

# ***PEMF, Lasers & Energy Medicine***

***With***

***Dr. Garry F. Gordon, MD, DO, MD(H)  
Gordon Research Institute  
Payson, Arizona USA***

***Webinar Presentation  
April 23, 2013***



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**The American Academy of Ozonotherapy (AAO)** is the only medical forum in the United States focusing on the use of ozone therapy to treat medical, dental, and veterinary disorders. April 2013 conference in Dallas featured world-renowned ozone clinicians Silvia Menendez, PhD and Jaime Rebeil, MD.

**TOPICS Included:**

- Ozone Epidural Workshop
- Ultrasound Guidance Workshop
- Ozone in Ophthalmology
- Intestinal Ozone Therapy
- Direct IV Ozone Therapy
- Reflex Dystrophy Protocol
- Oxaloacetate Therapy
- Oxytocin Therapy
- Low Gauss PEMF
- Root Canal Alternatives
- Treating TMJ with Ozone
- Ozonated Oil Therapy
- Ozone Sauna & Cancer

**WORKSHOPS:**

- Cellular Bio-Markers for Mitochondrial Function
- Applications of Ozone Therapy
- Advanced Ozone Injection Techniques: Caudal Epidural, Interscalen Approach for Brachial Plexus Therapy, Trigeminal Neuralgia Therapy
- Oxytocin Therapy
- Ultrasound Guidance for Epidural Injections
- Veterinarian Workshop with Margo Roman, DVM
- Dental Review Workshop with Drs. Bob Harris & Phil Mollica

[http://www.oxygenhealingtherapies.com/American\\_Academy\\_Ozonotherapy\\_Conference.htm](http://www.oxygenhealingtherapies.com/American_Academy_Ozonotherapy_Conference.htm)

## LIVING WITHOUT CANCER

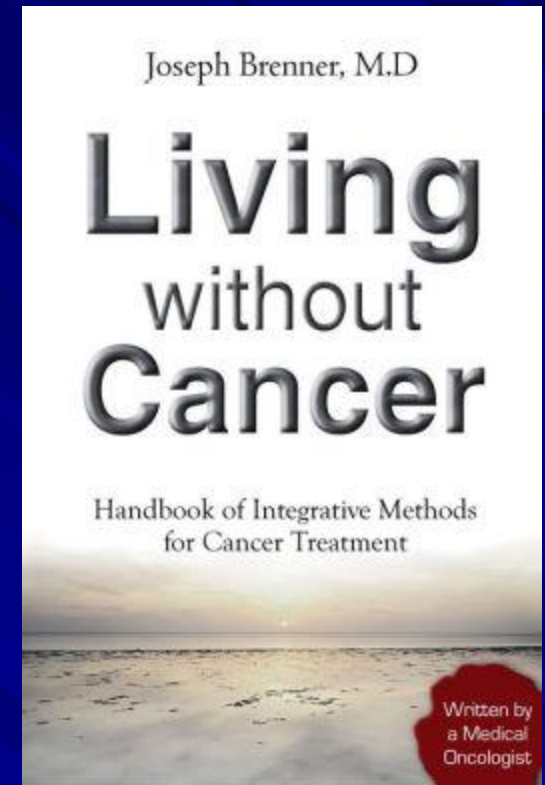
In this unique handbook, Dr. Joseph Brenner M.D. describes his personal experience in treating cancer from 3 entirely different points of view: As an expert Oncologist, as a physician using CAM - Complementary Alternative Medicine, and as a cancer victim himself.

Cancer patients and professionals will find this handbook as one of the most exhaustive, definitive and up to date resources of information combining complementary medicine and traditional methods for prevention and treatment of cancer. The handbook is based on Dr. Brenners many years of experience in treating cancer by conventional and alternative medicine, and on many articles he published in the mainstream medical journals, dealing with alternative medicine and its contribution to the treatment of cancer.

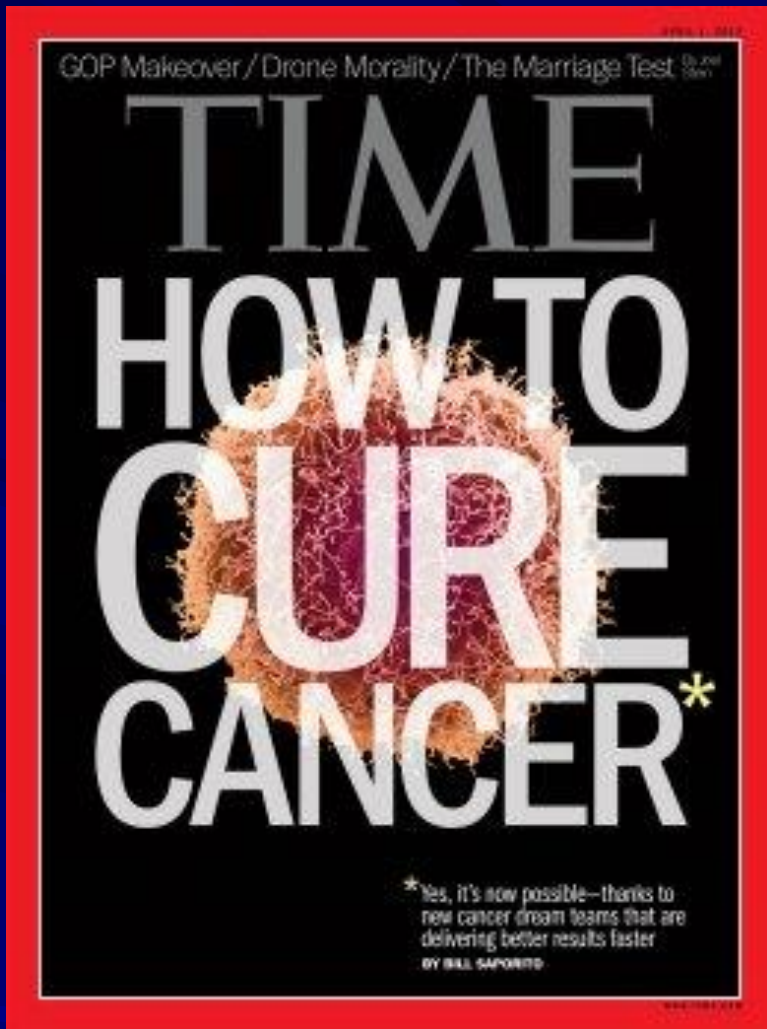
Various complementary and alternative treatments for different kinds of cancer are described in detail. The reader will be able to find answers to many questions categorized by various types of cancer:

- \* **What is the right diet for specific cancers**
- \* **What life habits need changing**
- \* **How can cancer be treated by hypothermia**
- \* **What vitamins and minerals are most suitable for specific cancers**

The handbook describes the effect of food additives such as hormones, enzymes, amino-acids, fatty-acids and herbs on cancer; various treatments for symptoms such as: lack of appetite, diarrhea, nausea, etc..., the effect of food additives on increasing efficacy and decreasing toxicity of chemotherapy and radiation therapy.







## The Conspiracy to End Cancer

by Bill Saporito

April 1, 2013

The hero scientist who defeats cancer will likely never exist. It will take not one hero but many.

Cancer is not just one disease, it is potentially thousands. And not all cancers are caused by just one agent — a virus or bacterium that can be flushed and crushed.

Cancer is an intricate, potentially lethal collaboration of genes gone awry, of growth inhibitors gone missing, of hormones and epigenomes changing and rogue cells breaking free. It works as one great armed force, attacking by the equivalent of air and land and sea and stealth...

Cancer research has traditionally involved a narrowly focused investigator beavering away, one small grant at a time. But advances in genetic profiling of malignancies and mutations that cause them are telling scientists and physicians they must stop treating lung or breast or colon or prostate cancer as distinct diseases.

<http://healthland.time.com/2013/04/01/the-conspiracy-to-end-cancer/>

# New Ecosystem of Cancer Research: Cross Institutional Team Science - March 24, 2013 by 2012pharmaceutical

Today the physics of cancer are known; what remains is massive engineering.

Now the Cure for Cancer is possible thanks to the following innovations in the Division of Labor of the research process among integrative institutions.

1. **New Cancer Dream Teams** deliver better results faster, better understand the metabolic changes of pancreatic cells. Joint Lab work: Superior to any research ever known.
2. Drug agents in development for therapy **targeting the genetic mutations**
  - > reactivate the body's immune system
  - > cut off a tumor's blood or energy supply
  - > restart apoptosis
3. **New Biomarkers**  
Allows to identify, target and track cancer cells – PI3K mutation One pathway – three women's Cancers: Ovarian, endometrial, Breast CA.
4. Design and built of a **smart chip device to trap circulating tumor cells (CTCs)** in a blood sample – early identification of metastasis

Dr. Daniel Beilin



**Hidden Causes  
Revealed Through  
Dynamic  
Regulation  
Thermography**

Dr. Garry Gordon



**NO Sex, NO  
Life, NO Fun**

Dr. Damon Miller



**Hope for Sight:  
Understanding the  
Role of Epigenetics  
in Reversing  
Degenerative Retinal  
Diseases**

Dr. Leigh Erin Connealy



**Solving “Last-  
Resort” Cases: A  
Review of Case  
Studies**

Dr. Janet Hranicky



**The Power of  
the Mind in  
Getting Well**

Dr. Simona Pop



**Cancer and  
Dental Heavy  
Metals & Lasers**

Dr. W. Lee Cowden



**Hope For The  
“Incurable”- What  
the Evidence  
Shows**

Dr. Dietrich Klinghardt



**Integrative  
medicine**

Dr. David Steenblock



**Stem Cell Growth  
Factors are the  
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Dr. Amy Derkson



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Dr. Shiu Yin Lo



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Dr. Toby Watkinson



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# Cancer, Dental Heavy Metals & Lasers

## Dr. Simona Pop

### Criteria of research

Thirty people took part in the study:

- Ovarian Carcinoma, 19 women (24 -60 yrs)  
( CA-125 > 35 U/ml, Stage II, III, )
- Prostate cancer, 11 men, (27-55 yrs)  
( PSA 10 – 28 ng/ml)

- All the patients have been given vaccines in the past, had amalgam fillings, had prosthodontic treatment , orthodontic appliances or implants.
- At the time of the study, all the patients had complete dental metal replacement.
- All the patients had the Melisa test and the most positive responses were to: [mercury](#), [gold](#), [platinum](#), [palladium](#), [silver](#), [copper](#), [titanium](#), [tin](#), [nickel](#), [chromium](#), [cobalt](#), [cadmium](#), [manganese](#), and [thimerosal](#).

- All patients had undergone minimum one conventional treatment during a period of 10 to 25 years.
- The conventional treatment was unsatisfactory, some patients had had metastasis 0.5-3 years prior to the study.

- During the heavy metal detox treatments, from the total of 30 patients
- Half were in the control group without laser treatments,
- The other half were exposed to laser therapy (SLBP) one or more sessions.



## Treatment

- All the patients in both groups were treated with detox treatment:
  - DMSA,
  - Vitamin C,
  - Glutathione,
  - Na Selenite
  - Mineral and Vitamin supplements.
- Half of them receive the laser therapy

## Laser Therapy

- The treatment course consisted of 22 exposures distributed over 5 ½ weeks. There were four sessions per week.
- Another 22 sessions over 4 weeks were offered to patients who received the first course but showed minimal improvement after the first course.
- Ten patients completed the second course of 22 laser treatments

## Laser Specifications

- soft laser
- category 1 or lower
- penetrates up to 17 mm
- improves the energy supply of the cell by direct effect on ATP- production
- improves cell regeneration - photonic effects take place in the cellular field

- The preliminary data show that increasing the number of laser sessions from 22 to 44 sessions did improve the efficacy of the treatments and resulted in total recovery in the majority of treated patients.

# Conclusions

- The health in all patients treated by dental metal replacement and detoxification improved .
- Patients who received laser treatments had faster recovery.
- Patients who received the additional 22 laser sessions had complete health recovery in a short time.



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Through the use of clinical nutrition, dietary modifications, and nutraceuticals, as well as therapeutic modalities such as homeopathy, acupuncture, microcurrent, laser, pulsed electromagnetic field, craniosacral therapy, and guided imagery.

# 2013 Eleventh Annual International IPT/IPTLD Integrative Cancer Care Conference “Integrative Alternative Oncology: First Do No Harm”

*There is more than one harm involved with conventional cancer care.*



*Targeting the Cancer...  
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As of 2011, there are more than 300 physicians worldwide who are trained in [Insulin Potentiation Therapy Low Dose \(IPTLD\)](#) integrative cancer care.

Best Answer for Cancer Foundation facilitates a physician certification process that includes a minimum of 40 hours of additional training, ending in a full credentialing process. BACF maintains a directory of physicians certified in the use of IPTLD. The Foundation also conducts an annual conference to share best practices, case studies, and new techniques.

The physicians listed here also specialize in the [complementary therapies](#) that are the foundation of an integrative approach to oncology.

To find a doctor, [click here](#)



**Annie W. Brandt, Executive Director**  
[annie@bestanswerforcancer.org](mailto:annie@bestanswerforcancer.org)  
<http://www.bestanswerforcancer.org/find-a-doctor/>

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# FIGHT with M.I.C.E. Magnetically Induced

**Cellular Exercise.** Pulsed electro-magnetic frequency (PEMF) therapy recharges the body's 70+ trillion cells. Like physical exercise, PEMF increases cellular bioporation, oxygenation, alkalinity, energy production, and nutrient uptake – while promoting vital autophagic processes and detoxification of harmful toxins and metals.



Multi-vitamin complex  
Herbs & Minerals  
Omega 3's  
Zeolite

EDTA (calcium edta)  
Vitamin C  
Zeolite  
Fiber



**WARNING**

Plug in both cables  
and before turning  
main power on,  
turn main power off  
before unplugging  
any cables.

## PEMF's are like a spark plug or catalyst for energy production in the cell.

Just like a car needs oxygen, fuel and an ignition or spark plug, so does the human cell need fuel (glucose), oxygen and a "spark plug" or ignition. This ignition is PEMF or pulsed magnetic energy from both the earth and movement/exercise on the earth.



We can also think of PEMF as a battery recharger for the human cell. We now know that the voltage of a healthy cell is about 70-110 millivolts and when we get sick that voltage drops below 50 millivolts or less and cancer cells are 30 millivolts or less. Pulsed electromagnetic fields (PEMF) act like a catalyst and battery recharger for the human cells and these PEMF's are critical for human metabolism.

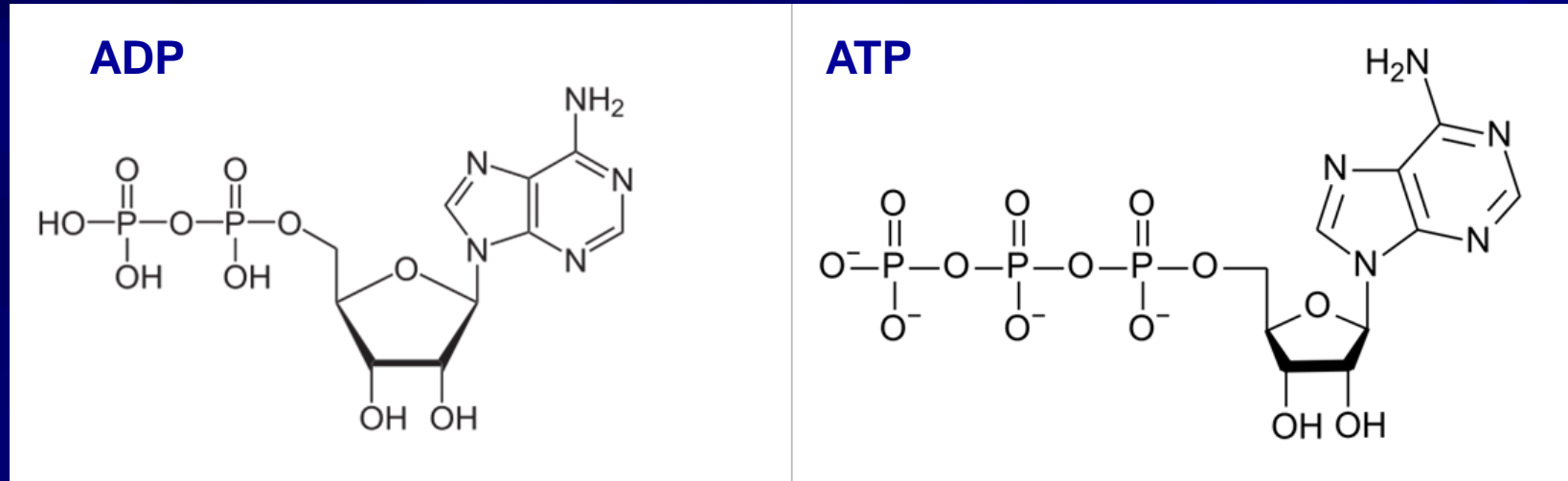
PEMF's also improve microcirculation, oxygenation (up to a 200% increase), help in nerve regeneration, pain management and many other health promoting benefits. There are over 1000 clinical studies and over 7000 research papers validating the therapeutic benefits of PEMFs.



# PEMF Therapy Increases Energy Storage and Cellular Activity

At the sub-atomic level, as the pulsed fields expand and collapse through a tissue, the protein molecules, such as the cytochromes in the cells' mitochondria, gain electrons and, in doing so, store energy.

