Body Field Effect Transistor (BFET) Theory, Structured Water and the PyraLight Pad

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Abstract

While investigating the physical effects of the PyraLight Pad, in order to understand the way in which people were being helped by the pad, I conducted a number of tests which you can see on my Guy Harriman YouTube channel. There are two clearly observable effects created in the body by the PyraLight - structuring water, and inducing a voltage inside the muscle layer, associated with meridian lines.

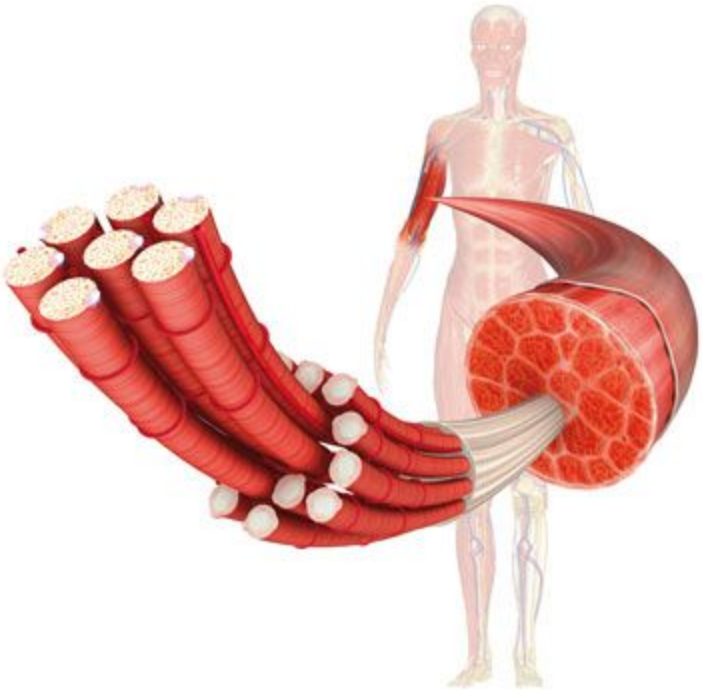
Based on the understanding of semiconducting charged liquid crystal actin filaments found inside and outside cells, a new theory of the Body Field Effect Transistor is presented, based on experimental results and a hypothesis of induced physiological transistor action.

YouTube videos cited:
Digital Oscilloscope Acupuncture and PyraLight Pad Experiments 1:
https://youtu.be/N2oSVYUlCfc

Digital Oscilloscope Acupuncture and PyraLight Pad Experiments 2:
https://youtu.be/-YVYTnvcoXo

Cell Voltage and pH - PyraLight Effects

The body works as an electrical system. Muscles are piezoelectric, then they contract and release they generate electricity. The connective tissue around the muscle is an insulator, therefore the muscle acts as a battery and holds the voltage. For cells to function, the voltage at the cell membrane measured from ground needs to be -25mV which is pH 7.45. Cells need the nutrients and proteins (mostly recycled from the previous cells) as well as a voltage of -50mV (pH 7.9) to be able to replace themselves.



PyraLight Induced Internal Voltage Effect

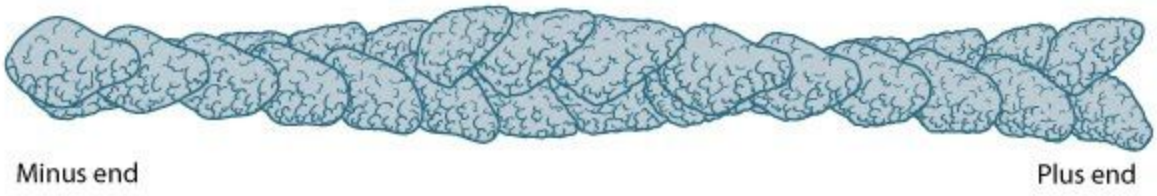
Semiconductors in the Connective Tissue

The cytoskeleton inside each cell is made of densely packed actin fibrils or strands. These are liquid crystals, due to their repeated molecular structure. Liquid crystals are present throughout the body.

