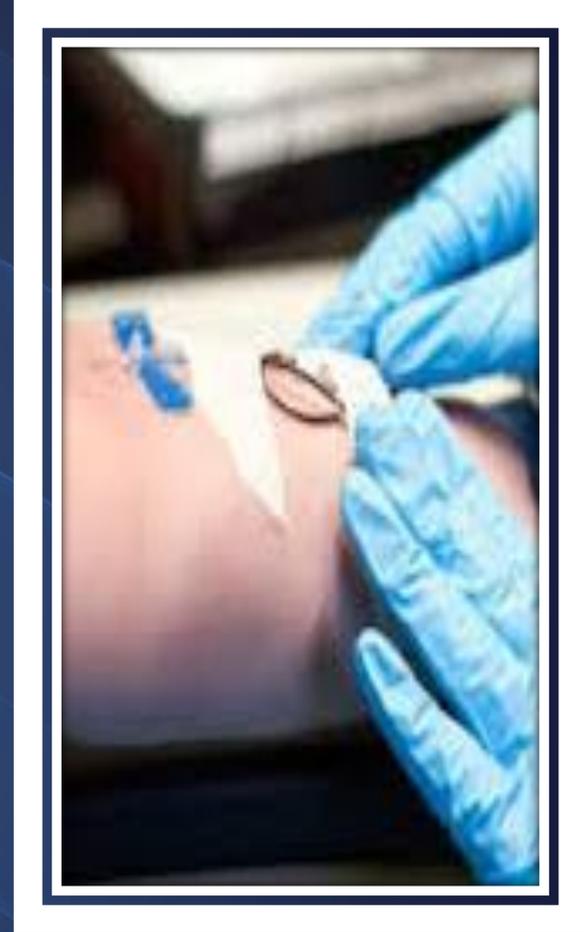
Body Weight	Test Dose	Second IV	Third IV	Max dose:
50 kg	5 mL	15 mL	20 mL	40 mL
60 kg	5 mL	15 mL	20 mL	40 mL
70 kg	5 mL	15 mL	30 mL	40 mL
80 kg	10 mL	20 mL	30 mL	40 mL
90 kg	10 mL	20 mL	30 mL	40 mL
100 kg	10 mL	20 mL	30 mL	40 mL
> 100 kg	10 mL	20 mL	30 mL	40 mL

LAMC – KEY POINTS

- 1) On days with no IV's, use oral LAMC dosing between 10-40ml per day
- 2) LAMC is an incredible synergist in many therapy sequences
- 3) **OXIDATIVE STRATEGIES:** (Ideally LAMC infusion first)

Separate **LAMC** from these therapies by 2-6 hours, pending dose

- **Artesunate with High Dose IV Ascorbate**
- **High Dose IV Ascorbate**
- **Ozone**
- **Hydrogen Peroxide**
- **Mistletoe (IV) products** (SQ Mistletoe does not apply)



Therapeutic goal is to have LAMC in the cells and supporting mitochondria increasing ATP so that they synergize with other applications.

LAMC – KEY POINTS

INFUSE IN PROXIMITY

Infuse LAMC in sequence / at the same IV sitting with:

Artesunate with low dose IVC (give LAMC first)

Example – ART-LDIVC as used in autoimmunity.

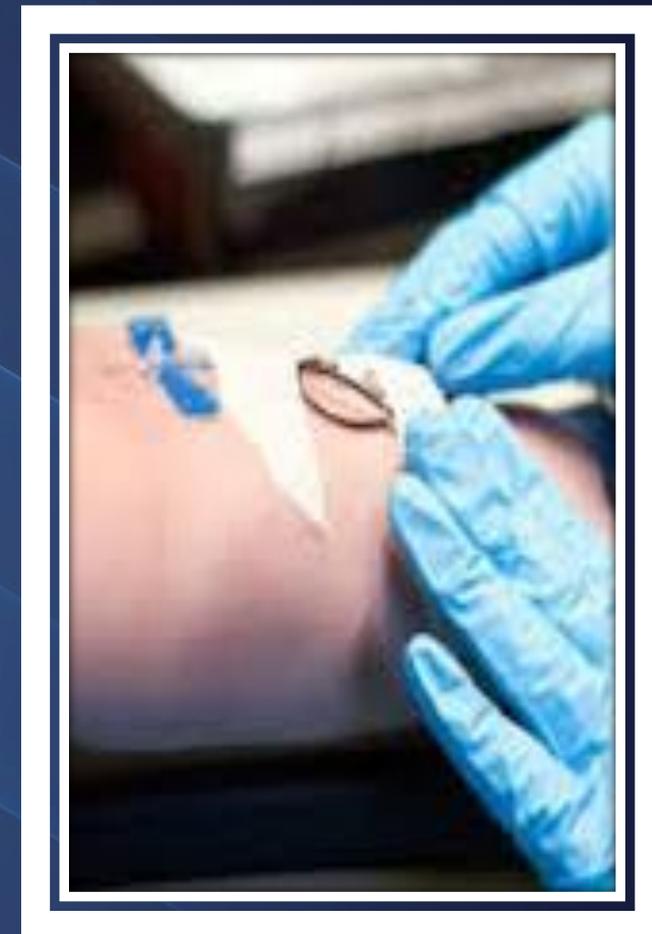
Curcumin (low or high dose, give LAMC first)