The average total energy transmitted to the tissues does not create heat within the cells, nor cause the cells' atoms to vibrate much causing a thermal increase, nor cause an electron to jump to a higher orbit and emit heat as it returns to its orbit of origin.



There is only sufficient average energy for the electron-spin to be increased, thus, energy gets stored in the cells' mitochondria by converting ADP (Adenosine Di-Phosphate) to ATP molecules more rapidly by the addition of the phosphate radical to the ADP.



# Clinical Cancer Research

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## Resistance of Tumor Interstitial Pressure to the Penetration of Intraperitoneally Delivered Antibodies into Metastatic Ovarian Tumors

Michael F. Flessner, Jaewah Choi, Kimberly Credit, Ravi Deverkadra and Karla Henderson

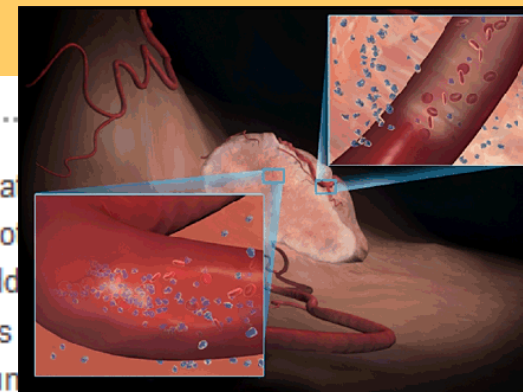
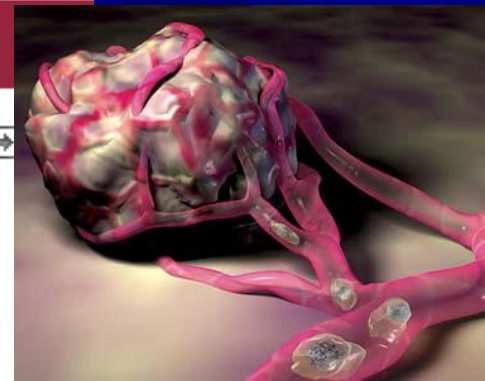
Author Address

Requests for reprints to:  
Michael F. Flessner, MD  
Mississippi State University  
601-984-5688

### Abstract

**Purpose:** Despite evidence that regional chemotherapy improves the treatment of metastatic peritoneal ovarian carcinoma, monoclonal antibodies have not had significant success in i.p. delivery. The present study was designed to add to the hypothesis that convective penetration of macromolecular antineoplastic agents is dependent on a positive pressure difference between the i.p. therapeutic solution and the tumor interstitial space.

The results only partially support our hypothesis and imply that the microenvironment of the tumor is in itself a major barrier to delivery of charged macromolecules.

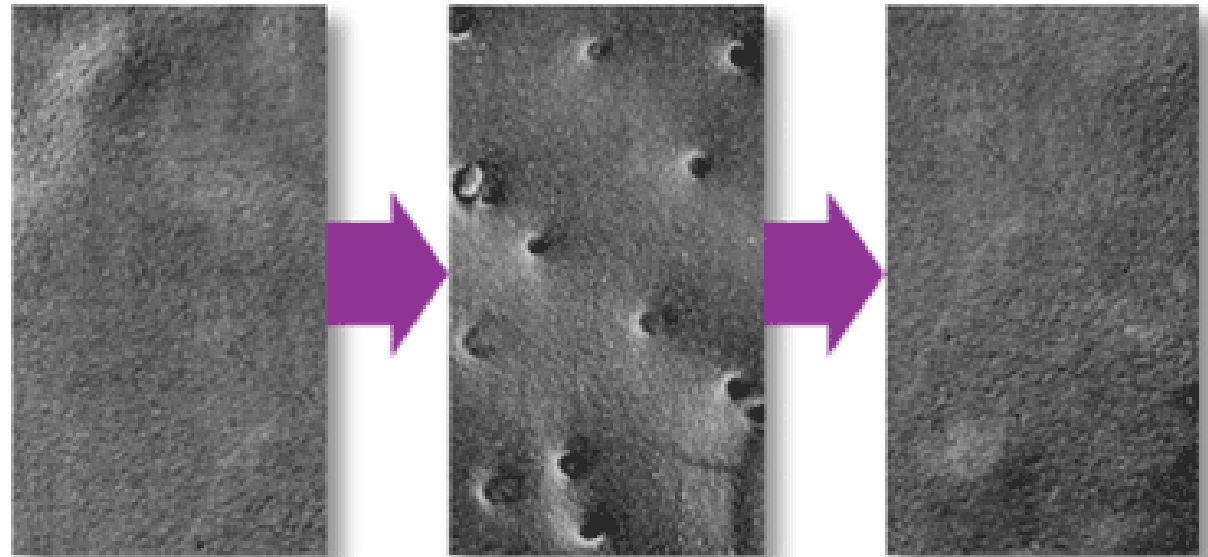


# PEMF induces Electro-poration – Increasing Cellular (TMP) Transmembrane Potential

Applied PEMF stimulates electroporation of the cell membrane, where tiny pores or “ion channels” are opened during pulses.

This effect increases trans-membrane potential, electron transport, and free radical scavenging, which is significantly important for anti-aging and treating chronic diseases including cancer.

The phenomenon of electroporation



Cell membrane before pulsing

Cell membrane during pulsing

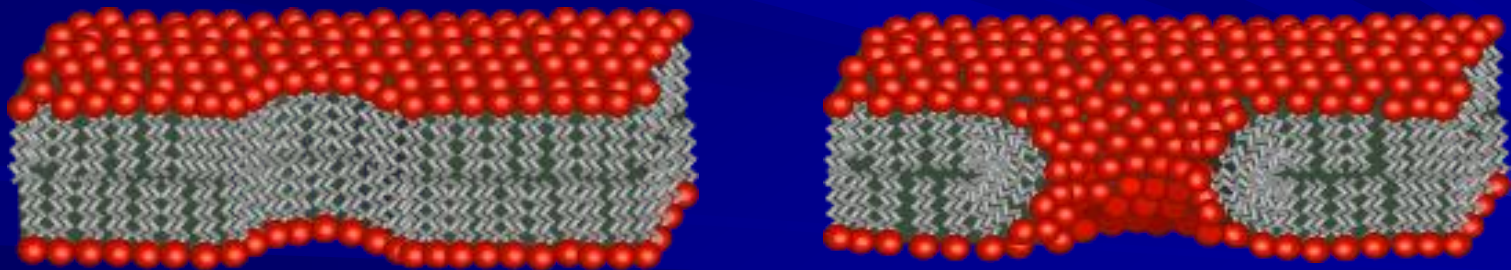
Cell membrane after pulsing (cell returns to

- *Controlled, millisecond electrical pulses induce temporary pores in the cell membrane*
- *Cell membrane reseals and is left unharmed*

## Physical Mechanism of Electroporation

Electroporation allows cellular introduction of large highly charged molecules such as DNA which would never passively diffuse across the hydrophobic bilayer core. This phenomenon indicates that the mechanism is the creation of nm-scale water-filled holes in the membrane.

Although electroporation and dielectric breakdown both result from application of an electric field, the mechanisms involved are fundamentally different. In dielectric breakdown the barrier material is ionized, creating a conductive pathway. The material alteration is thus chemical in nature. In contrast, during electroporation the lipid molecules are not chemically altered but simply shift position, opening up a pore which acts as the conductive pathway through the bilayer as it is filled with water.



Schematic showing the theoretical arrangement of lipids in a hydrophobic pore (left) and a hydrophilic pore (right).

## **Network for Development of Electroporation-Based Technologies and Treatments: COST TD1104**

Damijan Miklavčič

**Exposure of biological cells to a sufficiently strong external electric field results in increased permeability of cell membranes, referred to as “electroporation.” Since all types of cells (animal, plant and microorganism) can be effectively electroporated, electroporation is considered to be a universal method and a platform technology.**

**Electroporation has become a widely used technology applicable to, e.g., cancer treatment, gene transfection, food and biomass processing and microbial inactivation. However, despite significant progress in electroporation-based applications, there is a lack of coordination and interdisciplinary exchange of knowledge between researchers from different scientific domains. Thus, critical mass for new major breakthroughs is missing. This is why we decided to establish cooperation between research groups working in different fields of electroporation.**

**Cooperation in Science and Technology (COST), which funds networking and capacity-building activities, presents a perfect framework for such scientific cooperation. This COST action aims at (1) providing necessary steps toward EU cooperation of science and technology to foster basic understanding of electroporation; (2) improving communication between research groups, resulting in streamlining European research and development activities; and (3) enabling development of new and further development of existing electroporation-based applications by integrating multidisciplinary research teams, as well as providing comprehensive training for early-stage researchers.**



## **Electroporation and alternating current cause membrane permeation of photodynamic cytotoxins yielding necrosis and apoptosis of cancer cells**

Nelly Traitcheva, Hermann Berg.



To increase the permeability of cell membranes for low doses of cytostatic drugs, two bioelectrochemical methods have been compared:

- (a) electric pore formation in the plasma membranes by single electric impulses (electroporation), and
- (b) reordering of membrane structure by alternating currents (capacitively coupled).

These treatments were applied to human leukemic K-562 cells and human lymphoma U-937 cells, yielding apoptotic and necrotic effects, determined by flow cytometry.

Additional cell death occurs after exposure to light irradiation at wavelengths  $\lambda > 600$  nm, of cells which were electroporated and had incorporated actinomycin-C or daunomycin (daunorubicine).

# **PEMF Therapy Increases Cellular Membrane Permeability and Cellular Metabolism**

As early as 1940, it was suggested that magnetic fields affect the TMP and the flow of ions in and out of the cells and might therefore influence cellular membrane permeability.

It has since been established that magnetic fields can influence ATP (Adenosine Triphosphate) production; increase the supply of oxygen and nutrients via the vascular and lymphatic systems; improve the removal of waste via the lymphatic system; and help re-balance the distribution of ions across the cell membrane.

Healthy cells in tissue have a voltage difference between the inner and outer membrane referred to as the membrane resting potential that ranges from -70 to -80 mV. This causes a steady flow of ions through its voltage-dependant ion channels.

**As the magnetic field created fluctuates, it induces an electron flow or a current in one direction through the living tissue. As electrons always flow from a negative (cathode) to a positive (anode) potential, when the magnetic field vanishes, the direction of the electron flow is reversed. Therefore such induced polarized currents stimulate the exchange of ions across the cell membrane.**

# Exercise as Housecleaning for the Body

By GRETCHEN REYNOLDS, Columnist  
New York Times  
February 1, 2012

When ticking off the benefits of physical activity, few of us would include intracellular housecleaning. But a new study suggests that the ability of exercise to speed the removal of garbage from inside our body's cells may be one of its most valuable, if least visible, effects.



It's long been known that cells accumulate flotsam from the wear and tear of everyday living. Broken or misshapen proteins, shreds of cellular membranes, invasive viruses or bacteria, and worn-out, broken-down cellular components, like aged mitochondria, the tiny organelles within cells that produce energy, form a kind of trash heap inside the cell.

Through a process with the expressive name of autophagy, or “self-eating,” cells create specialized membranes that engulf junk in the cell's cytoplasm and carry it to a part of the cell known as the lysosome, where the trash is broken apart and then burned by the cell for energy.

Without this efficient system, cells could become choked with trash and malfunction or die. In recent years, some scientists have begun to suspect that faulty autophagy mechanisms contribute to the development of a range of diseases, including diabetes, muscular dystrophy, Alzheimer's and cancer. The slowing of autophagy as we reach middle age is also believed to play a role in aging.

# Autophagy in Human Health and Disease

Augustine M.K. Choi, M.D., Stefan W. Ryter, Ph.D., and Beth Levine, M.D. N Engl J Med 2013; 368:651-662  
February 14, 2013



The NEW ENGLAND  
JOURNAL of MEDICINE

**This review discusses the cellular process of autophagy (“self-eating”), which plays key roles in normal development of the immune system and adaptation to stress, as well as in a wide range of disease states.**

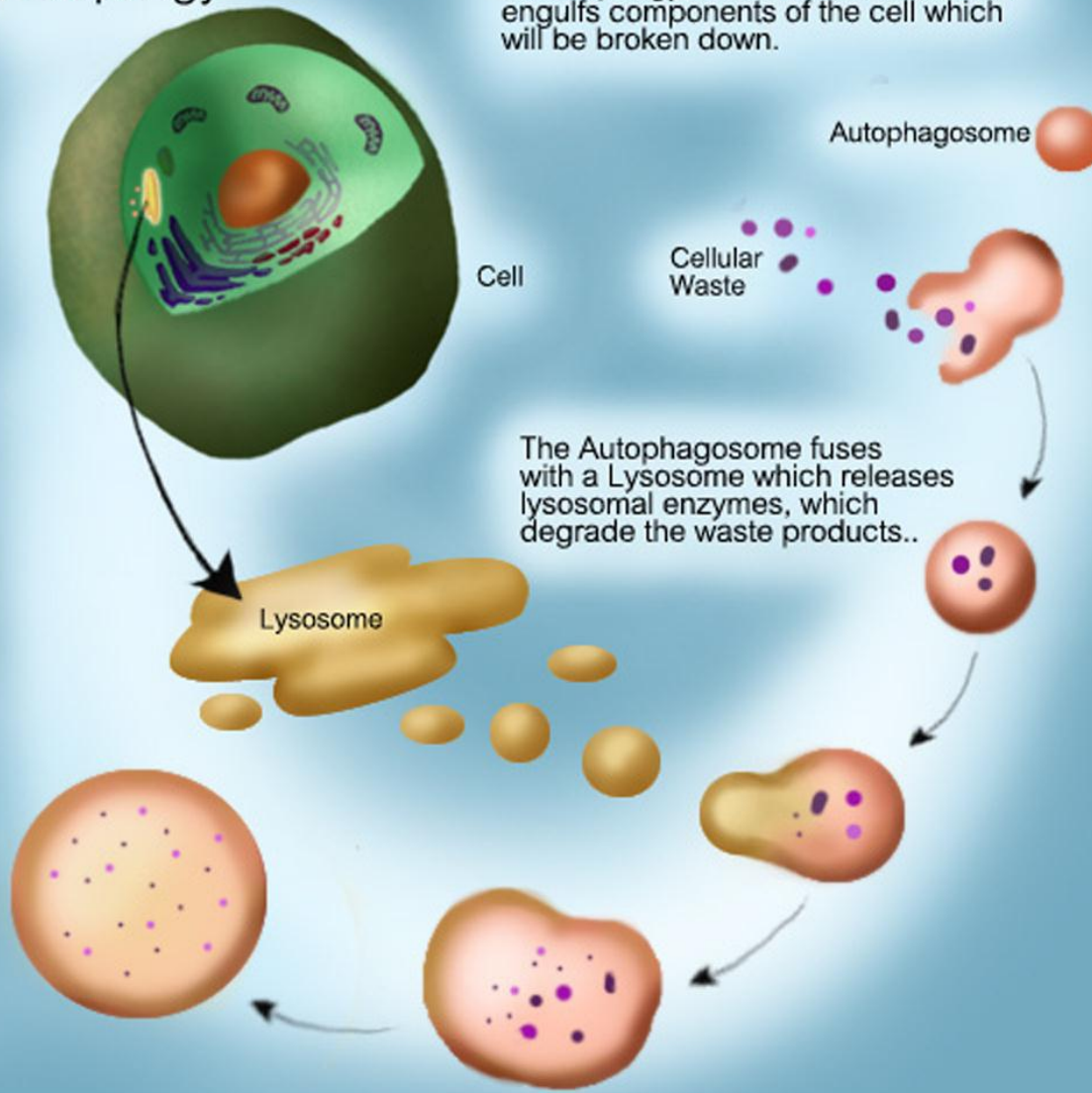
**During exercise, autophagy is increased in cardiac and skeletal muscle, adipose tissue, and pancreatic beta cells. In mice, exercise-induced autophagy provides protection against glucose intolerance associated with a high-fat diet**

**Without this efficient system, cells could become choked with trash and malfunction or die. In recent years, some scientists have begun to suspect that faulty autophagy mechanisms contribute to the development of a range of diseases, including diabetes, muscular dystrophy, Alzheimer’s and cancer. The slowing of autophagy as we reach middle age is also believed to play a role in aging.**



## Autophagy

In Autophagy, a membrane forms and engulfs components of the cell which will be broken down.



Recent developments reveal a crucial role for the autophagy pathway and proteins in immunity and inflammation. They balance the beneficial and detrimental effects of immunity and inflammation, and thereby may protect against infectious, autoimmune and inflammatory diseases.

Autophagy helps the cell fight infection by some kinds of invading bacteria and viruses, by cleaning them out of the cell's interior without having to discard the entire cell.

Sustained autophagy may also increase longevity by protecting cells against free radical damage and mutations in DNA.

Autophagy. 2007 Jan-Feb;3(1):28-31. Epub 2007 Jan 3.

## **Role of autophagy in cancer: management of metabolic stress.**

Jin S, White E.

Department of Pharmacology, University of Medicine and Dentistry of New Jersey, Robert Wood Johnson Medical School, 675 Hoes Lane, Newark, NJ 08854, USA.



