

# Bioelectromagnetics Applications for Health and Healing

© By Thomas Valone, Ph.D. and Jacqueline Panting, N.D., USA

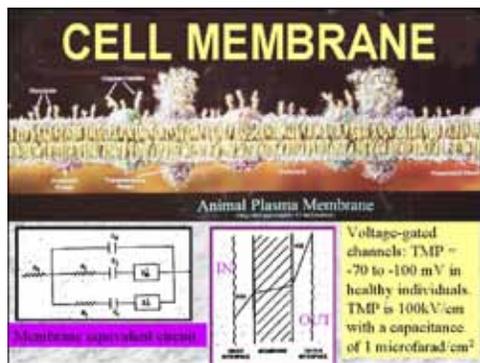
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## Introduction to Electromedicine

In 1898, Tesla published a paper that he read at the eighth annual meeting of the American Electro-Therapeutic Association in Buffalo, NY entitled, "High Frequency Oscillators for Electro-Therapeutic and Other Purposes." He states that "One of the early observed and remarkable features of the high frequency currents, and one which was chiefly of interest to the physician, was their apparent harmlessness which made it possible to pass relatively

great amounts of electrical energy through the body of a person without causing pain or serious discomfort."<sup>1</sup>

Tesla also concluded correctly that



bodily "tissues are condensers" in the 1898 paper, which today is estimated to be about 100 – 300 pF. It is also the basic component (dielectric) for an equivalent circuit only recently developed for the human body. In fact, the relative permittivity for tissue at any frequency from ELF

(10 Hz-100 Hz) through RF (10 kHz–100 MHz) exceeds most commercially available dielectrics on the market. This unique property of the human body indicates an inherent adaptation and perhaps innate compatibility toward the presence of high voltage electric fields, probably due to the high **transmembrane potential (TMP)** gradient in healthy individuals, present across cellular membrane tissue. This surprisingly *intense electric field*, which averages 100 kV/cm or equivalently 10 MV/m as noted in our first figure, is extraordinary because it demonstrates the body's ability to withstand high electric field energy without dielectric breakdown. It is also one of the *only two ways that the human body stores energy* (electrical gradients or chemical gradients). We have found that debilitated people, with or without accompanying disease, will respond to a five minute exposure of a high voltage therapy device and report an increase in their liveliness and vitality almost immediately.

For example, a client of ours named Susan R. wrote to us to place an order for our portable Tesla-coil-styled **Premier Junior** stating, "About an hour after I tried the device for the 2nd time on the last day of the conference I had so much energy I packed up and drove 7 hours to get home. After I got home I still had energy to burn! I cannot wait to have more of that on a regular basis!" This seems to be related to the "charging" of the body's condensers (capacitors) which are the cell's membranes. Another reason is that *electrons are the active ingredient in antioxidants* and have the ability to quench free radical damage faster than any pill or capsule (more explanation in a later section of this article). Tesla also indicates that the after-effect from his coil treatment "was certainly beneficial" but that an hour exposure was too strong to be used frequently. This has been found to be still true today with the various Tesla coil therapy devices.<sup>2</sup>

<sup>1</sup> Tesla, Nikola. "High Frequency Oscillators for Electro-Therapeutic and Other Purposes," The Electrical Engineer, Vol. XXVI, No. 550, Nov. 17, 1898, p.477 (available online at [www.electrotherapymuseum.com](http://www.electrotherapymuseum.com)). <sup>2</sup> For a more extensive history and theory, see "History and Physics of High-Voltage Electromagnetic Medicine" by Thomas Valone, *Explore!*, Vol. 12, No. 4, 2003, p.37-46.