Water soluble vitamin – mineral and/or amino acid formulas **

Glutathione **

Phosphatidylcholine **

** LAMC is usually given after the other nutritional IV's



LAMC SUMMARY

Intra Muscular and Perineural Injections

IM up to 1-3-5cc using deltoid, ventrogluteal, posterior gluteal or perineural injection.

Nebulizing and Ophthalmological Ratios. Dermatological direct 1:1 application

1 cc of sterile LAMC for every 1.5 cc of sterile saline. Example 2cc of LAMC to 3cc of saline
Ophthalmologically with 1cc of sterile LAMC with 1cc of sterile normal saline

IV preparation and administration: Osmolarity is 0.12 Osmol/ml

1. **Generally start with 100-250cc normal saline.** Initially add 5-10 cc of sterile LAMC.
Increase each infusion by 5-10 cc of LAMC until max of 40-60 cc or 0.6-0.9 cc per kg (based on a 70 kg patient). Continue at the max dose as tolerated for the remainder of the process.
2. Run the 100 cc infusions over 30-45 minutes. Low and slow to start, always.
3. 10-20cc 3 times for first week with oral dosage of 10-20 cc on all days.
4. 30-40cc 3 times for second week with oral dosage of 10-40cc
5. 40-60cc 3 times for third week with oral dosage of 20-40cc on days off and weekends.
6. Increase dosage to 30/40/60 cc of LAMC, use 250/500/1000cc of saline as required for patient protocol. **May use lactated ringers or D5W. NO MIXING.** Run this over one hour or more.

Non IV days- Use Oral strategy between 5-40ml per day

PATIENT CONSIDERATION AND RESPONSE

1. Type of patient and any deficiencies
2. Overall approach and plan outlined
3. Any special adjustments that need to be addressed
4. Pre and Post testing for outcome evaluation

1. Set the proper expectation with full disclosure
2. 1ml to 40ml carries a wide range of response Initially
3. Generally well tolerated with positive response and improvements with in the week
4. Hydration and nutrients in the system.
5. Temporary fatigue or headache
6. Mild nausea
7. Flushing and slight warmth or discomfort at the IV site pending vein size and flow rate
8. Be mindful of Cell Danger Response it can present Detox-like symptoms such as body aches or flu-like sensations,
9. Check blood sugar on any clients of concern Pre and Post