### **Abstract**

**Human breast, ovarian, and prostate tumors display allelic loss of the essential autophagy gene beclin1 with high frequency, and an increase in the incidence of tumor formation is observed in beclin1(+/-) mutant mice. These findings suggest a role for beclin1 and autophagy in tumor suppression; however, the mechanism by which this occurs has been unclear.**

**We found that metabolic stress is a potent trigger of apoptotic cell death, defects in which enable long-term survival that is dependent on autophagy both in vitro and in tumors in vivo. These findings raise the conundrum whereby **inactivation of a survival pathway (autophagy) promotes tumorigenesis**. Interestingly, when cells with defects in apoptosis are denied autophagy, this creates the inability to tolerate metabolic stress, reduces cellular fitness, and activates a necrotic pathway to cell death. This necrosis in tumors is associated with inflammation and enhancement of tumor growth, due to the survival of a small population of injured cells in a microenvironment that favors oncogenesis. Thus, **by sustaining metabolism through autophagy during periods of metabolic stress, cells can limit energy depletion, cellular damage, and cell death by necrosis, which may explain how autophagy can prevent cancer, and how loss of a survival function can be tumorigenic.****

Plant Physiol. 2007 January; 143(1): 291–299.

## Degradation of Oxidized Proteins by Autophagy during Oxidative Stress in Arabidopsis

Yan Xiong, Anthony L. Contento, Phan Quang Nguyen, and Diane C. Bassham\*



Upon encountering oxidative stress, proteins are oxidized extensively by highly reactive and toxic reactive oxidative species, and these damaged, oxidized proteins need to be degraded rapidly and effectively. There are two major proteolytic systems for bulk degradation in eukaryotes, the proteasome and vacuolar autophagy. In mammalian cells, the 20S proteasome and a specific type of vacuolar autophagy, chaperone-mediated autophagy, are involved in the degradation of oxidized proteins in mild oxidative stress.

Using two macroautophagy markers, monodansylcadaverine and green fluorescent protein-AtATG8e, we here show that application of hydrogen peroxide or the reactive oxidative species inducer methyl viologen can induce macroautophagy in Arabidopsis (*Arabidopsis thaliana*) plants. Macroautophagy-defective RNAi-AtATG18a transgenic plants are more sensitive to methyl viologen treatment than wild-type plants and accumulate a higher level of oxidized proteins due to a lower degradation rate. In the presence of a vacuolar H<sup>+</sup>-ATPase inhibitor, concanamycin A, oxidized proteins were detected in the vacuole of wild-type root cells but not RNAi-AtATG18a root cells.

Together, our results indicate that autophagy is involved in degrading oxidized proteins under oxidative stress conditions in Arabidopsis.



Review Article

Journal of Molecular and Cellular Cardiology

Volume 51, Issue 4, October 2011, Pages 584–593

## Autophagy as a therapeutic target in cardiovascular disease

Andriy Nemchenko, Mario Chiong, Aslan Turer, Sergio Lavandero, Joseph A. Hill

**Abstract - The epidemic of heart failure continues apace, and development of novel therapies with clinical efficacy has lagged. Now, important insights into the molecular circuitry of cardiovascular autophagy have raised the prospect that this cellular pathway of protein quality control may be a target of clinical relevance.**

Whereas basal levels of autophagy are required for cell survival, excessive levels – or perhaps distinct forms of autophagic flux – contribute to disease pathogenesis. **Our challenge will be to distinguish mechanisms that drive adaptive versus maladaptive autophagy and to manipulate those pathways for therapeutic gain. Recent evidence suggests this may be possible.**

Here, we review the fundamental biology of autophagy and its role in a variety of forms of cardiovascular disease. We discuss ways in which this evolutionarily conserved catabolic mechanism can be manipulated, discuss studies presently underway in heart disease, and provide our perspective on where this exciting field may lead in the future. This article is part of a special issue entitled “Key Signaling Molecules in Hypertrophy and Heart Failure.”

<http://www.sciencedirect.com/science/article/pii/S0022282811002483>





# Exercise Protects the Heart Via Nitric Oxide

Research , School of Medicine  
May 4, 2011



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**Exercise both reduces the risk of a heart attack and protects the heart from injury if a heart attack does occur.** For years, doctors have been trying to dissect how this second benefit of exercise works, with the aim of finding ways to protect the heart after a heart attack.

Researchers at Emory University School of Medicine have identified the ability of the heart to produce and store nitric oxide as an important way in which exercise protects the heart from injury.

**Nitric oxide, a short-lived gas generated within the body, turns on chemical pathways that relax blood vessels to increase blood flow and activate survival pathways.** Both the chemical nitrite and nitrosothiols, where nitric oxide is attached to proteins via sulfur, appear to act as convertible reservoirs for nitric oxide in situations where the body needs it, such as a lack of blood flow or oxygen.

In experiments with mice, the researchers showed that four weeks of being able to run on a wheel protected the mice from having a blocked coronary artery; the amount of heart muscle damaged by the blockage was less after the exercise period. Importantly, the mice were still protected a week after the wheel was taken away.



## **PEMF Therapy and Nitric Oxide Production**

Many cells in the body produce nitric oxide; however, its production by the vascular endothelium is particularly important in the regulation of blood flow. Abnormal production of nitric oxide, as occurs in different disease states, can adversely affect blood flow and other vascular functions. Nitric oxide is one of the few gaseous signaling molecules known and is additionally exceptional due to the fact that it is a radical gas. It is a key vertebrate biological messenger, playing a role in biological processes.

The March/April 2009 Aesthetic Surgery Journal published a study:

**“Evidence-Based Use of Pulsed Electromagnetic Field Therapy in Clinical Plastic Surgery”** that summarizes the evolution in the understanding of the physiological effects of PEMF therapy on cells and tissues.

**Studies emerged suggesting that PEMF could modulate the production of growth factors and began to focus on enzyme systems with well-characterized calcium (Ca<sup>2+</sup>) dependence.**

## **PEMF Therapy Reduces Inflammation**

Several factors may contribute to inflammation including injury, tissue damage, a poor localized circulation with the formation of edema. Inflammation causes pain. Swelling and bruising is an inflammation and discoloration of soft tissue caused by an impact injury or trauma. It can also result from surgery.

Tissue cells are inherently like tiny electrically charged machines. When a cell is traumatized, the cell's electrical charge is diminished; this causes normal cell functions and operations to shut down. Cells that are scarred or fibrotic with adhesions have a TMP charge of approximately -15 mV, degenerative or immune-compromised cells average -30 mV, both low TMPs.

With the raised TMP, the body releases chemical signals that cause inflammation swelling and bruising resulting in pain and inhibiting the cell communication pathways necessary for healing to begin. Numerous clinical studies have demonstrated that PEMF therapy has been successful in reducing inflammation.

**PEMF therapy treats the cellular source of swelling by recharging the cells with a mild electromagnetic current. This stops the release of pain and inflammatory mediators, reduces inflammatory fluids and allows an increase in blood flow, therefore increased oxygen intake, to help the cells heal faster with less swelling, pain and bruising.**

## PEMF Therapy Reduces Pain

Many studies have demonstrated the positive effects of PEMF therapy on patients with pain, even as opposed to receiving traditional treatment as well as against a placebo group getting no treatment. Some studies focused on the rapid, short-term relief while others demonstrate the long-term effects. The effectiveness of PEMF therapy has been demonstrated in a wide variety of painful conditions.

In a March, 2003 publication on Pain Management with PEMF Treatment, Dr. William Pawluk explains:

*”Magnetic fields affect pain perception in many different ways. These actions are both direct and indirect. Direct effects of magnetic fields are: neuron firing, calcium ion movement, membrane potentials, endorphin levels, nitric oxide, dopamine levels, acupuncture actions and nerve regeneration. Indirect benefits of magnetic fields on physiologic function are on: circulation, muscle, edema, tissue oxygen, inflammation, healing, prostaglandins, cellular metabolism and cell energy levels... Short-term effects are thought due to a decrease in cortisol and noradrenaline, and an increase in serotonin, endorphins and enkephalins. Longer term effects may be due to CNS and/or peripheral nervous system biochemical and neuronal effects in which correction of pain messages occur; and the pain is not just masked as in the case of medication”.*



## **PEMF Therapy Blocks Pain**

**PEMF therapy has shown to be effective at reducing pain both in the short-term and in the long-term. The ways by which PEMF therapy relieves pain include pain blocking, decreased inflammation, increased cellular flexibility, increased blood and fluids circulation, and increased tissue oxygenation.**

**The trans-membrane potential, (“TMP”) is the voltage difference (or electrical potential difference) between the interior and exterior of a cell. An electrochemical gradient results from a spatial variation of both an electrical potential and a chemical concentration across a membrane. Both components are often due to ion gradients, particularly proton gradients, and the result is a type of potential energy available for cellular metabolism. This can be calculated as a thermodynamic measure, an electrochemical potential that combines the concepts of energy stored in the form of chemical potential, which accounts for an ion's concentration gradient across a cellular membrane, and electrostatics, which accounts for an ion's tendency to move relative to the TMP.**

**Differences in concentration of ions  
on opposite sides of a cellular membrane  
produce the TMP.**

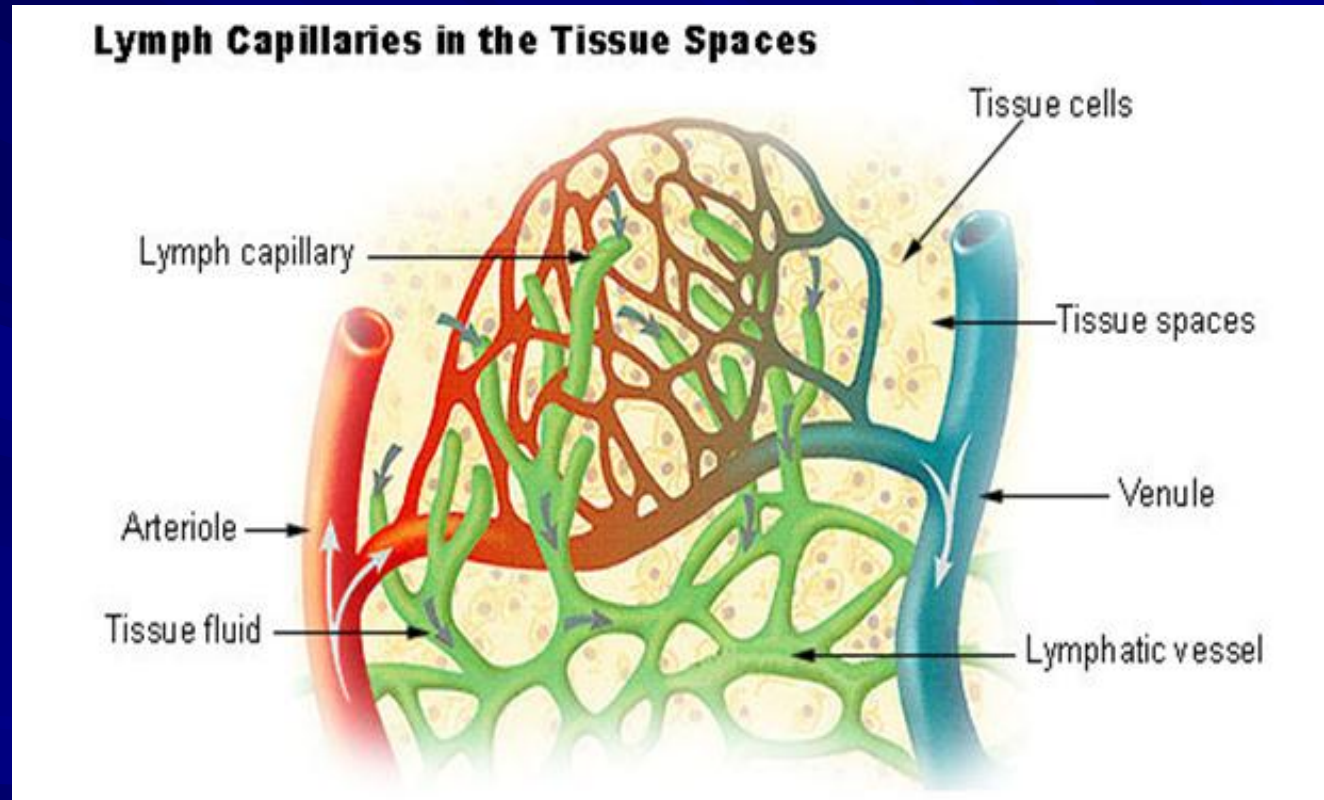
# PEMF Therapy Increases Blood and Lymphatic Circulation

The arterial and venal blood vessels are intimately associated with the lymphatic system.. As the blood and lymphatic vessels bring oxygen and nutrients to the cells and remove their waste products, they are nourishing and detoxifying the cells, tissues and body.

As PEMF therapy mechanically stimulates blood vessels and blood flow, the blood vessels pump blood and oxygen into the cells.

Simultaneously, PEMF therapy mechanically stimulates the lymphatic

vessels and waste products are hauled away from the cells more efficiently. PEMF therapy supports immune health by mechanically stimulating lymphatic drainage and blood flow.



## **PEMF Therapy Increases Cellular Membrane Flexibility and Elasticity**

**A study entitled “Modulation of collagen production in cultured fibroblasts by a low-frequency pulsed magnetic field” by Murray *et al.* (*Biochim Biophys Acta*) shows that the total protein synthesis was increased in confluent cells treated with a pulsed magnetic field for the last 24 h of culture as well as in cells treated for a total of 6 days. However, in 6 day-treated cultures, collagen accumulation was specifically enhanced as compared to total protein, whereas after short-term exposure, collagen production was increased only to the same extent as total protein. These results indicate that a pulsed magnetic field can specifically increase collagen production, the major differentiated function of fibroblasts, possibly by altering cyclic-AMP metabolism.**

**PEMF therapy successfully increases membrane flexibility by increasing the synthesis of collagen, a crucial protein that supports membrane elasticity, within the fibroblasts. In doing so, PEMF therapy increases tissue and muscle flexibility and, in doing so, increases range of motion.**

# PEMF Therapy Stimulates Cellular Communication and Replication

DNA synthesis is linked to pulsed, low intensity magnetic fields (*Liboff et al., 1984; Rosch et al., 2004*). Proteins are conductors of electricity. When exposed to strong fields, proteins are subject to electrophoresis.

The Ribonucleic Acid (“RNA”) messengers that are synthesized from a Deoxyribonucleic Acid (“DNA”) template during transcription mediate the transfer of genetic information from the cell nucleus to ribosomes in the cytoplasm and serve as a template for protein synthesis.

Since RNA mechanically influences the DNA and encoded proteins influence RNA, the flow of information to and from genes may be linked to changing magnetic fields (*Einstein, 1977; Goodman et al., 1983*).

Since magnetic fields interact with changing electrical charges and recent studies (*Dandliker et al., 1997*) show that DNA conducts electrons along the stacked bases within the DNA double helix, electro-magnetic fields may initiate transcription of the precursor mRNA by accelerating electrons moving within the DNA helix (*McLean et al., 2003*).



## PEMF Therapy Increases Cellular Genesis (Cellular Growth and Repair)

The many intra and inter cellular processes and activity stimulated by PEMF therapy lead to faster cellular and tissue regeneration. This fact is shown by the results of many studies on a variety of tissues, including bones, spine, cartilage, intestines, blood vessels, nerves, brain, and muscles.

In December 2004, the Swiss Medical Tribune stated that PEMF therapy provided:

*“improvement of blood circulation, relief from pain, improvement of bone healing and the stimulation of nerve cells. Not only is the PEMF therapy effective in disease condition: it is an excellent means of preventing stress, assisting regeneration and recovery after sports exertion... Through metabolic activation and blood circulation more nutrients and oxygen are available to muscle cells, less damage is experienced, and efficiency is improved.”*

# Electromagnetic Therapy

## for energy production and cellular detoxification

In an article published in *Plos One*, November 2010, volume 5, issue 11 (Wang), page 4, Johns Hopkins' researchers found a **38% increase** in ATP production in P12 cells that were placed in a static magnetic field device that we supplied.