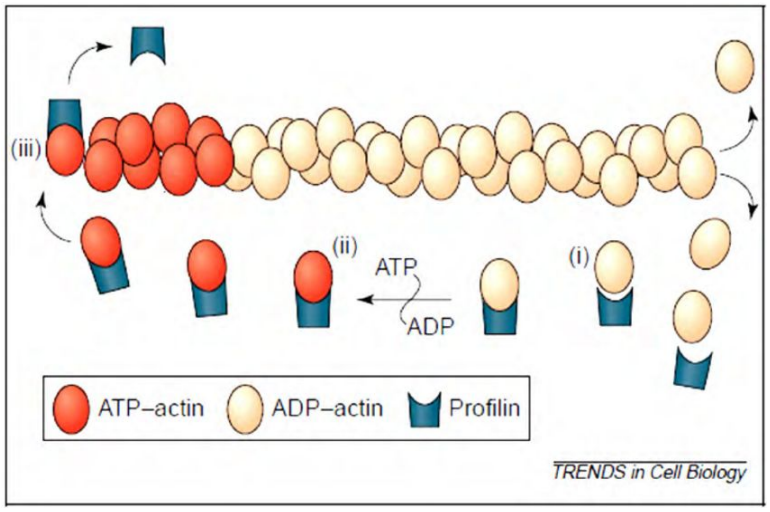
From https://www.nature.com/nphys/journal/v3/n5/full/nphys567.html:

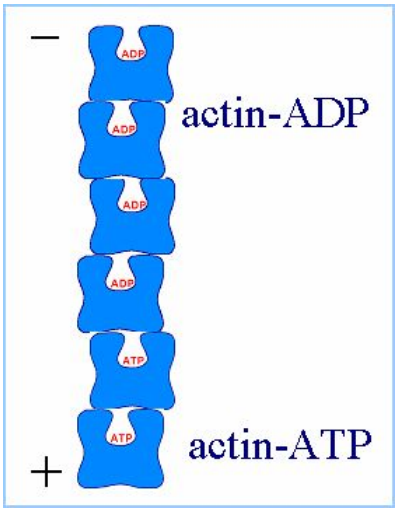
Crosslinked actin networks show liquid crystal elastomer behaviour, including soft-mode elasticity

Actin filament networks with protein crosslinks of distinct length and flexibility resemble liquid crystal elastomers.



Actin Filament





The images show the charge developed along the actin molecule as ATP and ADP from Krebs cycle in the mitochondria are at opposite ends of the molecule. This charge separation is analogous to the charge separation in a transistor, with the P (positive) doped are of the silicon substrate being positive relative to the N (negative) doped region.

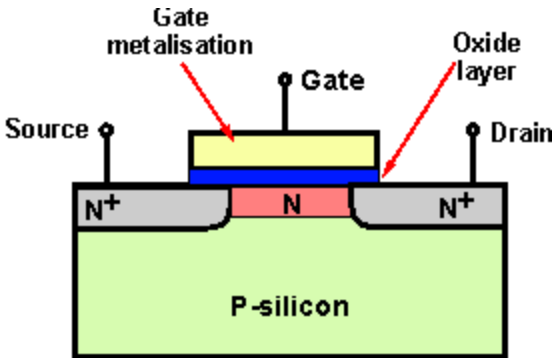
The same actin filaments are outside the cells as well, known as the extracellular matrix. This material is a semiconductor, just like the silicon crystal used to make integrated circuits. The extracellular matrix is a diode, holding the voltage on the muscle batteries. Stacks of muscles crete the voltage which is measured at acupuncture points.Energy in the form of electrical current and biophotons generated in the mitochondria of the cells can flow if the voltage outside the cell is high enough (-25mV to keep the cell alive, and -50mV for regeneration).

In the first set of experiments with the digital oscilloscope acupuncture experiment YouTube video https://youtu.be/N2oSVYUlCfc, it was shown repeatedly and consistently that a voltage was induced from the surface of the skin, 1 cm into the muscle where the needle was inserted. The voltage was doubled if the 650nm IR LEDs were pointed into the body instead of away from it. When the pad was removed from the skin the induced voltage in the muscle dropped to zero at a short distance.

The low voltage, low frequency magnetic torus generated in the special antenna used in the PyraLight pad comes out perpendicularly from the top and bottom of the pad.This explains why the effect of the pad occurs when the pad is lying on top of the user.