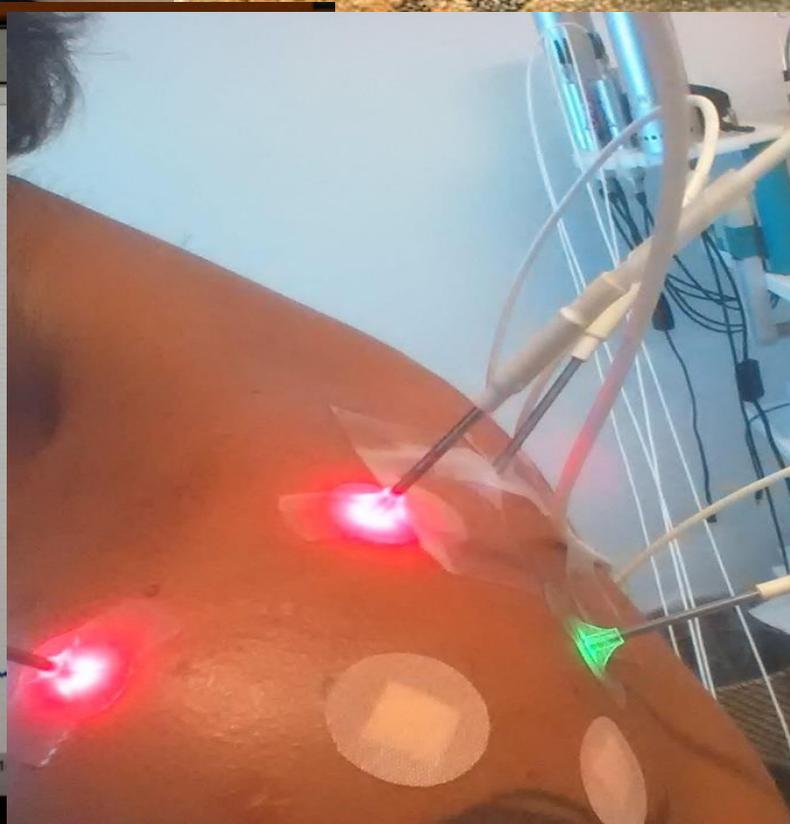
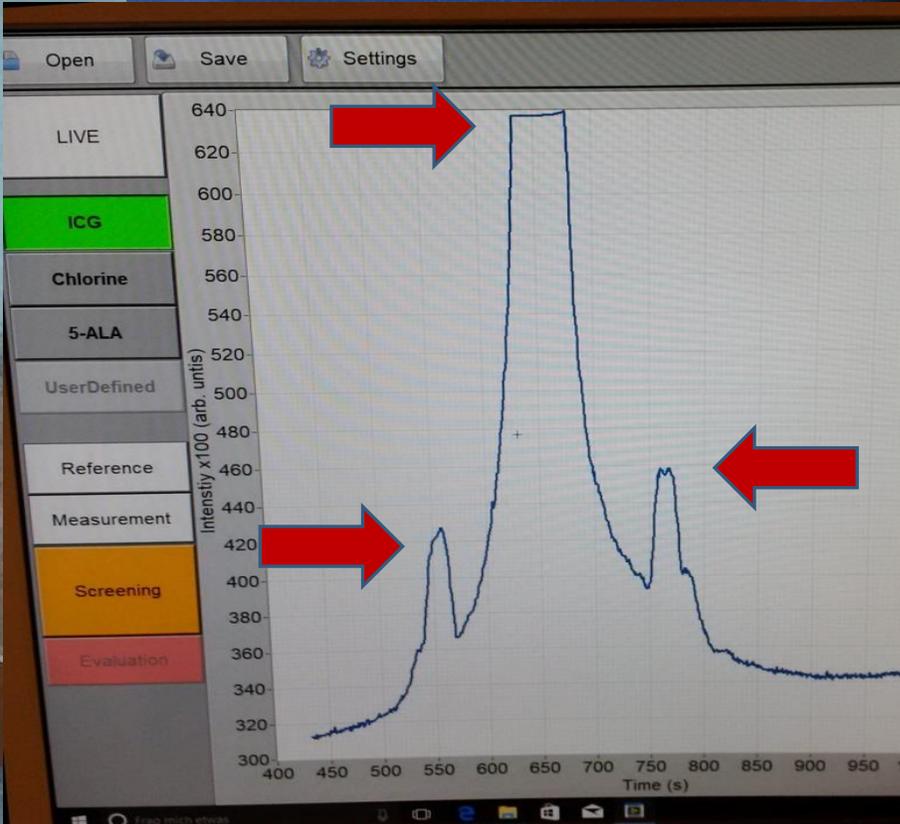