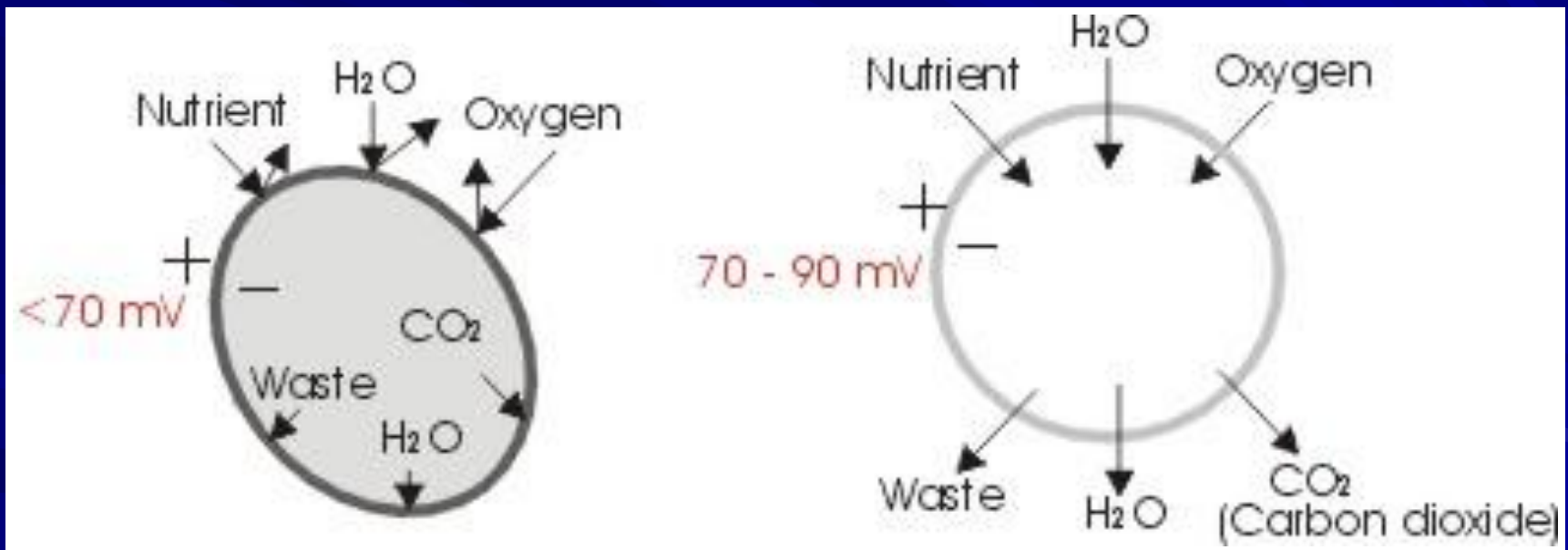
This increase could be much higher *in vivo* with the brain's pulsed DC electromagnetic field interacting with an enhanced earth-type field resulting in increased resonance of the mitochondria. All of this leading to enhance electron transfer in the creb cycle resulting in more ATP production.

↑ ATP equals ↑ Na<sup>+</sup> K<sup>+</sup> pump function  
which leads to ↑ charge of the cell  
wall and ↑ metal excretion.

## PEMF Exercise Therapy can Increase the Effectiveness of Anti-oxidants 100 Fold!

PEMF creates a Negative-Potential energy field to induces subtle current flows and generate a very large amount of negative ions inside human body. Negative Ions stimulate the activity of the **Na<sup>+</sup>/K<sup>+</sup>-ATPase** to enhance **Na<sup>+</sup>/K<sup>+</sup> pump** and to maintain the cell potential at 70 – 90 mV.

Increasing cellular energy and membrane potential assists in uptake of oxygen, H<sub>2</sub>O, anti-oxidants and other critical nutrients into the cell...while toxins, cellular waste and carbon dioxide are purged.



Low energy "sick" cell < 70mV

Normal healthy cell = 70-90 mV

**It is observed that drug uptake** after an exponentially decaying electro poration pulse of the initial field strength  $E_0 = 1.4$  kV/cm and pulse time constants in the time range 0.5–3 ms, is faster than during PEMF-treatment, i.e., application of an alternating current of 16 kHz, voltage  $U < 100$  V,  $I = 55$  mA, and exposure time 20 min.

However, at the low a.c. voltage of this treatment, more apoptotic and necrotic cells are produced as compared to the electroporation treatment with one exponentially decaying voltage pulse.

Thus, **additional photodynamic action appears to be more effective than solely drugs and electroporation**, as typically applied in clinical electro chemotherapy, and somewhat more effective than the noninvasive pulsed electromagnetic fields (PEMFs), for cancer cells in general and animals bearing tumors in particular.

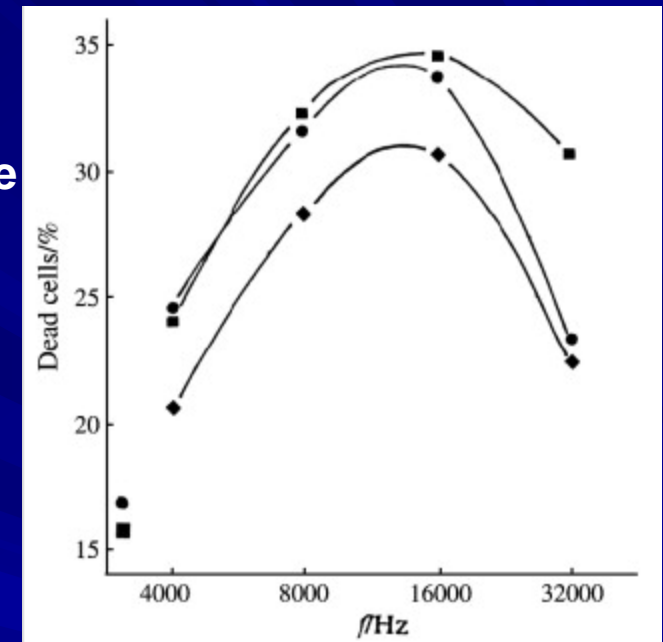


Fig. 1. Frequency dependence. % (death) as a function a.c. current frequency  $f$  for the number  $N(\text{dead})$  of dead U-937 cells, determined by TP colouring: the percentage dead is defined by  $\% \text{ dead} = 10^2 N(\text{dead})/N(\text{total})$ . See Eq. (1) of the main text. Lethal effect by penetration of the drugs alone into the cells after 20 min, below left: (■), for actinomycin-C ( $1 \times 10^{-5}$  M); (●), for daunomycin ( $1 \times 10^{-5}$  M), both without a.c. field pulses. (◆) lethal synergism after 20 min exposure to a.c. field pulses in the presence of drugs: (■) plus actinomycin-C ( $1 \times 10^{-5}$  M) (●) plus daunomycin ( $1 \times 10^{-5}$  M).



# **ZeoGold™ Has Superior DETOX Capacity and Performance**

**Generally, ZeoGold™ powder has superior DETOX capacity and performance for inorganic metallics vs. other zeolite DETOX products, because of the higher CEC capacity, ultrahigh surface area available for sorption and optimized particle size. The natural zeolites remove Pb or other metal cations present in water solutions and biological, aqueous milieu via:**

- a) exchange for ions (e.g., Na, K, Ca, H<sup>+</sup>) in the zeolite, crystallites for the Pb or other metal cation.*
- b) by direct, surface sorption.*
- c) by physically, removing particulate forms of Pb or trace metals that get “trapped” in the zeolite, micro-crystals or pore structures.*
- d) indirectly, by altering the intestinal tract microflora and/or bio-film layer that can alter the utilization or processing of trace metals.*

**The mechanism for removal of Pb and other toxic, trace metal cations for ZeoGold™ is the same as for Clinoptilolite products, but superior DETOX performance can be expected from the ZeoGold™ doses (100 to 250 mg/day) than the Clinoptilolite products.**



*J Clin Biochem Nutr.* 2012 May;50(3):195-8. Epub 2011 Nov 29.

## **Natural zeolites chabazite/phillipsite/analcime increase blood levels of antioxidant enzymes.**

Dogliotti G, Malavazos AE, Giacometti S, Solimene U, Fanelli M, Corsi MM, Dozio E.

Dipartimento di Morfologia Umana a Scienze Biomediche "Città Studi", University of Milan, Via Mangiagalli 31, 20133 Milan, Italy.



### **Abstract**

**Imbalance between reactive oxygen species generation and antioxidant capacity induces a condition known as oxidative stress which is implicated in numerous pathological processes.** In this study we evaluated whether natural zeolites (chabazite/phillipsite/analcime) may affect the levels of different antioxidant enzymes (glutathione peroxidase, superoxide dismutase, glutathione reductase), total antioxidant status and oxidative stress in 25 clinically healthy men, both non-smokers and smokers. Measurements were performed on whole blood or on plasma samples before (T0) and after 4-weeks zeolites intake (T1).

At T1, glutathione peroxidase, superoxide dismutase and glutathione reductase increased compared to T0 levels, both considering all subjects as joint and after subdivision in non-smokers and smokers. Differently, a reduction in total antioxidant status was observed at T1. Anyway, total antioxidant status resulted higher than the reference values in both groups at each time point. **A decrease in lipid peroxidation, a major indicator of oxidative stress assessed by monitoring thiobarbituric acid reactive substances, was observed in all subjects at T1.** Our results suggested that natural zeolites may help to counteract oxidative stress in apparently healthy subjects exposed to different oxidative stress risk factors, such as smoking, thus representing a particular kind of food with potential antioxidant properties.

*Anticancer Res.* 2003 Mar-Apr;23(2B):1589-95.

## **Anticancer and antioxidative effects of micronized zeolite clinoptilolite.**

Zarkovic N, Zarkovic K, Kralj M, Borovic S, Sabolovic S, Blazi MP, Cipak A, Pavelic K.  
Ruder Boskovic Institute, Division of Molecular Medicine, Bijenicka 54, HR-10000 Zagreb, Croatia.

PubMed.gov

U.S. National Library of Medicine  
National Institutes of Health

### **ABSTRACT**

**Treatment of cancer-bearing mice and dogs with micronized zeolite clinoptilolite (MZ) led to improvement of the overall health status, prolongation of life span and decrease of tumor size in some cases. It also reduced lipid peroxidation in the liver of mice.**

### **MATERIALS AND METHODS:**

The experiments were performed on various tumor cell cultures and tumor-bearing animals. Immunohistochemistry was used to analyze if MZ could interfere with Doxorubicin-induced lipid peroxidation and consequential production of 4-hydroxynonenal (HNE).

### **RESULTS:**

MZ reduced the metabolic rate of cancer cells and increased binding of HNE to albumin in vitro. It selectively reduced generation of HNE in vivo in tumor stroma after Doxorubicin treatment leaving onset of lipid peroxidation intact in malignant cells. Combined treatment with Doxorubicin and MZ resulted in strong reduction of the pulmonary metastasis count increasing anticancer effects of Doxorubicin.

### **CONCLUSION:**

**Interference of MZ with lipid peroxidation might explain some of the beneficial effects of this particular zeolite in combined cancer therapy.**

*J Mol Med (Berl). 2001;78(12):708-20.*

## **Natural zeolite clinoptilolite: new adjuvant in anticancer therapy.**

Pavelić K, Hadzija M, Bedrica L, Pavelić J, Dikić I, Katić M, Kralj M, Bosnar MH, Kapitanović S, Poljak-Blazi M, Krizanac S, Stojković R, Jurin M, Subotić B, Colić M. Ruder Bosković Institute, Division of Molecular Medicine, Zagreb, Croatia.

PubMed.gov

U.S. National Library of Medicine  
National Institutes of Health

### **Abstract**

Natural silicate materials, including zeolite clinoptilolite, have been shown to exhibit diverse biological activities. We report a novel use of **finely ground clinoptilolite as a potential adjuvant in anticancer therapy.**

Clinoptilolite treatment of mice and dogs suffering from a variety of tumor types led to improvement in the overall health status, prolongation of life-span, and decrease in tumors size. Local **application of clinoptilolite to skin cancers of dogs effectively reduced tumor formation and growth.**

In addition, toxicology studies on mice and rats demonstrated that the treatment does not have negative effects. In vitro tissue culture studies showed that finely ground clinoptilolite inhibits protein kinase B (c-Akt), induces expression of p21WAF1/CIP1 and p27KIP1 tumor suppressor proteins, and blocks cell growth in several cancer cell lines.

These data indicate that clinoptilolite treatment might affect cancer growth by attenuating survival signals and inducing tumor suppressor genes in treated cells.

PMID: 11434724 [PubMed - indexed for MEDLINE]



# WHAT'S HYDROGEN GOT TO DO WITH IT?

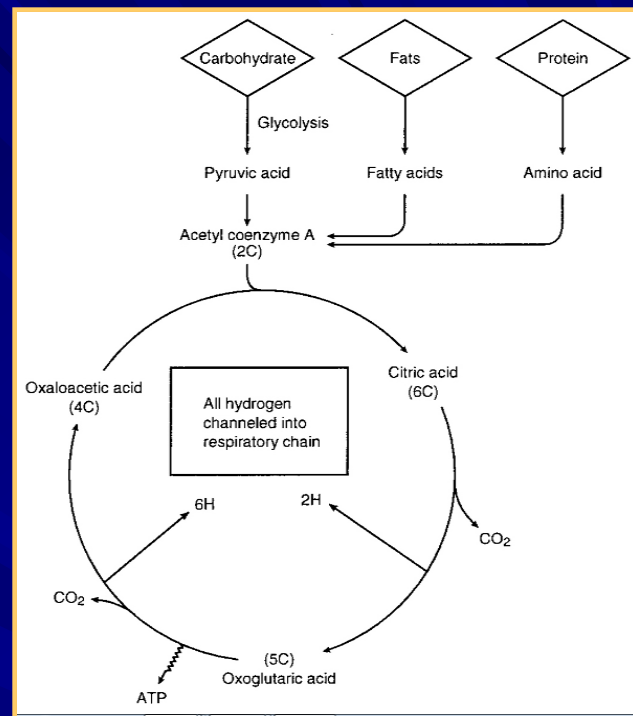
Albert Szent-Gyorgyi, the Hungarian Nobel Prize winning biochemist who discovered Vitamin C, said that hydrogen rather than oxygen, is the fuel of life.

Hydrogen is the body's most needed nutrient.

Everyone is deficient in H-. A machine called the BTA or Biological Terrain Analyzer developed by a Dr. Morrell which tests blood, saliva and urine for H+, H- and minerals found 100% of people low in H-, especially as they got older. They were all over oxidized. The absence of electrons causes numerous diseases.

Electrons don't move in the body unless they are associated with hydrogen. A body in good health has abundant H- ionised molecules.

When you hydrate the cells they plump and become healthy and the body goes into an anabolic state - when the cells become dehydrated, the body goes into a catalytic state and eats its own muscles.



*Biochim Biophys Acta. 2005 Sep 25;1756(1):1-24.*

## **The role of pH dynamics and the Na<sup>+</sup>/H<sup>+</sup> antiporter in the etiopathogenesis and treatment of cancer.**

### **Two faces of the same coin--one single nature.**

Harguindey S, Orive G, Luis Pedraz J, Paradiso A, Reshkin SJ.  
Centro Médico La Salud, Independencia, 13-01004 Vitoria, Spain.



Conventionally, cancer represents a daunting and, frankly, confusing multiplicity of diseases (at least 100) that require an equally large variety of therapeutic strategies and substances designed to treat the particular tumor. However, when analyzed phenotypically, cancer is a relatively uniform disease of very conserved hallmark behaviors across the entire spectrum of tissue and genetic differences.

Cancers share common biochemical and physiological characteristics independent of the varied genetic backgrounds, and that there may be a common mechanism underlying both the neoplastic transformation/progression side and the antineoplastic/therapy side of oncology.

**Hydrogen ion-dependent oncogenesis and parallel new avenues to cancer prevention and treatment using a H<sup>+</sup>-mediated unifying approach: pH-related and pH-unrelated mechanisms.**

**Cancer cells have an acid–base disturbance that is completely different than observed in normal tissues and that increases in correspondence with increasing neoplastic state: an interstitial acid microenvironment linked to an intracellular alkalosis.**

## Studies on the Properties and Real Existence of Aqueous Solution Systems that are Assumed to Have Antioxidant Activities by the Action of “Active Hydrogen”

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(Received March 2, 2004; Accepted June 9, 2004)

We evaluated the properties and real existence of **an electrolyzed-reduced water**, which we prepared, and three commercially purchased water goods, that are advertised to have antioxidant activities by the action of “active hydrogen,” on the basis of the results of examinations for inhibitory effects on the oxidative reactions of biomolecules, quantitative analyses of the minerals, and the ESR spectral data in measurement of the scavenging ability for reactive oxygen species. The results suggested that all of the examined aqueous solution systems **undoubtedly have antioxidant activities *in vitro*** and that such effects are derived from ordinary molecular hydrogen (hydrogen gas) and/or (a) reductive vanadium ion(s). “Active hydrogen” seems to be absent as an effective component of the antioxidant activities of these aqueous solution systems.

**Key words** ——— reduced water, antioxidant activity, oxygen-radical scavenger, ESR spectrometry, hydrogen, vanadium

## Effectiveness of Hydrogen Rich Water on Antioxidant Status of Subjects with Potential Metabolic Syndrome—An Open Label Pilot Study

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<sup>1</sup>Heart, Lung and Esophageal Surgery Institute, Department of Surgery, University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania, 15213, USA

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**Summary** Metabolic syndrome is characterized by cardiometabolic risk factors that include obesity, insulin resistance, hypertension and dyslipidemia. Oxidative stress is known to play a major role in the pathogenesis of metabolic syndrome. The objective of this study was to examine the effectiveness of hydrogen rich water (1.5–2 L/day) in an open label, 8-week study on 20 subjects with potential metabolic syndrome. Hydrogen rich water was produced, by placing a metallic magnesium stick into drinking water (hydrogen concentration; 0.55–0.65 mM), by the following chemical reaction;  $\text{Mg} + 2\text{H}_2\text{O} \rightarrow \text{Mg}(\text{OH})_2 + \text{H}_2$ . The consumption of hydrogen rich water for 8 weeks resulted in a 39% increase ( $p < 0.05$ ) in antioxidant enzyme superoxide dismutase (SOD) and a 43% decrease ( $p < 0.05$ ) in thiobarbituric acid reactive substances (TBARS) in urine. Further, subjects demonstrated an 8% increase in high density lipoprotein (HDL)-cholesterol and a 13% decrease in total cholesterol/HDL-cholesterol from baseline to week 4. There was no change in fasting glucose levels during the 8 week study. In conclusion, drinking hydrogen rich water represents a potentially novel therapeutic and preventive strategy for metabolic syndrome. The portable magnesium stick was a safe, easy and effective method of delivering hydrogen rich water for daily consumption by participants in the study.