Throughout the early 1900's, thousands of electrical devices were invented and used by doctors to effectively ameliorate a variety of illness, disease, infection, and malady. As far back as September 6, 1932, Dr. Gustave Kolisher announced to the American Congress of Physical Therapy in New York that "Tesla's high-frequency electrical currents are bringing about highly beneficial results in dealing with cancer, surpassing anything that could be accomplished with ordinary surgery." Though a few devices and textbooks survive to this day, most have been wiped out by the special interests of the A.M.A. and the F.D.A. Today, it is ironic that cancer, AIDS, and a host of other diseases remain in the limbo of research almost indefinitely with only incremental improvements in care revealed by all of the medical institutions. On the other hand, there is a resurgence in the science of bioelectromagnetics (BEMs), which is the study of the effect of electromagnetic fields on biological systems. There are presently many instruments and devices re-emerging that bring beneficial health changes to human organisms, including one developed by this presenter. Electromedicine, electrotherapy or electromagnetic healing are the terms applied to such developments in the ELF, RF, IR, visible or UV band, which when properly used, represent the ideal, noninvasive therapy of the future. Studies by numerous doctors and scientists have demonstrated incontrovertible evidence for the benefits of BEM healing, for a wide variety of illnesses, with a surprisingly lack of harmful side effects. Another example of the benefits we hear about firsthand is from Elliott who wrote down his experience: "I have been suffering from nerve damage in my back for several years now. I have had several operations, physical therapy and tons of pain killers. I heard you on Coast to Coast<sup>3</sup> and decided to order the Premier Junior! Wow, I experience relief immediately, so much so, that I brought it to my Neurosurgeon's office, and ask that they include it in my treatments. My doctor was so impressed that he bought one as well! When I first got the Premier, I was using a wheelchair, after 4 months, I was walking with a walker and now I am walking with a cane! I use it every day, morning and night and will never be without it! Thanks so much!"

One of the many interesting examples of how sophisticated high voltage electrotherapy was a century ago is the book, *Use of Electricity on the Face and Scalp* by Emily Lloyd (Marinello Pub., 1924) with many examples and illustrations which we now distribute through our institute. Another more extensive publication is the *Medical Electricity* textbook by Sinclair Tousey M.D. which we borrowed from Jeff Behary (Electrotherapy Museum) and copied four major chapters for distribution by our nonprofit organization ([www.IntegrityResearchInstitute.org](http://www.IntegrityResearchInstitute.org)) which is available in a computer CD format. Below is the table of contents for the textbook excerpt on the CD and a sample illustration

from the book. Dr. Tousey was a consulting surgeon at St. Bartholomew's Clinic in New York City when the book was published by Saunders and Company in 1916.

<i>Medical Electricity</i> by Sinclair Tousey, M.D. (Selected chapters now on CD)	
Electricity in Diseases of the Nervous System	p. 440
High-Frequency Currents	p. 518
Phenomena Accompanying the Transmission Of Electricity Through Gases	p. 620
Phototherapy	p. 633

### Tesla Coil Electrotherapy Devices

Our experience with variations of Tesla's original coil design, accentuated with noble gas tube delivery system, has run the gamut of large tower style Tesla coil machines and more compact models like the "suitcase" style coil and gas tube combinations. Two models which we invented are the PREMIER 3000 and 2500 models (shown side by

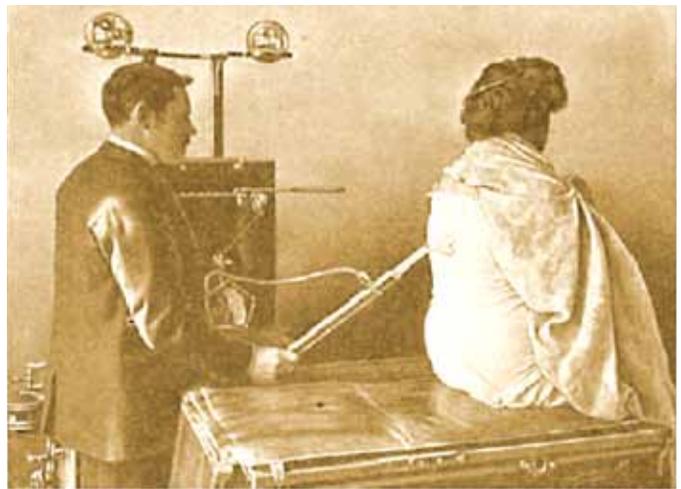


Fig. 354.—Application of vacuum electrode by means of the author's completely insulated handle.