After considering the clear switching on and off of the internal voltage potential caused by the PyraLight,I understood this is exactly analogous the switching on and off of a field effect transistor in a semiconductor integrated circuit. Early transistors were bipolar transistors with physical junctions. The characteristics of field effect transistors is far superior (very high impedance at the gate, high current flow possible from source to drain, high switching frequency). Since the early 1980s all integrated circuits have use CMOS transistors, Complementary Metal Oxide Semiconductor field effect transistors.

The behaviour observed with the PyraLight pad and induced voltage in the meridian line inside the skin is, in this hypothesis, exactly analogous to a MOSFET in a CMOS integrated circuit. The pad acts as the gate, and induces a flow of current inside the semiconducting liquid crystal actin fibrils of the connective tissue inside the body where the source and drain line. Turning the pad on induces the voltage inside the body, turns off the voltage induced inside the body. Switching the pad off immediately stops that current flow inside the body.



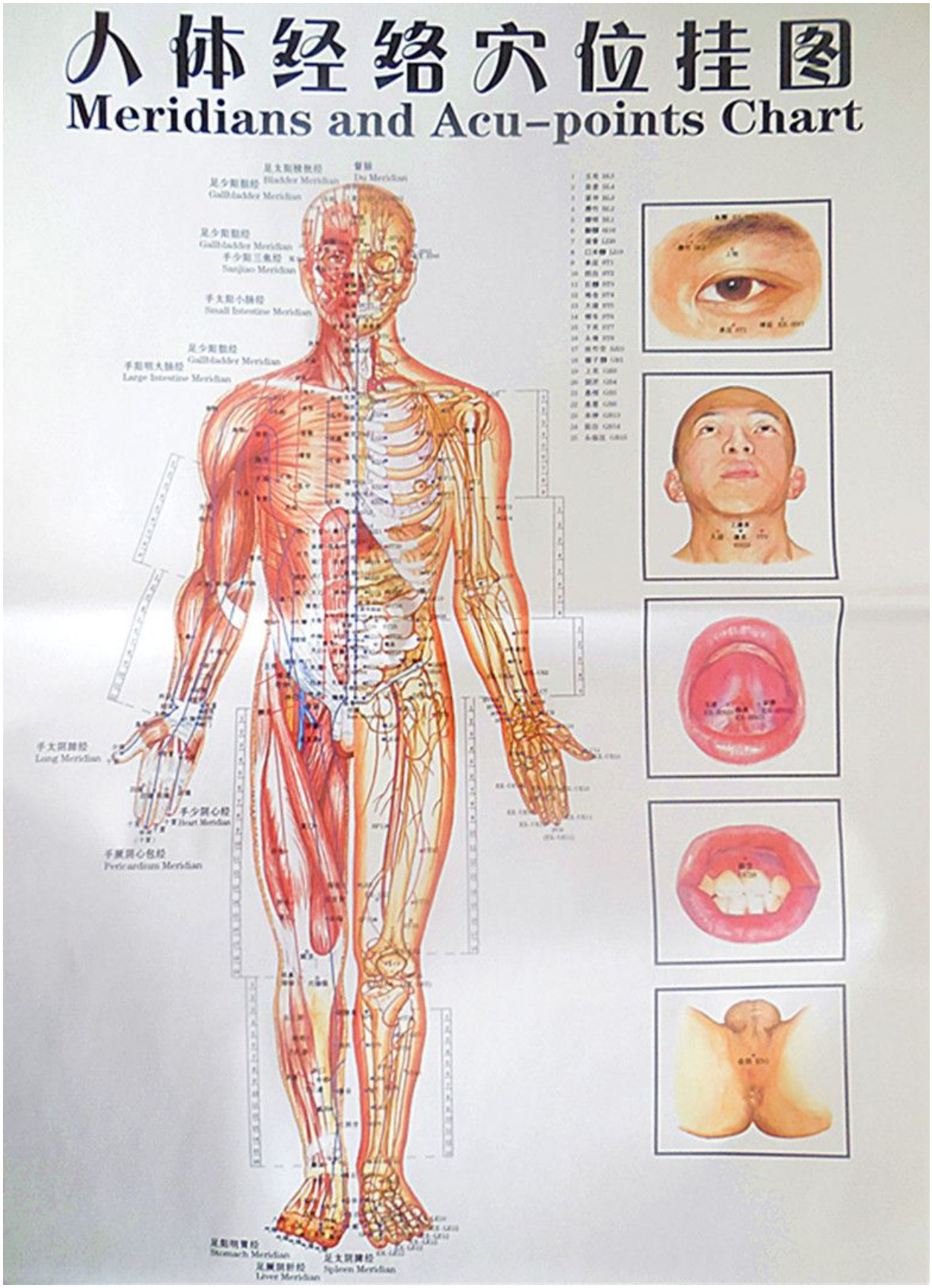
Integrated Circuit MOSFET

Pad is gate, skin is oxide layer, source and drain are in the muscle group

Transistors amplify the voltage on the gate, so a relatively weak voltage on the pad will turn of a larger flow of electricity between the source and drain which are part of the meridian line flowing through the connective tissue around the muscle battery.