# Hydrogen acts as a therapeutic antioxidant by selectively reducing cytotoxic oxygen radicals

Ikuroh Ohsawa<sup>1</sup>, Masahiro Ishikawa<sup>1</sup>, Kumiko Takahashi<sup>1</sup>, Megumi Watanabe<sup>1,2</sup>, Kiyomi Nishimaki<sup>1</sup>, Kumi Yamagata<sup>1</sup>, Ken-ichiro Katsura<sup>2</sup>, Yasuo Katayama<sup>2</sup>, Sadamitsu Asoh<sup>1</sup> & Shigeo Ohta<sup>1</sup>

Acute oxidative stress induced by ischemia-reperfusion or inflammation causes serious damage to tissues, and persistent oxidative stress is accepted as one of the causes of many common diseases including cancer. We show here that hydrogen (H<sub>2</sub>) has potential as an antioxidant in preventive and therapeutic applications. We induced acute oxidative stress in cultured cells by three independent methods. H<sub>2</sub> selectively reduced the hydroxyl radical, the most cytotoxic of reactive oxygen species (ROS), and effectively protected cells; however, H<sub>2</sub> did not react with other ROS, which possess physiological roles. We used an acute rat model in which oxidative stress damage was induced in the brain by focal ischemia and reperfusion. The inhalation of H<sub>2</sub> gas markedly suppressed brain injury by buffering the effects of oxidative stress. Thus H<sub>2</sub> can be used as an effective antioxidant therapy; owing to its ability to rapidly diffuse across membranes, it can reach and react with cytotoxic ROS and thus protect against oxidative damage.

Oxidative stress arises from the strong cellular oxidizing potential of excess reactive oxygen species (ROS), or free radicals<sup>1–5</sup>. Most of the superoxide anion radical (O<sub>2</sub><sup>•</sup>) produced is generated in mitochondria by electron leakage from the electron transport chain and the Krebs cycle<sup>6</sup>. O<sub>2</sub><sup>•</sup> is also produced by metabolic oxidases, including NADPH oxidase and xanthine oxidase<sup>7</sup>. Superoxide dismutase converts O<sub>2</sub><sup>•</sup> into hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>)<sup>8</sup>, which is detoxified into H<sub>2</sub>O by

## RESULTS

### H<sub>2</sub> selectively reduces •OH in cultured cells

H<sub>2</sub> reduces the •OH that is produced by radiolysis or photolysis of water<sup>12</sup>; however, whether H<sub>2</sub> can effectively neutralize •OH in living cells has not been directly investigated. As the cellular damage produced by spontaneous generation of •OH is not sufficient to be detectable, we induced O<sub>2</sub><sup>•</sup> production in BCL2 cultured cells. To do

## Inhibitory Effect of Electrolyzed Reduced Water on Tumor Angiogenesis

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Taichi KASHIWAGI,<sup>d</sup> Kiichiro TERUYA,<sup>a,d</sup> Ryuhei NISHIKAWA,<sup>d</sup> Takeshi KAWAHARA,<sup>d</sup> Kazuhiro OSADA,<sup>d</sup>  
Kazuko TOH,<sup>d</sup> Masumi ABE,<sup>d</sup> Huaize TIAN,<sup>d</sup> Shigeru KABAYAMA,<sup>f</sup> Kazumichi OTSUBO,<sup>f</sup>  
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Vascular endothelial growth factor (VEGF) is a key mediator of tumor angiogenesis. Tumor cells are exposed to higher oxidative stress compared to normal cells. Numerous reports have demonstrated that the intracellular redox (oxidation/reduction) state is closely associated with the pattern of VEGF expression. Electrolyzed reduced water (ERW) produced near the cathode during the electrolysis of water scavenged intracellular H<sub>2</sub>O<sub>2</sub> and decreased the release of H<sub>2</sub>O<sub>2</sub> from a human lung adenocarcinoma cell line, A549, and down-regulated both VEGF transcription and protein secretion in a time-dependent manner. To investigate the signal transduction pathway involved in regulating VEGF expression, mitogen-activated kinase (MAPK) specific inhibitors, SB203580 (p38 MAPK inhibitor), PD98059 (ERK1/2 inhibitor) and JNKi (c-Jun N-terminal protein kinase inhibitor) were applied. The results showed that only PD98059 blocks VEGF expression, suggesting an important role for ERK1/2 in regulating VEGF expression in A549 cells. As well, ERW inhibited the activation of extracellular signal-regulated kinase (ERK) in a time-dependent manner. Co-culture experiments to analyze *in vitro* tubule formation assay revealed that A549 cell-derived conditioned medium significantly stimulated the formation of vascular tubules in all analyzed parameters; tubule total area, tubule junction, number of tubules, and total tubule length. ERW counteracted the effect of A549 cell-conditioned medium and decreased total tube length ( $p < 0.01$ ). The present study demonstrated that ERW down-regulated VEGF gene transcription and protein secretion through inactivation of ERK.

**Key words** electrolyzed reduced water; angiogenesis; oxidative stress; vascular endothelial growth factor; extracellular signal-regulated kinase; A549 cell-conditioned medium

## PLATINUM NANOCOLLOID-SUPPLEMENTED HYDROGEN-DISSOLVED WATER INHIBITS GROWTH OF HUMAN TONGUE CARCINOMA CELLS PREFERENTIALLY OVER NORMAL CELLS

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*Cell-Death Control BioTechnology Laboratory, Faculty of Life and Environmental Sciences, Prefectural University of Hiroshima, Shobara, Hiroshima 727-0023, Japan*

**Aim:** Hydrogen-dissolved water (HD-water) or platinum nanocolloid (Pt-nc) has been individually expected as a new therapeutic agent for oxidative stress-related diseases, whereas little is known about their combined effects on cancer, which were elucidated in the present study. **Methods:** HD-water was prepared by microporous gas bubbling, and supplemented with Pt-nc consisting of 0.003–1 ppm Pt and PVP polymers. Antioxidant activities were examined by 1, 1-diphenyl-picrylhydrazyl (DPPH)-radical-scavenging assay. Cytotoxic activities were examined by culturing of tumor and normal cell lines, respectively. **Results:** HD-water accelerated the Pt-nc-based DPPH-radical scavenging. Pt-nc-supplemented HD-water inhibited either colony formation efficiencies or colony sizes of human tongue carcinoma cells HSC-4, in contrast to no effects of HD-water alone, Pt-nc alone or Pt-absent PVP, but not appreciably inhibit normal human tongue epithelial-like cells DOK. Pt-nc-supplemented HD-water also suppressed cell population growth of HSC-4 cells of near-confluence (at higher cell densities) in view of decreases in either cell numbers or mitochondrial function, although less markedly than colony formation starting from a sparse-cell state (at lower cell densities). Dissolved hydrogen, oxygen concentration or  $\alpha$ ido-reduced potentials of HD-water was decreased, rather decreased or increased by Pt-nc addition, respectively. **Conclusions:** Anti-cancer activity of Pt-nc-supplemented HD-water was shown by its preferential cell-growth inhibition to human tongue carcinoma cells HSC-4 over normal human tongue cells DOK, and might be partly attributed to HD-water-caused enhancement of Pt-nc-relevant antioxidant ability. Pt-nc-supplemented HD-water is expected as a novel agent against human tongue cancers due to its cancer progression-repressive abilities.

**Key Words:** hydrogen-dissolved water, platinum nanocolloid, tumor-preferential repression, human tongue carcinoma, reactive oxygen species, antioxidant.

It has been reported that human tumor cells produce reactive oxygen species (ROS) more abundantly than non-transformed cell lines [1], and an elevated

ported that hydrogen is quite effective for alleviating oxidative stress. Inhalation of hydrogen gas markedly suppressed focal ischemia and reperfusion-induced



## Hydrogen sulfide and nitric oxide are mutually dependent in the regulation of angiogenesis and endothelium-dependent vasorelaxation

Ciro Coletta, Andreas Papapetropoulos, Katalin Erdelyi, Gabor Olah, Katalin Módis, Panagiotis Panopoulos, Antonia Asimakopoulou, Domokos Gerö, Iraidia Sharina, Emil Martin, and Csaba Szaboa



**Hydrogen sulfide (H<sub>2</sub>S) is a unique gasotransmitter, with regulatory roles in the cardiovascular, nervous, and immune systems.** Some of the vascular actions of H<sub>2</sub>S (stimulation of angiogenesis, relaxation of vascular smooth muscle) resemble those of nitric oxide (NO). Although it was generally assumed that H<sub>2</sub>S and NO exert their effects via separate pathways, the results of the current study show that H<sub>2</sub>S and NO are mutually required to elicit angiogenesis and vasodilatation.

The actions of H<sub>2</sub>S and NO converge at cGMP; though H<sub>2</sub>S does not directly activate soluble guanylyl cyclase, it maintains a tonic inhibitory effect on PDE5, thereby delaying the degradation of cGMP. H<sub>2</sub>S also activates PI3K/Akt, and increases eNOS phosphorylation at its activating site S1177. **The cooperative action of the two gasotransmitters on increasing and maintaining intracellular cGMP is essential for PKG activation and angiogenesis and vasorelaxation.** H<sub>2</sub>S-induced wound healing and microvessel growth in matrigel plugs is suppressed by pharmacological inhibition or genetic ablation of eNOS. **Thus, NO and H<sub>2</sub>S are mutually required for the physiological control of vascular function.**



**COMING  
SOON!**

# ZEO GOLD "Enhanced"



## Medical Applications of Zeolite (pg 1141).

*Zeolites are among the most important inorganic cation exchangers.*

*The aluminosilicate structure is negatively charged and attracts cations that come to reside inside the pores and channels.*

*Zeolites have large empty spaces, or cages, within their structures that accommodate large cations, such as Na<sup>+</sup>, K<sup>+</sup>, Br<sup>+</sup>, and Ca<sup>+</sup>, and even large molecules and cationic groups, such as water, ammonia, carbonate ions, and nitrate ions. The basic structure of zeolites is biologically neutral.*



## ZEO GOLD ENHANCED

Advanced Zeolite Product containing an Advanced MicroHydro Colloidal Zeolite, with Cation Exchange ActiVator, Bio En'R-G'y C, GMS Ribose, And Glutathione Lipoate.

Zeo Gold uses a Purified, Micronized HydroColloidal certified Food Grade form of Zeolite. It was formed in petrified bubbles of the clinoptilolite volcanic rock providing ultra high surface area and higher CEC (cation exchange capacity) for more effective utilization that any other clinoptilolite with or without nano sizing.

When MicroHydro Zeolite CEA (Cation Exchange ActiVator™) is added to water, the pH shifts to a slightly alkaline state as multitudes of negative ions, as stable **MICROBUBBLES** cascade into solution. The effect is a rapid change of the oxidation - reduction potential (ORP) toward the high negative millivolt range.

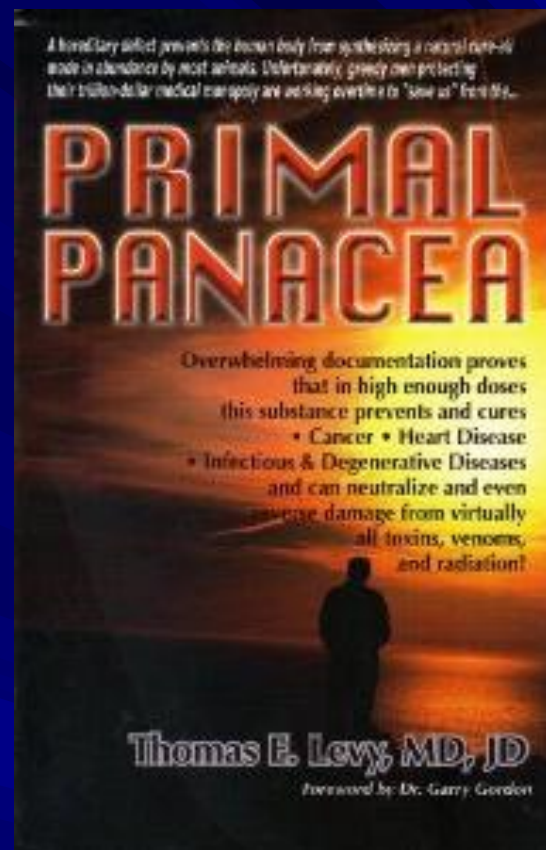
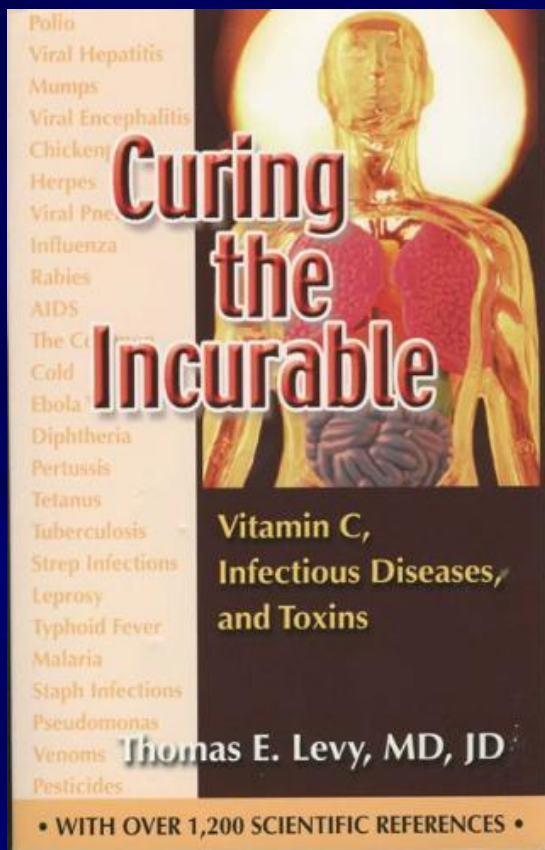
The resulting beverage provides exceptionally powerful electron donating properties, by donating more than 105 Active Nutritional Hydrogen Minus electrons for possible enzyme, ROS/free radical scavenging (oxidative stress), Detox, and Energy Enhancing functions.

**THE ENHANCED ZEOLITE** that creates negatively charged micro-bubbles of Hydrogen.

Hydrogen is the most needed nutrient as it assists in maintaining the **electrical balance** that enables cell structures to communicate and function properly.

When MicroHydro Zeolite CEA (cation exchange activator) is added to water, the pH shifts to a slightly alkaline state as multitudes of negative ions, as stable **MICROBUBBLES**, cascade into solution.

The effect is a rapid change of the **oxidation-reduction potential (ORP)** toward the high negative millivolt (mv) range.



## VITAMIN C

Vitamin C, given at sufficiently high doses, by itself, can cure life-threatening infections and neutralize many otherwise fatal toxin exposures, according to author Thomas E. Levy, MD, JD in his extensively referenced book, *Vitamin C, Infectious Diseases, and Toxins: Curing the Incurable*, and his newest book "Primal Panacea".

Thomas Levy's books are unmatched in the medical literature. According to Dr. E. Cheraskin, more than 80,000 scientific papers and reports have been written about vitamin C since its chemical nature was first discovered early in the 20th century. The Vitamin C Foundation credits Levy with "doing an almost impossible feat of reading, analyzing and clearly explaining the meaning of the massive science behind vitamin C."

[http://findarticles.com/p/articles/mi\\_m0ISW/is\\_2003\\_May/ai\\_100767885/](http://findarticles.com/p/articles/mi_m0ISW/is_2003_May/ai_100767885/)

## **The vitamin C:K3 system - Enhancers and inhibitors of the anticancer effect.**

Lamson DW, Gu YH, Plaza SM, Brignall MS, Brinton CA, Sadlon AE.

### **Abstract**

The oxidizing anticancer system of vitamin C and vitamin K3 (VC:VK3, producing hydrogen peroxide via superoxide) was combined individually with melatonin, curcumin, quercetin, or cholecalciferol (VD3) to determine interactions. Substrates were LNCaP and PC-3 prostate cancer cell lines. Three of the tested antioxidants displayed differences in cell line cytotoxicity. Melatonin combined with VC:VK3 quenched the oxidizing effect, while VC:VK3 applied 24 hours after melatonin showed no quenching. With increasing curcumin concentrations, an apparent combined effect of VC:VK3 and curcumin occurred in LNCaP cells, but not PC-3 cells. Quercetin alone was cytotoxic on both cell lines, but demonstrated an additional 50-percent cytotoxicity on PC-3 cells when combined with VC:VK3. VD3 was effective against both cell lines, with more effect on PC-3. This effect was negated on LNCaP cells with the addition of VC:VK3. In conclusion, a natural antioxidant can enhance or decrease the cytotoxicity of an oxidizing anticancer system *in vitro*, but generalizations about antioxidants cannot be made.

The VC:VK3 combination generates H<sub>2</sub>O<sub>2</sub> efficiently by redox cycling, such that a high level of VC by the intravenous route may not be necessary for cancer cell death. Since the VC:VK3 combination increases the cytotoxicity by six- to seven-fold over individual vitamin use, the oral route might suffice. Research on this concept proceeded through the usual route from *in vitro*, to *in vivo*, to human trial.