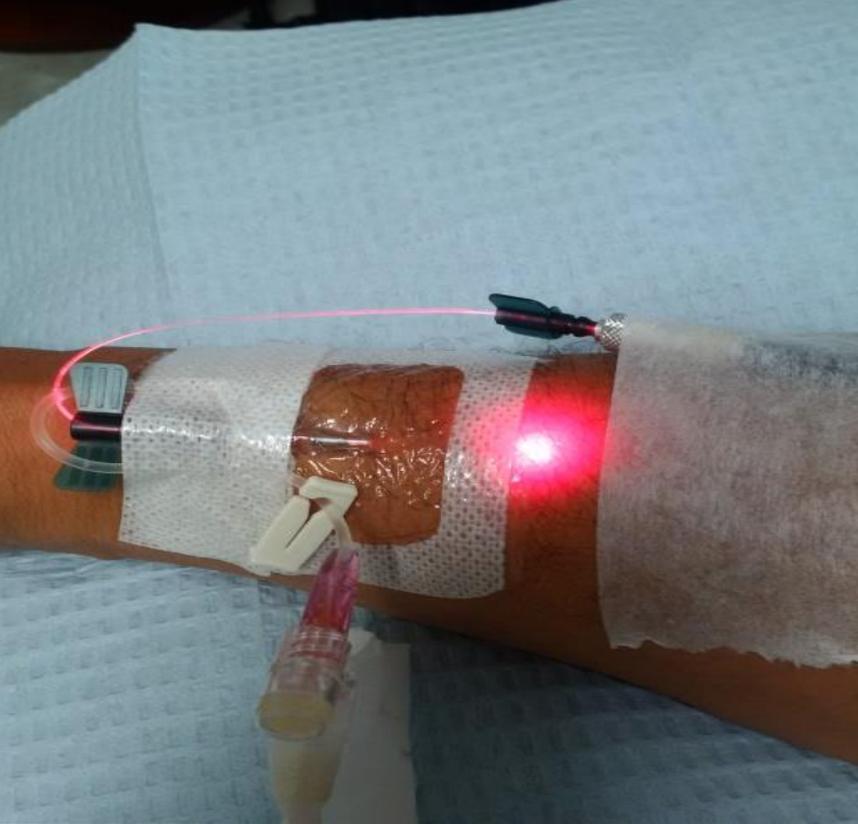
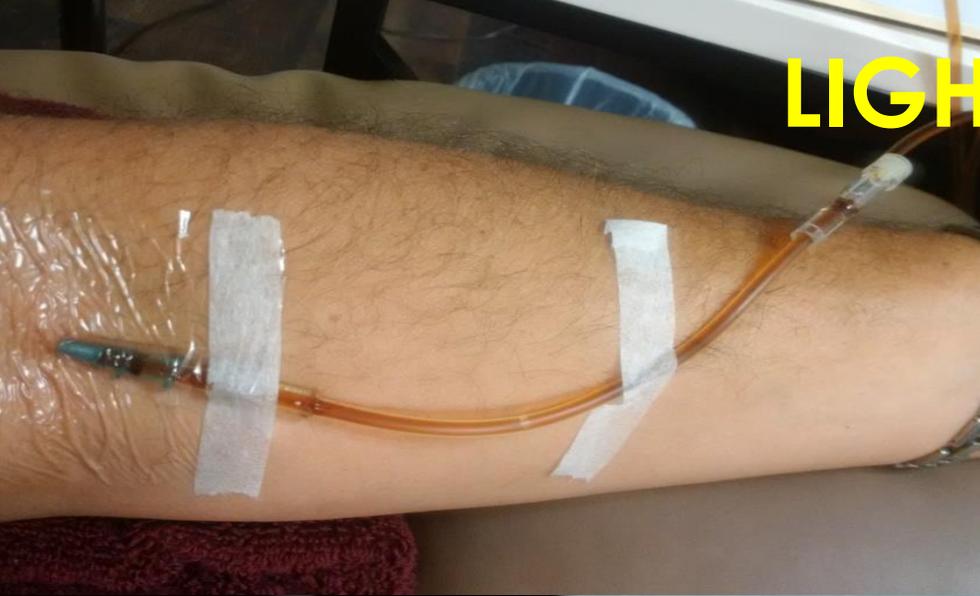
LAMC & COMPLEMENTARY AGENTS