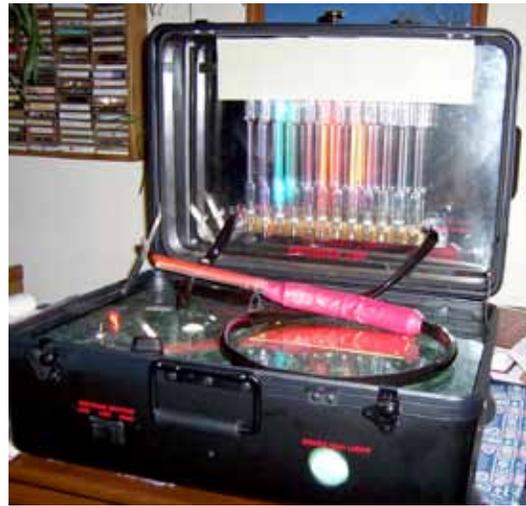
side) where the PREMIER 3000 has an additional pulsing toroid following Larry Azure's patent #6,217,604 in which he claims in the patent that it helped to cure cancer. The acronym **PREMIER** is a combination of therapeutic terms: Photonic Rejuvenation Energizing Machine & Immunizing Electrification Radiator. The PREMIER 2500 is shown in the photo operating with the gas tubes lit up by the high voltage and has a wand applicator.

The PREMIER 3000 and 2500 are experimental models which take about a month to manufacture and the case is specially designed with an extendable handle and wheels for moving it around. An innovative addition was the static mat at the top so the client can actually

<sup>3</sup> A four hour radio interview with Dr. Valone from "Coast to Coast with George Noory" (April 28, 2008) is now online in four MP3 files under "Related Links". The first few hours deal with energy, inventors, propulsion and suppression. The last hour is on health and healing with electrotherapy and was the most popular. Each is about 13 Meg (mp3) and very entertaining as well as educational: <http://www.integrityresearchinstitute.org/Valone-CoasttoCoast-Apr28,2008-Hour4.mp3>



PREMIER 3000 with toroid in front.



PREMIER 2500

contact the high voltage extending through the gas tubes and charge up the body. The “wand” as we call it, is the other method to accomplish the same goal, with a well-insulated high voltage cable and handle with a noble gas vacuum electrode tube at the end, much like the Fig. 354 from Dr. Tousey’s book. A ten-minute timer is also installed in every unit to limit the exposure and heating of the quiet, internal spark gap.

It is important to explain that the spark gap in every Tesla coil is the *mysterious but necessary “randomizer”* that introduces the *chaotic oscillations of high voltage discharge* in the circuitry and accomplishes an amazing superposition of frequencies in the kilohertz, megahertz and gigahertz, as verified by spectrum analysis.<sup>4</sup> The value of such a plethora of frequencies of electromagnetic radiation, *for short term exposure*, is that Bioelectromagnetics teaches that the human body has lots of frequency-specific storage sites, too numerous to mention in this article. As Lakhovsky suggested with his work, the human body can absorb the frequencies that it needs, which also equates to specific quanta of energy, by the Einstein equation  $E = hf$  where  $h$  is Planck’s constant.

The more recent and the most popular model that we have developed is the **Premier Junior** mentioned previously, with interchangeable noble gas tubes, which is a handheld, portable version of the other PREMIER models. Fashioned after the century-old “Violet Ray” devices and the “Branston Junior” shown in the photo, it is the same as the “Fig. 354” but more compact. We improved the electrical insulation of the high voltage coil interface



with the gas tube with two layers of silicon rubber sleeves for long-lasting, safe use of the model. Its durable design has convinced us and many clients of the efficacy of this renewable and non-consumable medicine. Richard is another case study who purchased a Premier Junior (PJ) and reported back to us, “I’ve been using the PJ for a couple days now. It seems to be helping a condition that I have had reoccurring that is similar to gout (knees and ankles). I’ve used it in the morning and evening as prescribed. I’ve used it along my adrenals and lymph nodes, as well as the back of the neck, with very invigorating results. Thank you for your time. I’m very happy with the purchase.”

### Chronic Fatigue Syndrome

Another area which seems ripe for a new electrotherapy protocol is Chronic Fatigue Syndrome (CFS). It is a condition that has become quite prevalent in the last 50 years. It is defined as a debilitating lack of vitality that includes symptoms lasting at least 6 months. These symptoms may include:

- ◆ Sore throat
- ◆ Muscle pain
- ◆ Tender lymph nodes
- ◆ Joint pain
- ◆ Interrupted sleep
- ◆ Unexplained persistent and relapsing fatigue that is not alleviated by rest
- ◆ Substantial reduction in previous levels of activity

<sup>4</sup> Valone, Thomas. *Bioelectromagnetic Healing: A Rationale for Its Use*, Integrity Research Institute, see Appendix.