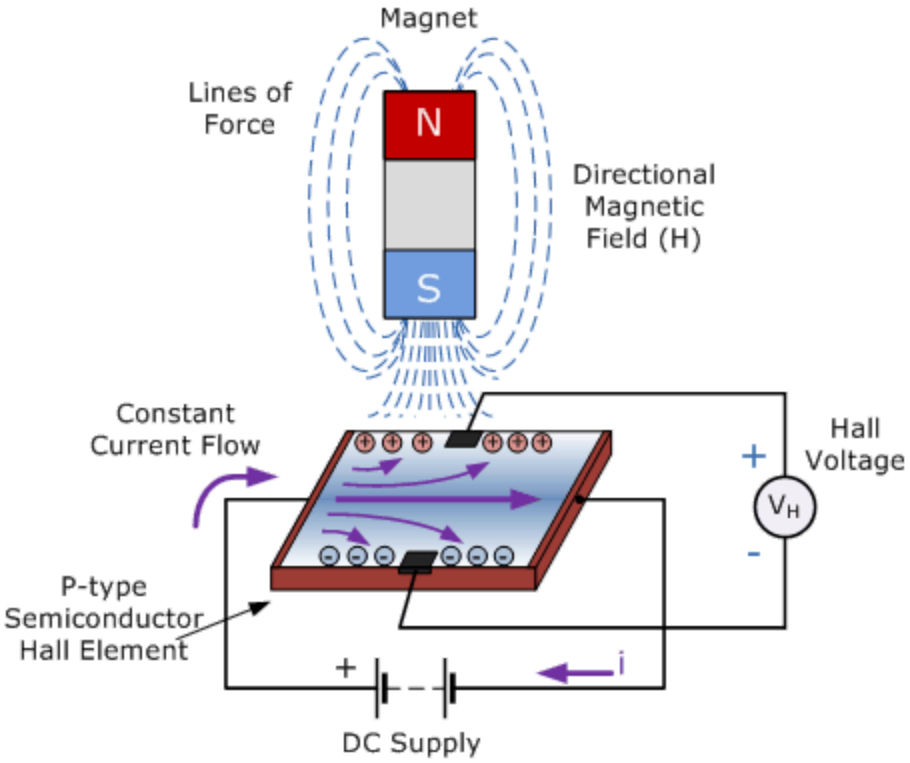
Meridian lines are known to carry electricity through the body. The voltage flows along the semiconducting layers of fascia under the skin. The voltage at each meridian acupuncture point changes depending on the health of the organs associated with the meridian. Applying electrical stimulation at the acupuncture points, with or without the use of acupuncture needles changes the skin resistance at the point. The PyraLight pad does the same thing, as we can observe directly the induced voltage inside the body, but with the PyraLight the induced voltage effect is caused by the magnetic field generated by the pad, and the six IR LEDs in the pad.

The pad covers about 10% of the body area, and so affects many meridian lines simultaneously.


人体经络穴位挂图
Meridians and Acu-points Chart

Magnetic Field Activated Transistors

In silicon based electronics, a sensor of magnetic fields is called a Hall Effect transistor.



From http://www.electronics-tutorials.ws/electromagnetism/hall-effect.html:

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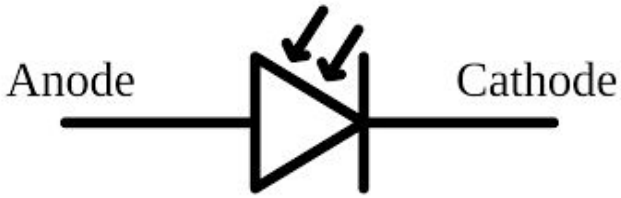
Hall Effect Sensors consist basically of a thin piece of rectangular p-type semiconductor material such as gallium arsenide (GaAs), indium antimonide (InSb) or indium arsenide (InAs) passing a continuous current through itself. When the device is placed within a magnetic field, the magnetic flux lines exert a force on the semiconductor material which deflects the charge carriers, electrons and holes, to either side of the semiconductor slab. This movement of charge carriers is a result of the magnetic force they experience passing through the semiconductor material.