The VC:VK3 system has performed positively *in vitro* for prostate cancer, breast cancer, ovarian cancer, bladder cancer, hepatocarcinoma, and some leukemias.





**Bio En'R-G'y C** is an exciting new form of Ribose Nucleotide Activated (RNA) Vitamin C containing Riboperine metabolites that safely allows patients to take daily high doses without stomach upset, cramping, or diarrhea.

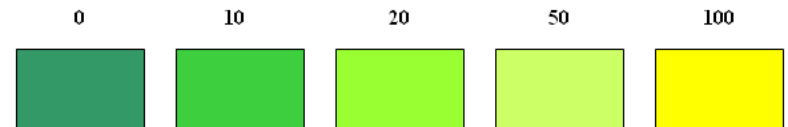
Each serving of Bio En'R-G'y C 's unique form of L-Ascorbate C crystals, has been further enhanced with 2000 mg of GMS-Ribose for increased bio-availability.

Preliminary double blind, human trials on one or more of the ingredients of GMS-Ribose taken with Vitamin C have been shown to enhance the uptake of Vitamin C plasma levels above 30% of subjects on placebo.



**A BRIGHT SPOT**  
on this urine stick  
test means  
you will have a  
brighter future!

#### COLOR CHART – mg/dL vitamin C (Ascorbic Acid)



#### Directions:

1. Dip reagent strip in freshly collected urine and remove immediately or alternatively, wet the reagent strip by passing through the urine stream.
2. While removing, run the edge of the strip against the rim of the urine collection cup to remove excess urine.
3. 30 seconds after removing from urine, compare reagent side of test area with corresponding color chart.



# C-Perfection

Anti-oxidant, Anti-wrinkle, Anti-aging and Skin rejuvenation

**C-Perfection is a new and natural perfect skin formulation that combines powerful ingredients that support the rejuvenation of damaged skin, soften deep wrinkles, eliminate fine wrinkles, and stimulate collagen growth.**

**C-Perfection replenishes moisture deep into the skin. The efficiency of the botanical antioxidants in this unique formula help make the skin firm, tight, and lifted to reveal your perfect youthful skin.**



## Patient Benefits\*

C-Perfection features:

- Anti-oxidant
- Fights wrinkles and expression lines
- Anti-aging and rejuvenation
- Smooth's skin texture
- Improves skin firmness
- Stimulates new skin cell growth
- Stimulates collagen

**With Puesterol®, a standardized extract of Pueraria Mirifica that contains phytoestrogens, C-Perfection has the ability to rejuvenate skin and reduce wrinkles by inhibiting collagenase, the enzyme that breaks down collagen.**

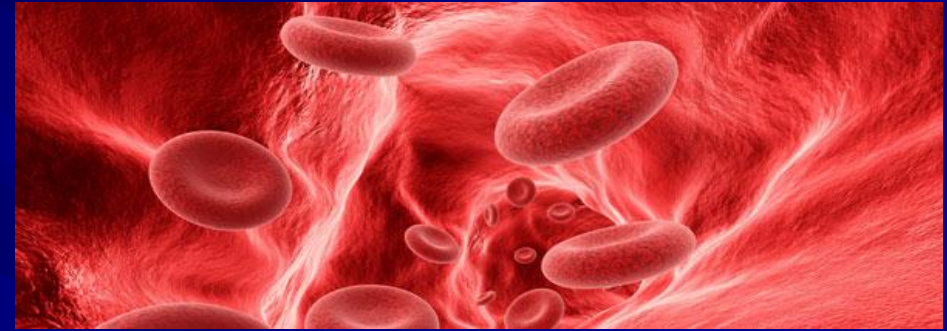
**With a stabilized form of oil-soluble vitamin c, C-Perfection can be a powerful anti-oxidant and offer collagen and DNA protection of the skin.**

*Healthy skin is an indication of a healthy body. When our skin looks good, we feel good. C-Perfection supports skin health and wellness.*

For more information visit [www.longevityplus.com](http://www.longevityplus.com)

# Natural Healing with Intranasal Light Therapy

Intranasal Light Therapy is a way to stimulate self healing and boost immunity by illuminating the blood capillaries through the nasal cavity.



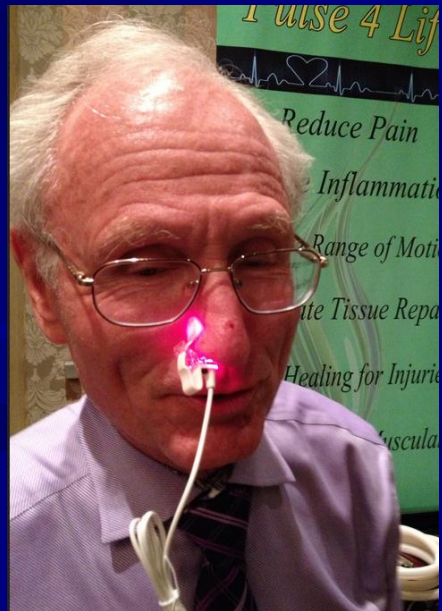
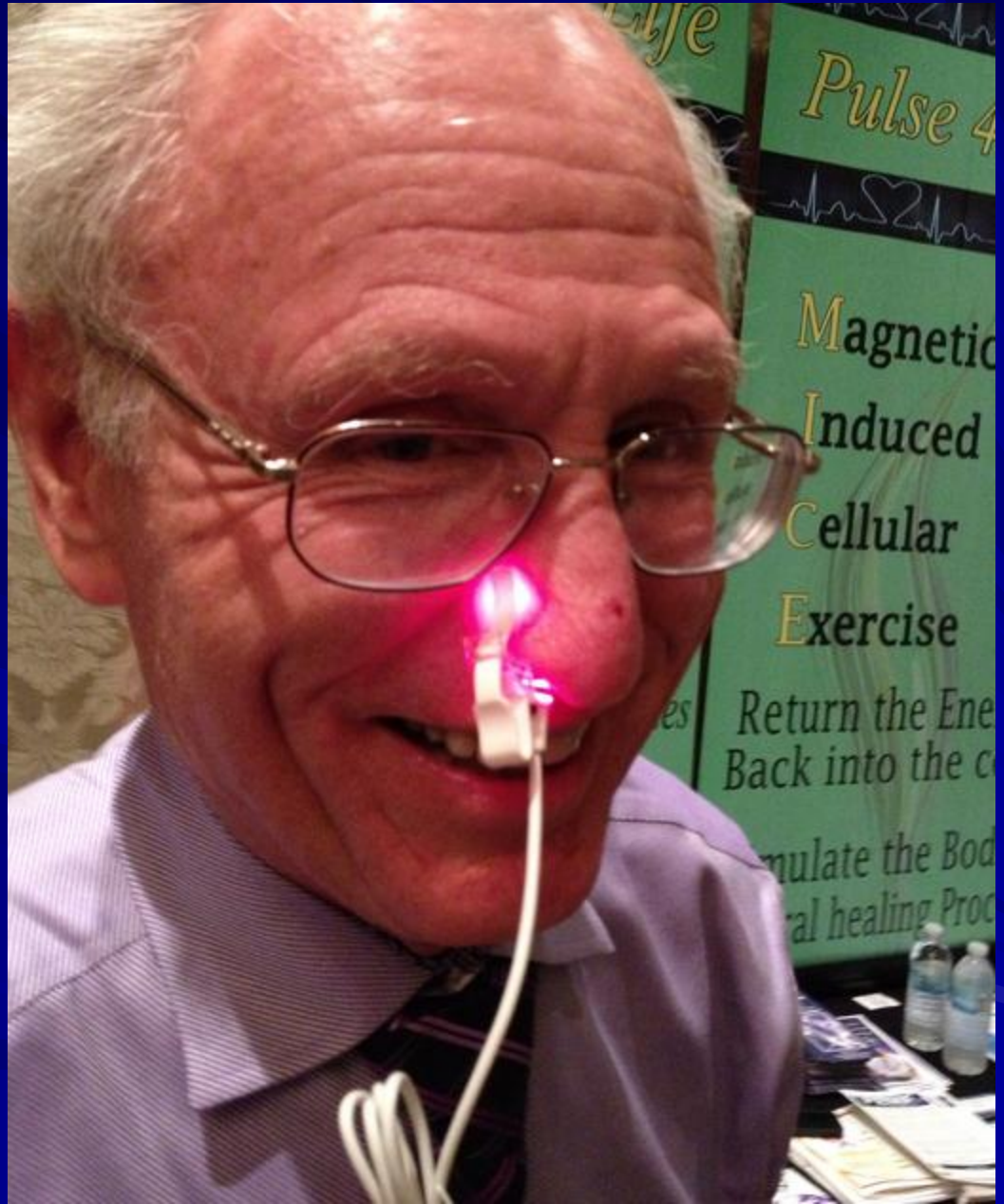
**Intranasal light therapy stimulates restoration of body balance (homeostasis).**

VieLight is a small light diode of certain specifications designed to be inserted into either nostril for 25 minutes per day. Homeostatic stimulation is achieved through the response of the mid-brain area, particularly the hypothalamus being in close proximity to the nasal cavity, and the stimulation of redox signaling molecules and their subsequent distribution through the nasal capillaries and the circulatory system.

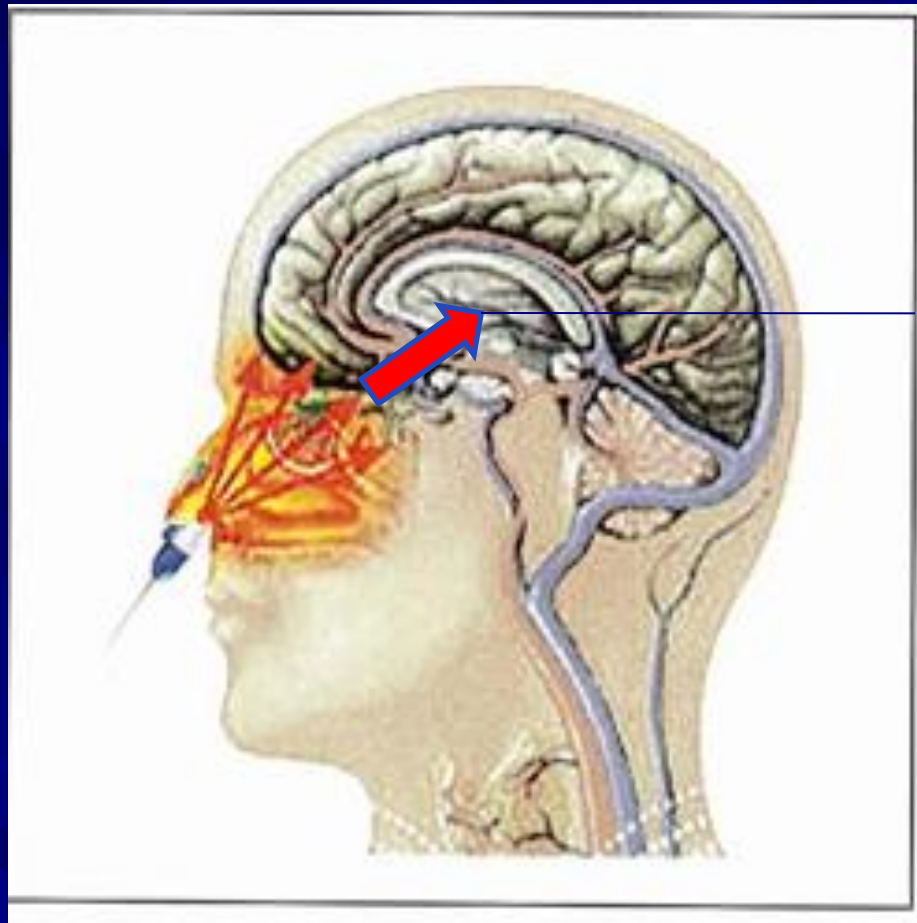


The facial area also responds directly to the light, often resulting in the immediate treatment of sinusitis, congestion, headache and, facial and pain in the neck area.