More women are affected than men are by this syndrome. Even more disturbing, a muscle disorder that also causes weakness, called *fibromyalgia*, has been found in many CFS patients, according to a study conducted by the Center for Disease Control ([www.cdc.gov](http://www.cdc.gov)). With more than three-quarters of a million people in the United States exhibiting a CFS-like condition, it is becoming a serious health concern.<sup>5</sup> The causes for CFS are still undetermined. Some studies suggest multiple nutrient deficiencies can trigger chronic fatigue. Therefore, proper nutrition, consisting of a well balanced diet is vitally important. Fresh fruits and raw foods are especially recommended. Herbs that are helpful include ginkgo, astragalus, red clover, dandelion and short term use of echinacea to help boost the immune system, which is always affected by CFS. To help improve the interrupted sleep pattern, valerian root or melatonin at bedtime is helpful.

Although numerous studies have been conducted to find the underlying causes of CFS, *none have succeeded in understanding its physiological or chemical pathways*.<sup>6</sup> Some studies have shown that deficiencies of the *adrenal or thyroid glands* have been found in CFS patients. This has prompted the belief that *stress* can trigger CFS, whether it is of mental or physical origin. Therefore energy boosting therapies as well as vitamins and antioxidant supplementation to combat free radical proliferation is often considered to be extremely important.

**How do free radicals deplete cellular energy?** Free radical proliferation is linked to pathological changes that cause cellular malfunction or mutation (i.e. cancer) as well as protein degradation. Free radicals also play a large role in causing damage to all cells of the body but particularly the *immune system*. Free radicals also *deplete cellular energy* by interfering with mitochondrial function and contribute to shortened lifespan, according to studies with animal species.<sup>7</sup> Cellular energy generation in the mitochondria is both a key source and key target of oxidative stress in the cells. Seeking an electron to complete the radical, free radicals cause chain reactions as electrons are ripped from molecules, creating another free radical. Cellular energy generation in the mitochondria is both a key source and key target of oxidant stress in the cell. One can therefore envision a model whereby the inevitable increased production of free radicals compromises mitochondrial efficiency and eventually energy output in a detrimental feedback loop.<sup>8</sup>

Antioxidants such as vitamin A, vitamin E, selenium and coenzyme Q10 supply free electrons and are usually prescribed by naturopathic doctors in order to provide limited relief in counteracting free radical ravages, as long as they are taken regularly. However, *electronic antioxidants* produced by bioelectromagnetic (BEM) therapy can also



Co-author Dr. Panting using PREMIER 2500

satisfy and terminate free radicals, by abundantly supplying the key ingredient usually found only in encapsulated antioxidant supplements...the electron.<sup>9</sup> Indeed, such a pattern of confirmation has been found through our preliminary studies before and after electrotherapy with the *Pharmanex BioPhotonic Scanner* which tests for carotenoid (vitamin A) levels in the blood. The carotenoid levels of the blood are noticeably higher after high voltage electrotherapy, suggesting that free radical levels have dropped since they are not consuming carotenoids at the same rate as before therapy. The accompanying bodily feedback to quenching free radicals is a relief of pain as James reported to us: "Your device seems to be healing my damaged knee. I have been using for 2 weeks am & pm. Less pain = can stand and walk better, also in a peculiar way I have more energy and better mood. Been using all nutrition protocols plus pulsed light from 'light force' co. all helped, but your Premier Jr. has already made a huge advance. I am very grateful. You are doing good work. Thank you. I am going to get the book on meditation, thank you over and over."

Another indicator for the body's immune system status and energy storage level is literally the electric field voltage that is maintained across all of its cell membranes! The so-called *transmembrane potential* (TMP), shown in the first illustration slide to this article, is typically a hundred thousand volts per centimeter, and often found to be much lower during stress and disease states, indicating lower energy levels in the body. In the case of CFS, modern medicine does not offer a chemical supplement or pharmaceutical concoction to provide relief. However, the high voltage electric fields presented to the body by bioelectromagnetic therapy can be reasonably expected to