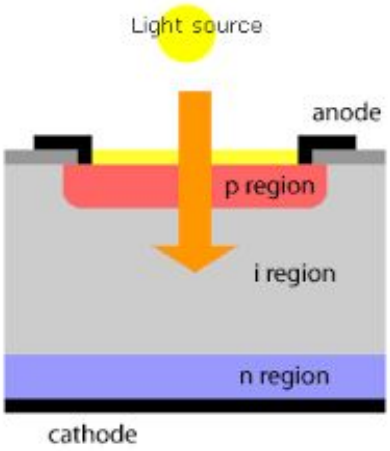
As these electrons and holes move side wards a potential difference is produced between the two sides of the semiconductor material by the build-up of these charge carriers. Then the movement of electrons through the semiconductor material is affected by the presence of an external magnetic field which is at right angles to it and this effect is greater in a flat rectangular shaped material.

Because we know that the actin fibers in the connective tissue are semiconducting liquid crystals, and we have seen on the oscilloscope test that the PyraLight pad's magnetic field is generating a voltage inside the body, the Hall effect explains how the Body Field Effect Transistor is turned on by the toroidal pulsed magnetic field generated by the PyraLight pad.

Light Activated Diodes

The simplest form of semiconductor light sensor is the light activated diode:





The experiment videos show repeatedly that turning the PyraLight pad LEDs to face into the body generated twice the induced voltage of the other side of the pad without LEDs. Therefore, the total induced voltage effect measured by the acupuncture needle inserted 1 cm into the subject's body is equally caused by the light activated liquid crystal actin filaments, as well as the magnetic Hall effect from the pad's pulsed magnetic field.

BFET Experiments- Conclusions

The PyraLight pad,.by integrating the two previously separate systems of PEMF and pulsed InfraRed therapy, has created a synergistic system for self healing. The experimentally observed induced voltage results clearly indicate that the pad is creating a field effect response in the body's internal electrical system, due to both magnetic and light pulsing. It is hypothesised that the internal voltage pathways are identical to the meridian lines.

PyraLight Water Structuring Effect

By asking people to compare the feeling of water before and after being on the pad for 5 minutes or more, over 50 people to date have informally been able to tell that the PyraLight water is softer in texture, which means it is structured.

From the webpage https://www.structuredwaterunit.com/articles/structuredwater

"To help understand the comparison between structured and unstructured water, the Wolfe Clinic website states: "The difference between normal water (a structural conglomerate) and hexagonally-structured water (an organized matrix) is similar to the difference between a piece of quartz and a quartz crystal. Although they are chemically the same (both silicon dioxide), a piece of quartz is structurally random, with an almost opaque appearance. On the other hand, quartz is organized in perfect geometric symmetry and is 'crystal' clear."