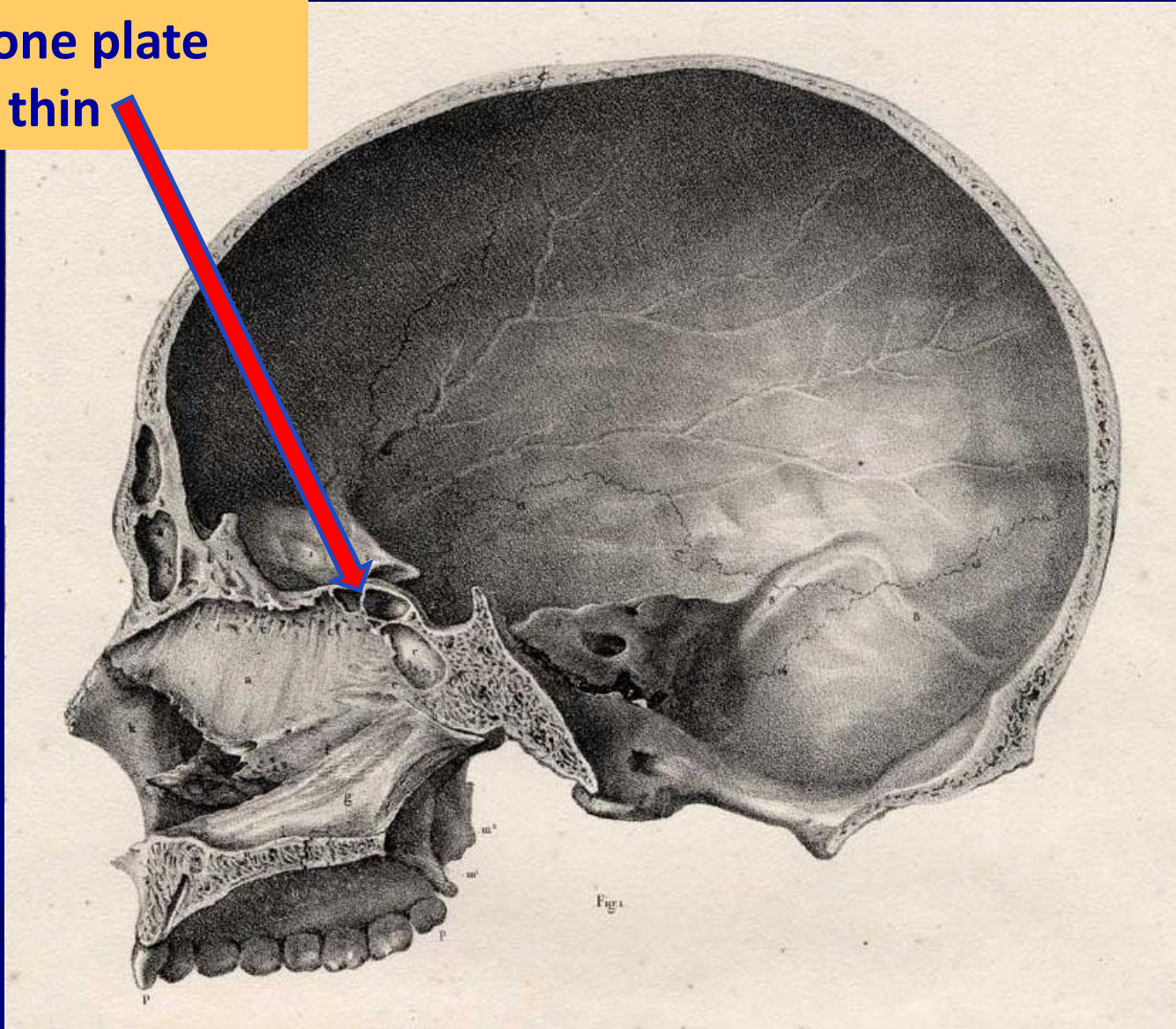
# Illuminating the Mid-brain



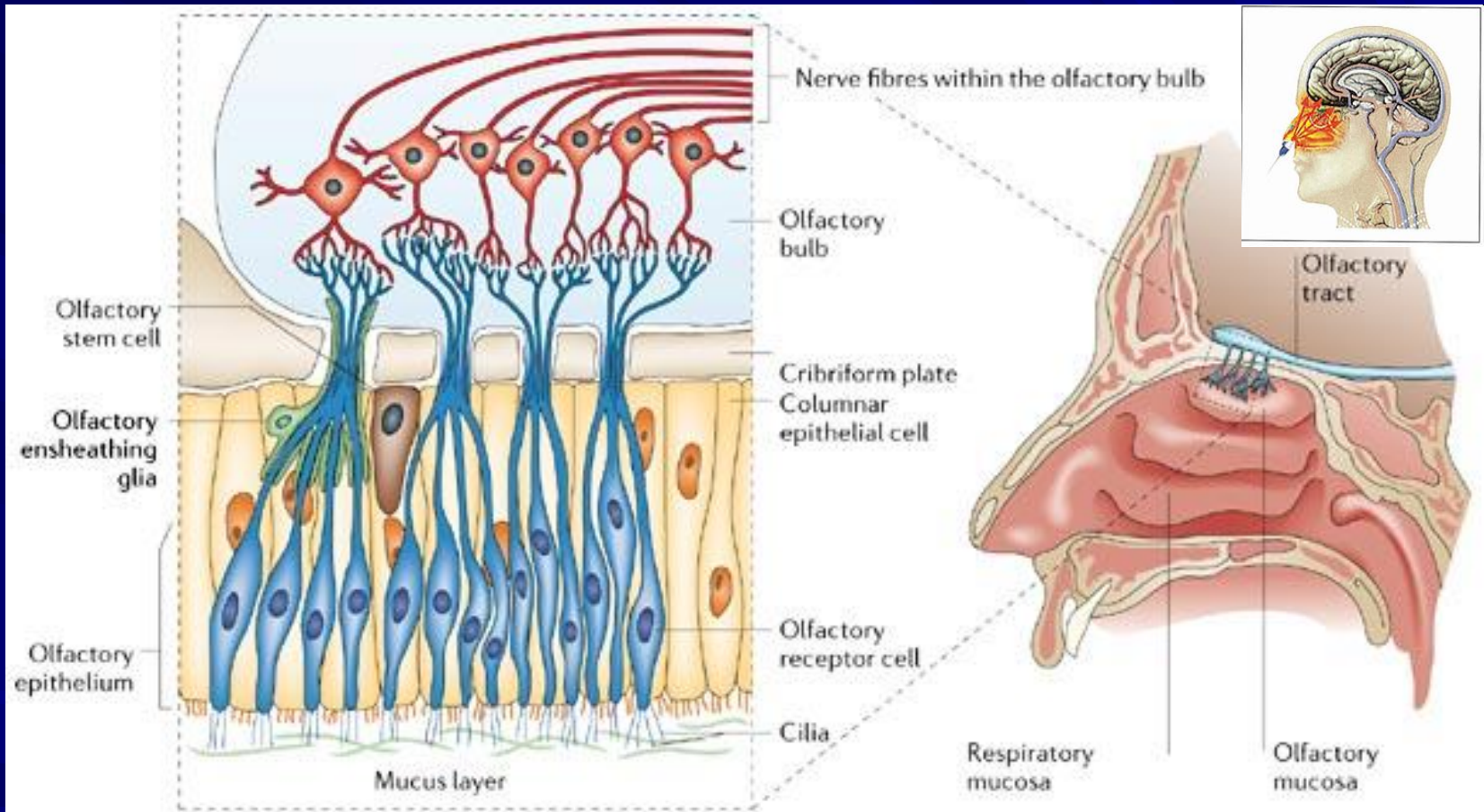
Hypothalamus



Thin ethmoid  
bone plate  
is thin

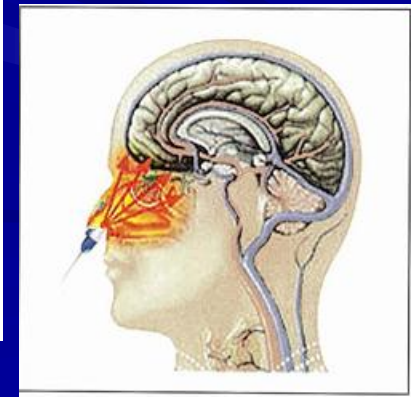
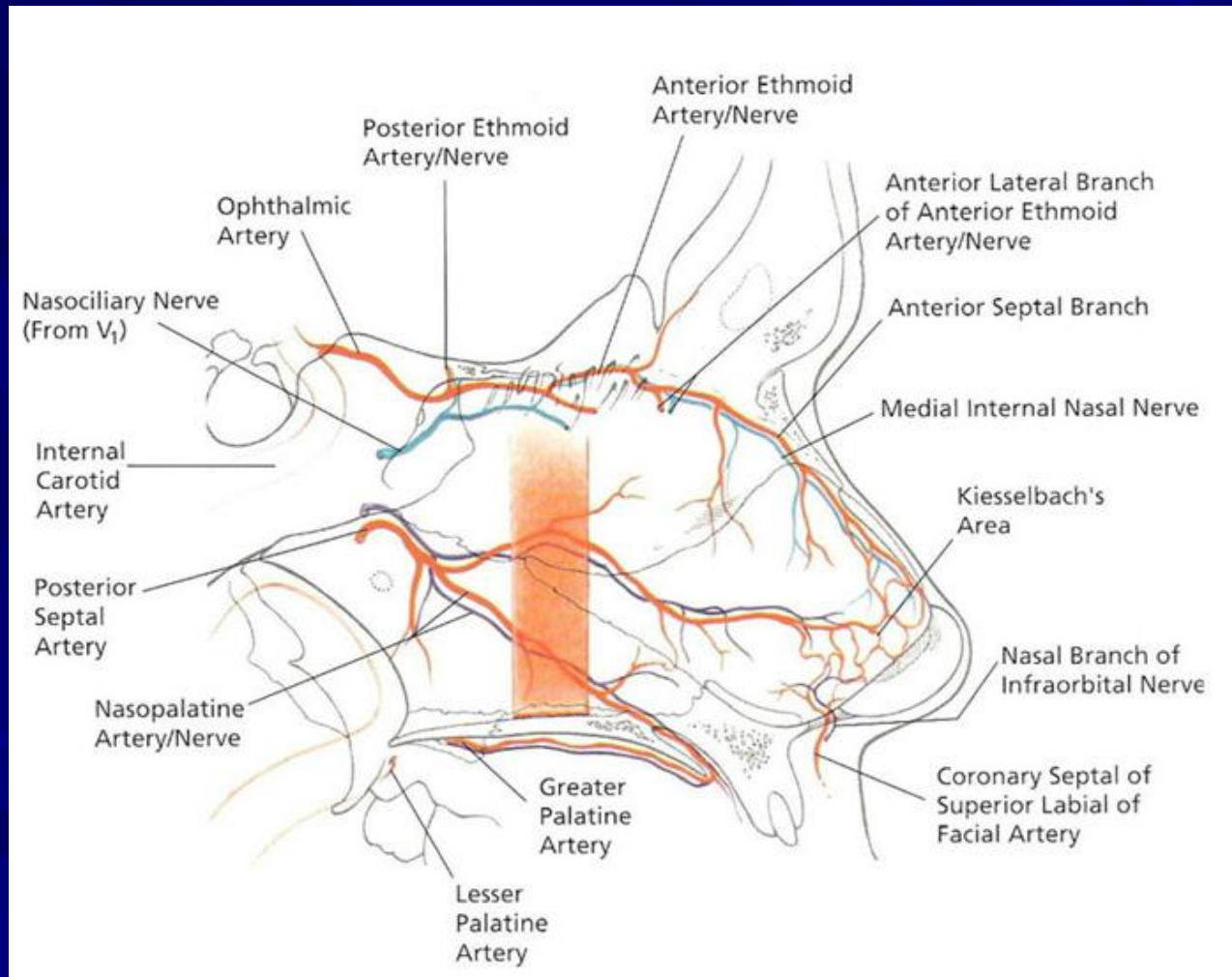


# ILIT Biomechanism: Olfaction

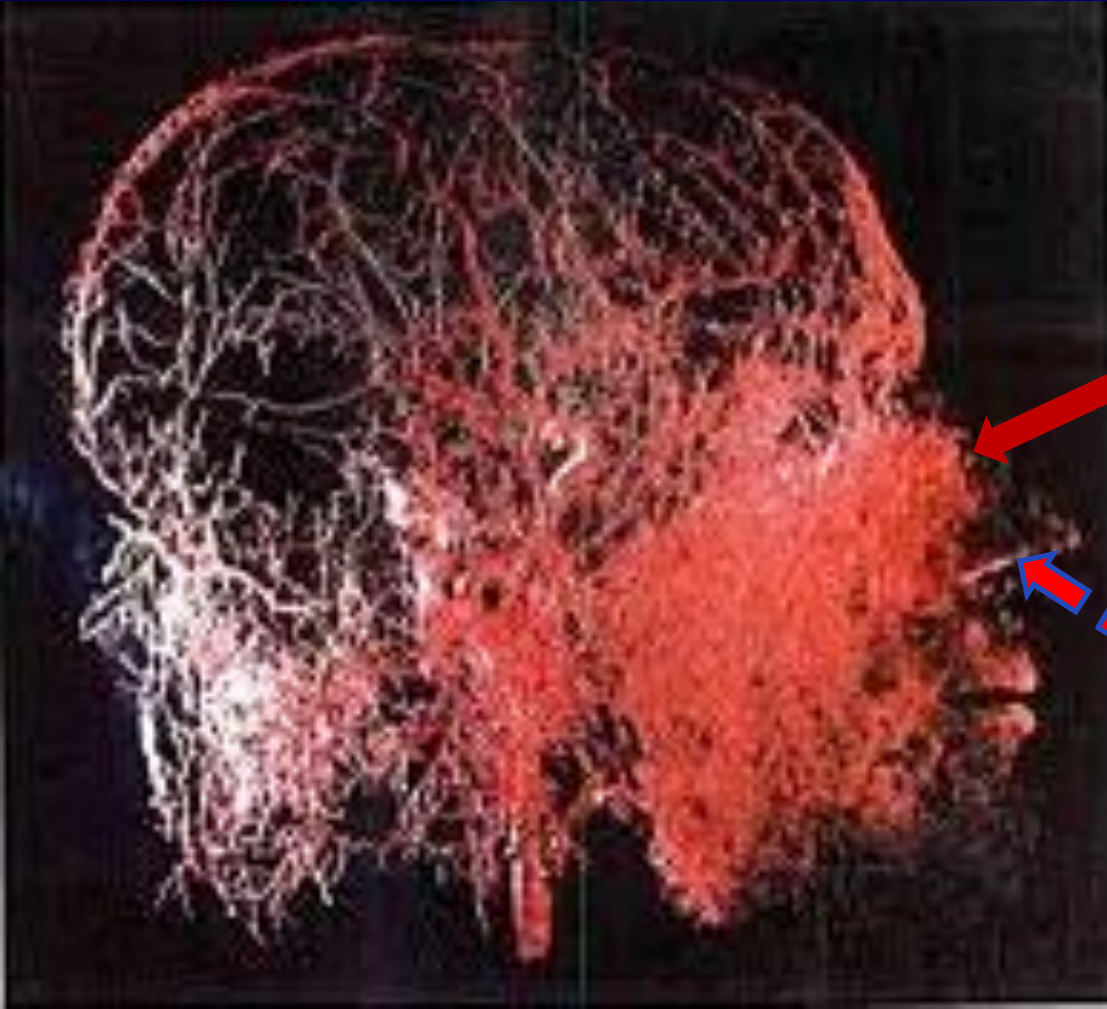




# ILIT Biomechanism: blood mediation



# Blood vessels of the Human Head



**The most concentrated area**

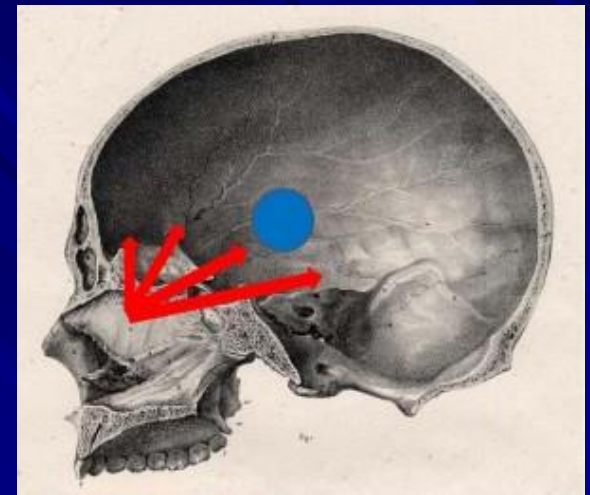
**Light source**



# THE POTENTIAL OF INTRANASAL LIGHT THERAPY FOR BRAIN STIMULATION

By Lew Lim, MedicLights Research Inc., Toronto, Canada.  
January 2013

Evidence supports intranasal light therapy for brain-related conditions such as mild cognitive impairment, Parkinson's Disease, migraine, stroke.



We analyzed the literature to arrive at reference parameters for optimum brain stimulation with low level light. **Studies lead us to select parameters that involve low level light in the near infrared red (NIR) range that pulses at 10 Hz to draw superior neural response.**

More specifically, the parameters could include a **wavelength of 810 nm from a LED source, supported by a power density of 10 mW/cm<sup>2</sup>, over daily treatment session of 25 minutes, and a duty cycle of 50 percent.**

The LED beam footprint spans the underside of the brain, including the mid-brain area. With these specifications, the energy is 7.5 J/cm<sup>2</sup> (net of duty cycle) per session. Users reported improved neurological outcomes, although the results are more mixed (but without negative effects) from those without prior medical conditions.

# History of neurological evidence

**With present Intranasal Low Level Laser Therapy parameters**

- Facial pain, 1998
- Intractable headache, 1998
- Cerebral thrombosis, 1999
- Parkinson's disease, 1999
- Alzheimer's disease, 1999
- Mild cognitive impairment, 2000
- Insomnia, 2001
- Post-stroke conditions, 2003
- Migraine, 2003
- Traumatic brain injury, 2003
- Schizophrenia, 2000
- Vascular dementia, 2005
- Cerebral palsy, 2007

***Can we still improve?***

# Lasers zap away cocaine addiction

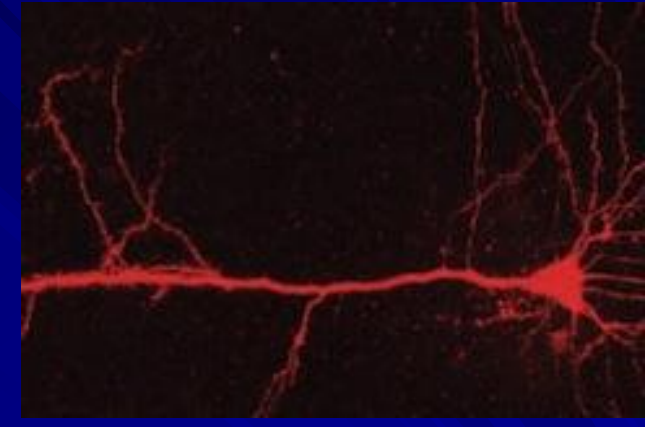
by Jason Bardi - April 3, 2013

UC HEALTH

Like so many other illicit drugs, cocaine can be extremely, destructively addictive.

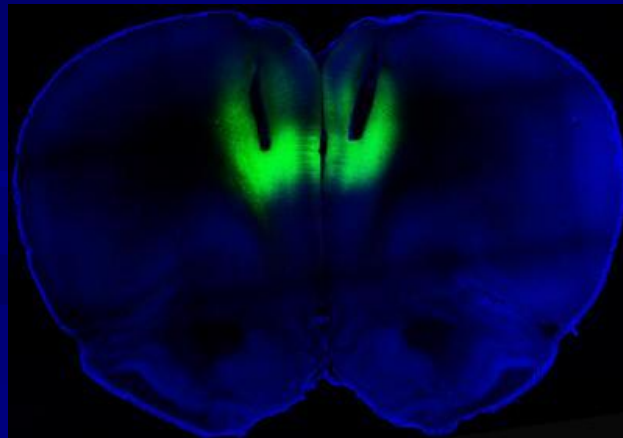
Recent research suggests, however, that ridding people of such addictions may be as simple as zapping them on their scalp. In a study conducted at the National Institutes of Health (NIH), and at the Ernest Gallo Clinic and Research Center at UC San Francisco, scientists were able to turn cocaine addiction on and off in rats via pulses of laser light to their brains.

The scientists started with light-sensitive proteins known as rhodopsins, which they inserted into the neurons of the rats' prefrontal cortex via genetic engineering. The prefrontal cortex is associated with impulse control - something that addicts tend to lack.



Cortical neurons

*Image courtesy of NIH/A. Bonci*



Those neurons were then able to be activated by exposing them to laser light, which was fed into the animals' brains through implanted fiber optic cables. The result was that compulsive drug-seeking behavior could be instantly turned off in cocaine-addicted rats, by turning on the neurons.

Laser light delivered through fiberoptic cables directed at the prefrontal cortex (shown here by their tracks) is used to modulate firing activity of neurons expressing light-sensitive molecules (shown in green fluorescence) to regulate cocaine-seeking behavior in rats.

*Image by B.Chen/NIDA*

# Brain Cell Healing



In vitro post-oxidative stress. 670nm, 3 mW, 20 sec/day, 5 days

Source: Giuliani et al. Low infra red laser light irradiation on cultured neural cells: effects on mitochondria and cell viability after oxidative stress. BMC Com Alt Med 2009, 9:8.