<sup>5</sup> Gerrity TR, et al., "Chronic fatigue syndrome: what role does the autonomic nervous system play in the pathophysiology of this complex illness?" *NeuroImmunoModulation*, V. 10, p. 134-141, 2002. <sup>6</sup> Fukuda K, et al., "The chronic fatigue syndrome: a comprehensive approach to its definition and study." *Annals of Internal Medicine*, V. 121, p. 953-959, 1994. <sup>7</sup> Smith P, editor, "Pathways of aging" *Life Extension*, January, 2004, p. 33. <sup>8</sup> Campisi J. "Aging, chromatin, and food restriction—connecting the dots" *Science*, Sept., 2000, V. 289, No. 5487, p. 2062-3. <sup>9</sup> Valone, T., *Bioelectromagnetic Healing: A Rationale for Its Use*, Integrity Research Institute, 2003, p. 37.

boost the TMP directly.<sup>10</sup> Similarly, with a higher voltage setting of the electrotherapy device, some people report extra benefits such as Larry who also refers to the Premier Jr.: “I am starting to notice it working for me because I hurt my elbow joint about 4 months ago and now I can put my own shirt, pants, etc. on with both hands instead of one. I very much enjoy the product. Now, I’ll use the highest power as I am use to it. Even though I always stay just over the minimum to get the gases flowing.”

It is known that damaged or diseased cells present an abnormally low TMP about 80% lower than healthy cells.<sup>11,12</sup> This signifies a greatly reduced metabolism and, in particular, impairment of the electrogenic *sodium-potassium (Na-K) pump* activity and therefore, reduced ATP production. The sodium-potassium pump, within the membrane, forces a ratio of 3Na ions out of the cell for every 2K ions pumped in, for proper metabolism. An impaired Na-K pump results in edema (cellular water accumulation) and a tendency toward fermentation, a condition known to be favorable toward cancerous activity.

A Nobel Prize winner, Dr. Albert Szent-Gyorgi, proposed that cell membranes also rectify alternating currents since structured proteins behave like *solid-state diodes*.<sup>13</sup> (A diode passes electricity in only one direction.) It is reasonable therefore to conclude, based on these biophysical principles, that an endogenous high voltage EMF potential of sufficient strength will theoretically *stimulate the TMP, normal cell metabolism, the sodium pump, ATP production and healing*. This far-reaching generalization has already been found in the literature: “*TMP is proportional to the activity of this pump and thus to the rate of healing.*”<sup>14</sup> Furthermore, “increases in the membrane potential have also been found to increase the uptake of amino acids.”<sup>15</sup> Electromedicine therefore, appears to connect to and recharge the storage battery of the TMP, just as sunlight baths connect to and recharge the storage battery of biophotons in cellular DNA, while helping the body to synthesize vitamins.

Will high voltage electrotherapy become the medicine of the future? Similar expectations were voiced 100 years ago when pioneers such as Tesla, Rife, and Lakhovsky, who were ahead of their time, served medical doctors with their remarkable inventions in electromedicine. Only superior clinical studies along with perseverance and determination to change the pharmaceutical dependency in this country may make the difference this time around. In the meantime, those suffering from chronic fatigue syndrome may find that relatively simple steps can be taken to reduce debilitating free radical attack and boost ATP production through TMP recharging by regular, brief (less than 10 minutes) electromedicine treatments.



Dr. Richard Gerow using Premier Jr.

Perhaps the most unusual story that we have received surprisingly came from a healing professional we call Dr. Garl: “I am a chiropractor and have used many machines in the past. The Premier Junior is amazing! I have no health challenges, but enjoy the extra energy I receive from it. I use it morning and night for 5 mins each. The other day, I was late and did not have a treatment in the morning, so I decided to have two in the evening. I did my first treatment and then 15 mins later I did another. To my amazement, after I finished the second treatment, I started to hear the most beautiful, rhythmic sounds coming from my spine. I felt total joy and bliss... Since that episode I have learned that the sounds I heard were that of my chakras. I cannot explain why it happened, but it was definitely related to my using the Premier 2 times that evening and I am convinced that this machine can create altered states of consciousness besides all the wonderful physical effects. Thanks so much!”

Note: All of the above-mentioned client anecdotes have been reproduced in the same syntax as we received them with all of the abbreviations in the original emails or letters except for the last one which was received as a personal phone call. The originals are on file.