- Melatonin
- Metformin
- DCA
- Salicinium
- Artesunate
- Ketogenic Diet
- Curcumin
- Mistletoe
- Naltrexone(LDN)
- Oxaloacetate(NAD)
- Vit C
- Glutathione
- Phosphatidylcholine

Sono Photo Dynamic Light Strategies



LIGHT THERAPIES

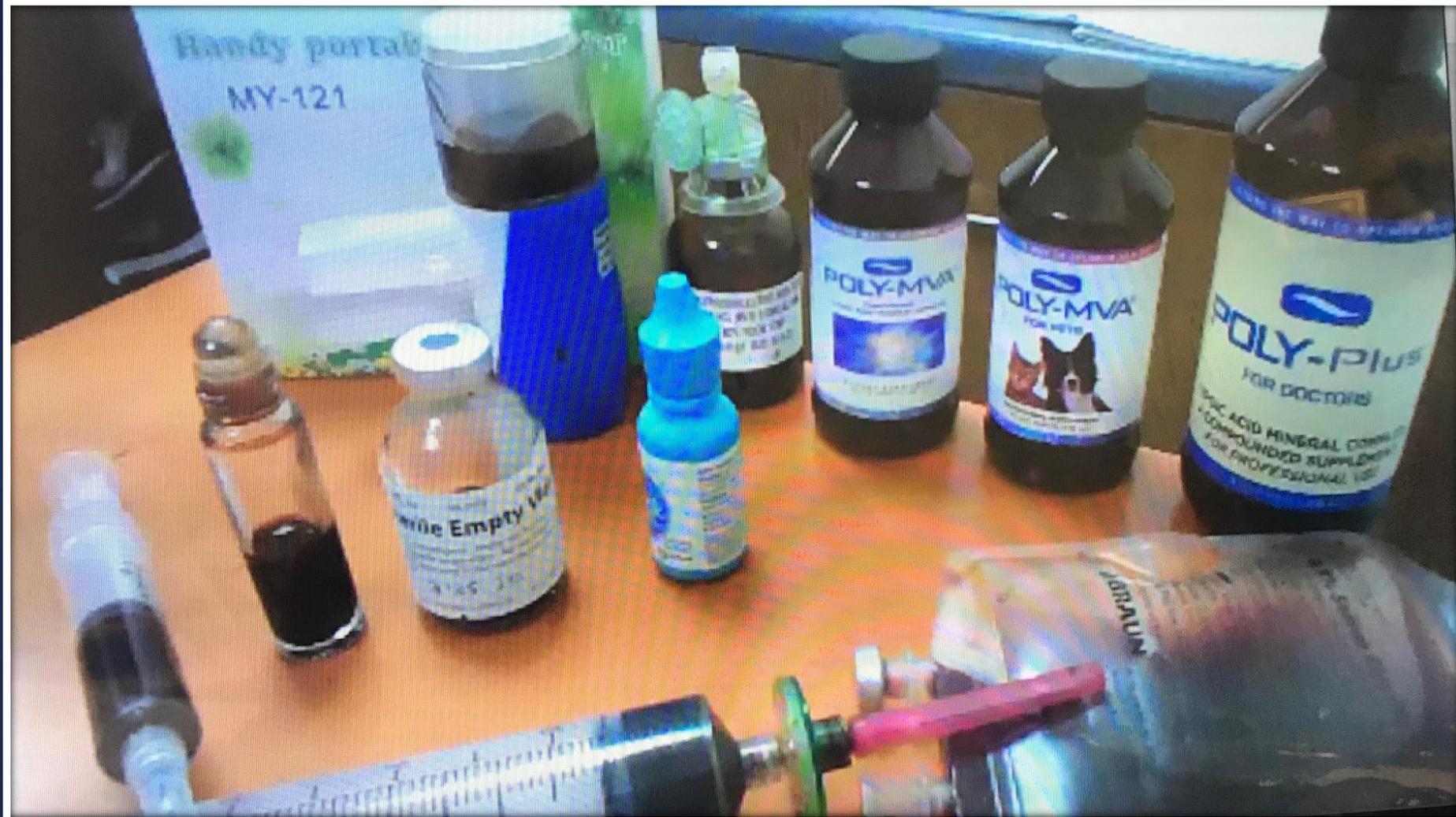


INTEGRATIVE HEALTH AND MITOCHONDRIAL SUPPORT

Improvements are not gained at the expense of normal cellular structure and function:

- ▶ **Neurological, Cardio and Pulmonary support**
- ▶ **Renal/Liver support for healthy pathways**
- ▶ **Pancytopenia support of the blood**
- ▶ **Bone, muscle and joint support**
- ▶ **Fatigue and/or lack/low appetite**
- ▶ **Skin cell support**
- ▶ **Mental strain or brain fogginess**

Research and Outcome reviews support that the *Biological/Integrative*
Complete and holistic approaches can be far more impactful



LAMC applications include:

**Oral, IV, IM, Sub Q, Push, Direct Inject, Nebulizing,
Vaginal and Rectal Insufflation, Topically, and Eye Drops.**