# Intranasal Low Intensity Laser Therapy (ILILT) blood purifying effects



ILILT



blood circulation and effects to whole body's blood



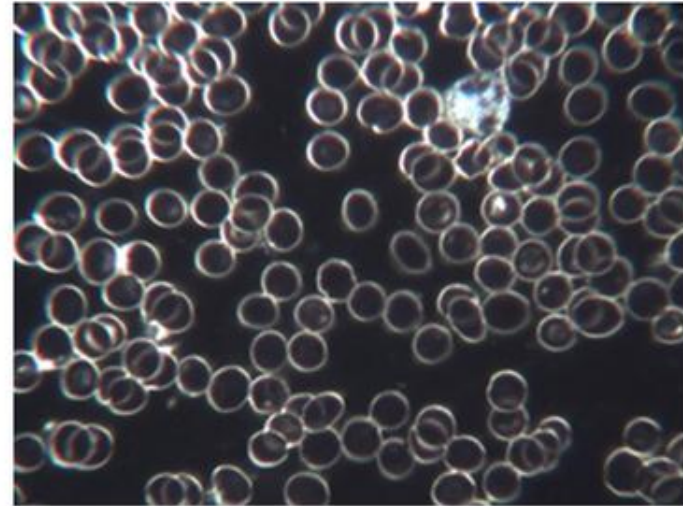
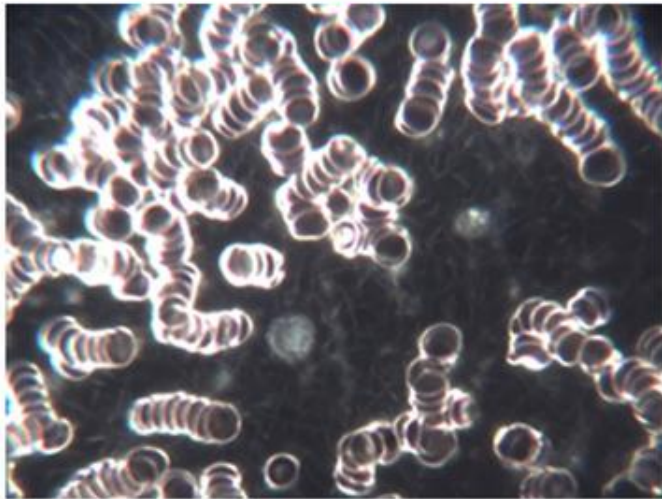
## ILILT's Biostimulatory effects to blood

1. Increased ATP production by the mitochondria and increased oxygen consumption on the cellular level, which may result in muscle relaxation
2. Increased serotonin and increased endorphins
3. Increased anti-inflammatory effects through reduced prostaglandin synthesis
4. Improved blood circulation to the skin in cases like neuralgia and diabetes mellitus
5. Decreases permeability of the membrane of the nerve cells for Na/K causing hyperpolarisation
6. Increased lymphatic flow and decreased edema

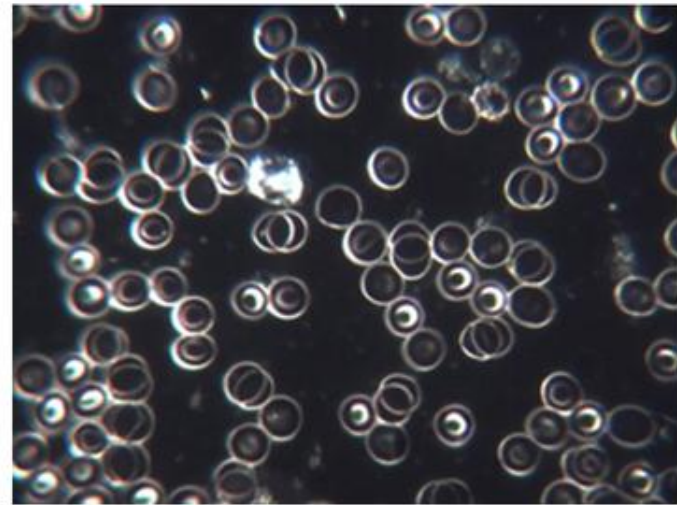
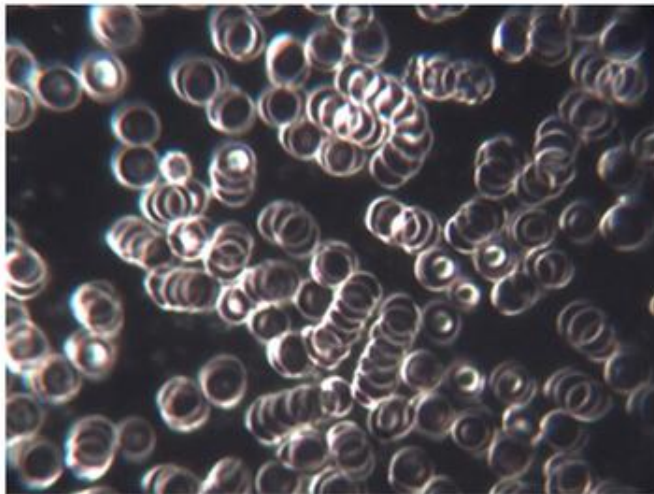
## Adjuvant therapy

## Health care

- **Hypertension** <<Learn more
- **Hyperlipoidemia** <<Learn more
- **Hyperviscosity** <<Learn more
- **Stroke** <<Learn more
- **Sugar diabetes** << Learn more
- **Insomnia** << Learn more
- Blood health care
- Improve natural immunity
- Anti-ageing
- protect the ischemic anemia



***Left before and after 25 minute use of the Vielight on the right notice the red blood cells on the left are stacked with poor amount of surface area available for the exchange of oxygen***



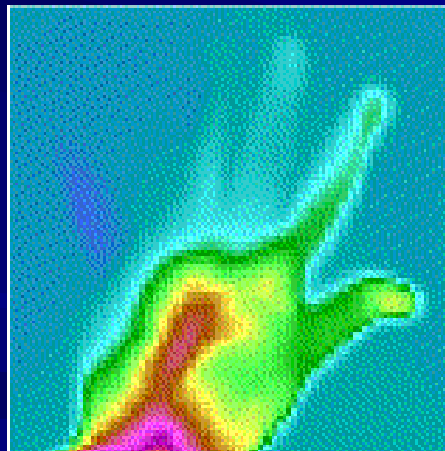


## Healing Distributed through the Circulatory System

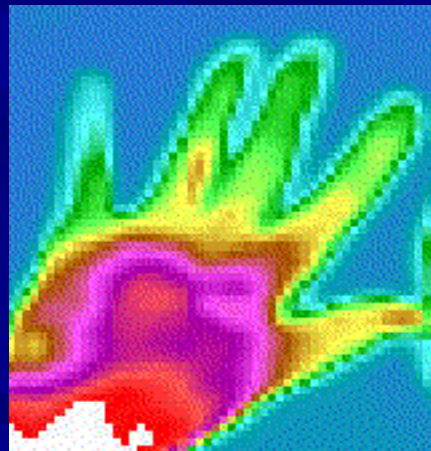
The combined roles of singlet oxygen, ROS, Redox Signalling and the activity of SOD best explains the mechanism behind the healing success of Intranasal Light Therapy. The key to the efficacy of the intranasal pathway is that it is essentially an in vivo method without the invasiveness of the older intravenous method.

The rich vascular bed in the nasal cavity is an excellent starting point to carry and distribute Redox Signalling molecules throughout the body to stimulate the healing process.

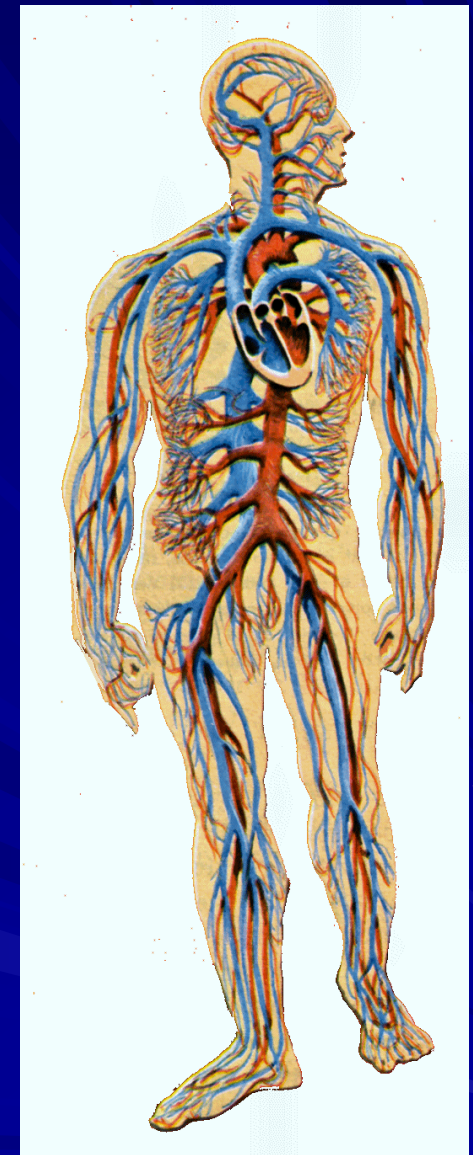
### Peripheral blood circulation



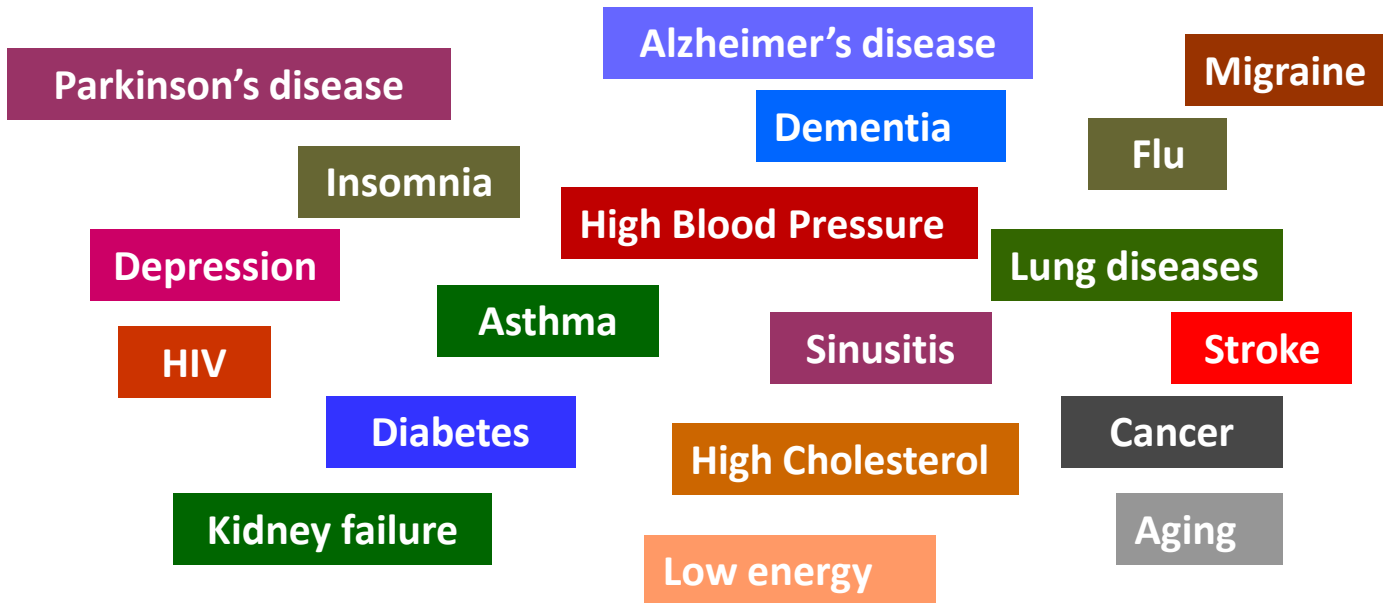
Before



After



# Clinical Evidence for...



**and more....**



# Summary Differences Between Three Models



	633 Red / Qi-Light	RadiantLife LT / 655 Prime	810 Infrared
Price	\$299	\$399	\$499
Light source	LED	Low level laser	LED
Wavelength	633 nm	655 nm	810 nm
Color	Red	Deep red	Invisible
Pulse mode	Continuous	Continuous	10 Hz
Battery life	2 months	3 months	2.5 months
Safety issues	None	Very small	None
Research studies	Few	Many	Few

# Detoxification is a LIFETIME challenge

**LEAD in bones requires years of continuous oral chelation with EDTA and/or Zeolite.**

**Because bones take an average of 15 years to fully regenerate, IV EDTA chelation therapy over several months only removes lead and other toxic metals from the body's blood and tissues, NOT from bones.**

**Harvard studies prove that bone lead leads to heart disease and cataracts, as Bones are the MAJOR storehouse of lead in the body.**

**For more information see the  
507 References Supporting Oral EDTA**

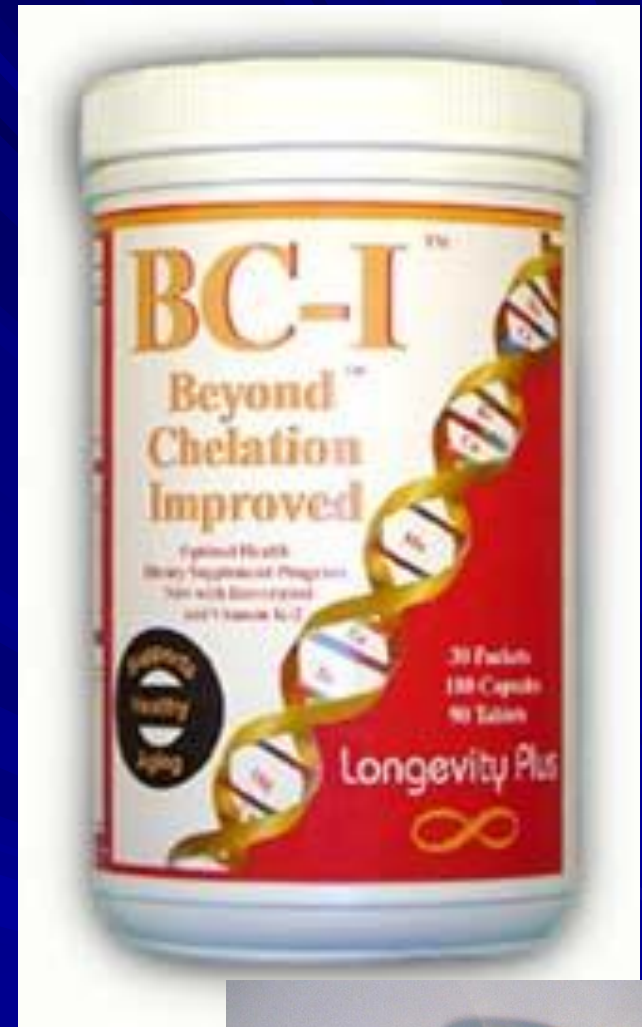
**On the Gordon Research Institute Website at**

**[www.gordonresearch.com](http://www.gordonresearch.com)**

## Beyond Chelation Improved (BC-I)

Each canister of Beyond Chelation Improved™ contains 30 packets. Each packet consists of:

- 3 *Beyond Any Multiple*™ caplets with **Vitamin K2**, Resveratrol, Tocotrienols, and Utah Sea Minerals
- 3 *Essential Daily Defense*™ capsules (which deliver a combined total of 400 mgs of EDTA)
- 1 Omega 3 marine lipid concentrate
- 1 Evening Primrose Oil capsule
- 1 Phosphatidyl Ginkgo Biloba capsule.



## The CD47-signal regulatory protein alpha (SIRP $\alpha$ ) interaction is a therapeutic target for human solid tumors

doi: 10.1073/pnas.1121623109

CD47, a “don't eat me” signal for phagocytic cells, is expressed on the surface of all human solid tumor cells. Analysis of patient tumor and matched adjacent normal (nontumor) tissue revealed that CD47 is overexpressed on cancer cells.



## Cancer Drug That Shrinks All Tumors Set To Begin Human Clinical Trials

The Huffington Post | By Sara Gates

Posted: 03/28/2013

A study published March 2012 discusses researchers' find that the one-for-all antibody drug successfully blocks a specific protein, CD47, from tricking the body's immune system into not destroying harmful cells. Though this protein is present on the surface of healthy blood cells, the team from Stanford University's School of Medicine determined that CD47 levels were significantly higher in all cancer cells.

*"By either killing or shrinking each tumor, the innovative antibody drug prevented the cancer from spreading to other parts of the body."*

**Wobenzyme** 10 TID – AC does this every day!  
More Safely, more effectively, and more affordably!



# FIGHT for Your Health with Dr. Gordon's Power Drink

Beyond Fiber - 1 rounded tsp

Bio En'R-G'y C - 1 rounded tsp

MACA Powder - 1/2 tsp

Dr. Gordon's Organic  
Best of Greens - 1 rounded tsp

ZeoGold\* - 1 capsule (twist open and dissolve in drink)



**FACT Membership is FREE** to any Qualified Health professional desiring to achieve **OPTIMAL WELLNESS** for themselves and their clients. This includes Nurses, Nutritionists, Scientists, Researchers, and others on a case by case basis.



# Gordon Research Institute

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March 2013

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31						

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## Next Energy Medicine Webinar on 3/4/2013

Join Dr. Gordon on Monday, 3/4/13 at 3 pm AZ time. "Energy Medicine, Lasers and Degenerative Disease." Click photo.

# Health Consultations

Get a personalized health consultation! Dr. Garry Gordon offers his 53+ years of advanced medical experience to you via telephone, or in-person, for \$300 per hour.

Appointments may include a review of all prior medical records and/or any new tests that can be ordered in preparation for your personalized consultation. Test panels can be more focused on ANTI-AGING, or cancer, depending on your concerns.

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For more information please contact Gordon Research Institute  
Ph 928-472-4263 x134, Fax 928-474-3819,  
or email [info@gordonresearch.com](mailto:info@gordonresearch.com)



***THANK YOU***



***Garry F. Gordon MD, DO, MD(H)***