Further information on TMP, ATP and BEM therapy can be found in the book, *Bioelectromagnetic Healing: A Rationale for its Use* by Thomas Valone available from [www.amazon.com](http://www.amazon.com) or bookstores. Related websites are [www.novaliteresearch.com](http://www.novaliteresearch.com), [www.zephyrtechnology.com](http://www.zephyrtechnology.com), [www.designmed.com](http://www.designmed.com), [www.lightbeamgenerator.com](http://www.lightbeamgenerator.com), and our site, [www.IntegrityResearchInstitute.org](http://www.IntegrityResearchInstitute.org).

<sup>10</sup> Valone, p. 27. <sup>11</sup> Ceve, G. “Membrane Electrostatics,” *Biochim Biophys Acta*, 103(3):311-82, 1990 **Medline 91027827**. <sup>12</sup> Malzone, A. et al, “Effect on cellular and tissue metabolism of induced electrical currents” *Arch Stomatology* 30(2):371-82 **Medline 90314754**. <sup>13</sup> Szent-Gyorgi, A., *Introduction to Submolecular Biology*, Academic Press, NY, 1960. Also, *Bioelectronics*, Academic Press, NY 1968, and *Electronic Biology*, Marcel Dekker, NY 1976 (See Appendix, p. 46) <sup>14</sup> Jorgenson, W. A. and B.M. Frome, C. Wallach. “Electrochemical Therapy of Pelvic Pain: Effects of Pulsed Electromagnetic Fields (PEMF) on Tissue Trauma,” *European Journal of Surgery*, 1994, Supplement 574, p. 86. <sup>15</sup> Bockris, J.M. et al. *Modern Aspects of Electrochemistry*, No. 14, Plenum Pub., New York, 1982, p. 512.

#### ABOUT THE AUTHOR



**Thomas F. Valone, PhD, PE,** physicist and licensed professional engineer with 30 years professional experience, is a patent examiner, research engineer, instrumentation designer and also an author, lecturer, and consultant on future energy developments. He is President and founder of Integrity Research Institute and formerly a community college teacher and a Research Director for Scott Aviation-ATO, Inc. He is the author of

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**Jacqueline Panting Valone:** Dr. Panting Valone is the Executive Director of Integrity Research Institute. She is a strong advocate of holistic health including electromagnetic medicine and is responsible for the Health programs of our Institute. Her experience in the field of medicine and health includes management of a cardiology wellness center with locations at Mt. Sinai, Parkway and Cedars Medical Center and a Partial Hospitalization Program in Miami, Florida for nearly 20 years. In the beginning of her career, Dr. Valone worked for Group Health Incorporated, who from 1976 through 1981 was awarded the management of the Medicare Part B system for the state of Florida. Mrs. Valone received her Doctorate degree in Naturopathy from Trinity College of Natural Health and is certified through the College of Natural Health Professionals, CNHP.

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**\*Bioelectromagnetic Healing: A Rationale for its Use, 9th ed., p. 86, 2008**

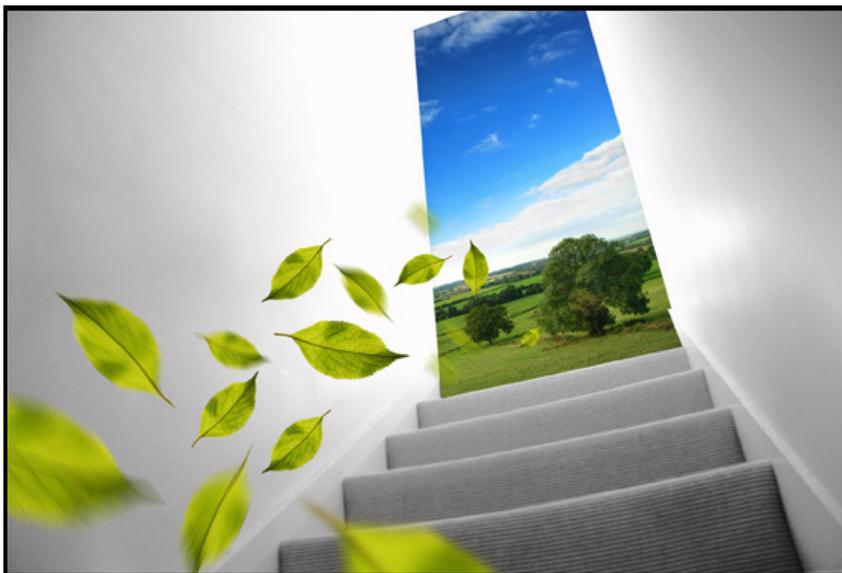
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