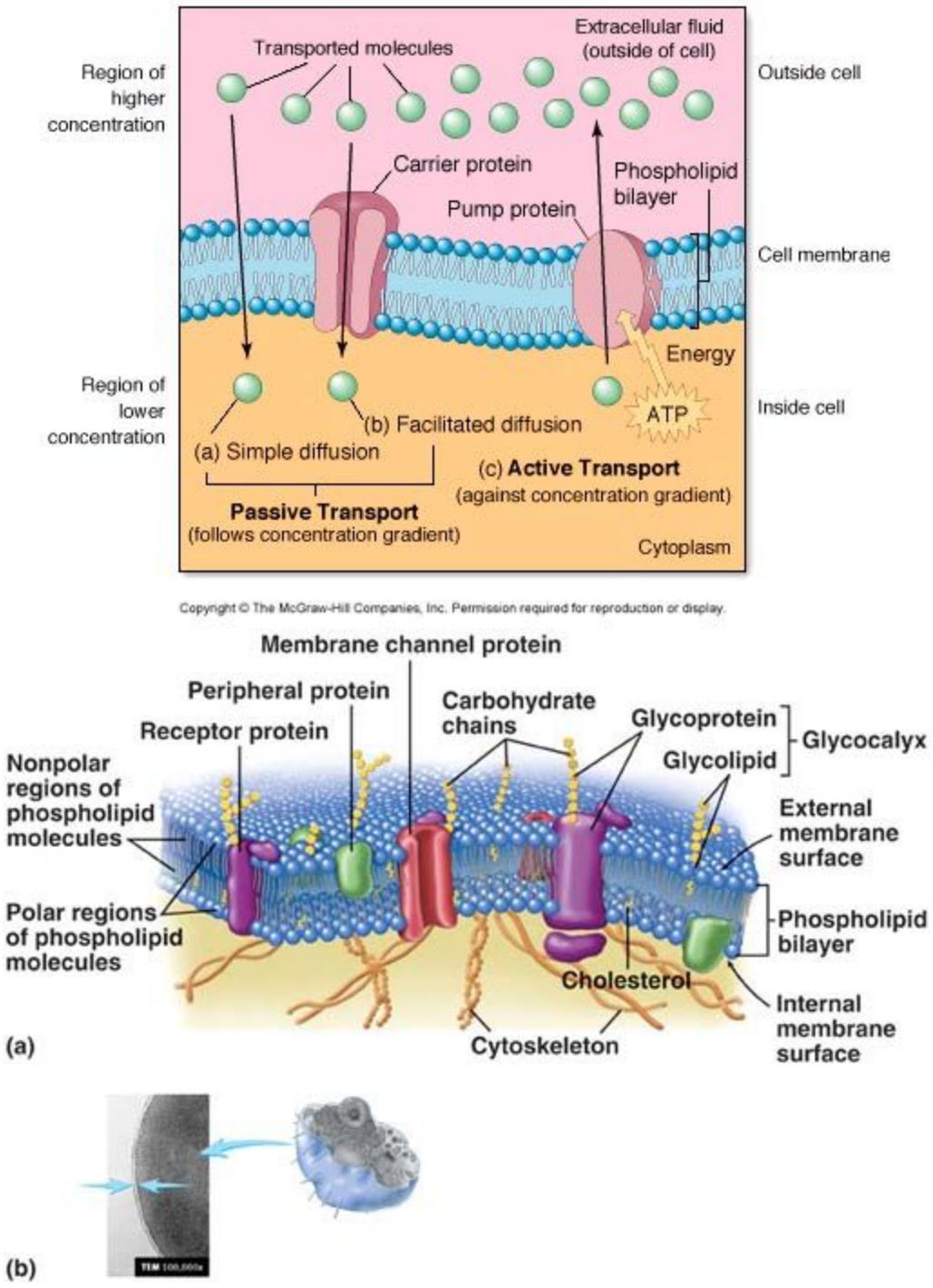
Another name for structured water is "liquid crystalline water". Water's similar communicative properties to quartz, a crystal, make it known as a liquid crystal. Some potential benefits of this type of water are better metabolism, DNA strengthening, more energy and a better ability to hydrate the cells.

The way structured water carries information through its powerful vibrations can make all bodily functions perform at an increased level. Structured water can also bring energy balance to the body. Studies with a GDV machine show that running water through a structuring device like a Natural Action Structured Water Unit will increase the biophotonic energy in water. It is also perfectly balanced with masculine and feminine energy, and gives over this organizational quality to each cell that absorbs it."

In addition, the PyraLight pad consistently raised the pH of water placed on it, up to pH8 after about 10 minutes.

Therefore we can see that one of the effects of the PyraLight Pad is to structure water inside the body, as well as alkalize the body. The body must maintain a pH7.4 for health. Eating a acid forming diet (meat, eggs, milk, grains) lowers this pH, but the PyraLight pad raises the pH to help the body come back into harmony,

Cell membrane



From http://www.anaesthesiamcq.com/FluidBook/fl1_2.php

Aquaporins: Cell Membrane Water Pores

The presence of specific pores (channels) in the cell membrane has long been predicted but the proteins involved in these water channels have only recently been characterised. At present at least 6 different water channel proteins (named aquaporins) have been found in various cell membranes in humans. These aquaporin proteins form complexes that span the membrane and water moves through these channels passively in response to osmotic gradients. These channel proteins are present in highest concentrations in tissues where rapid transmembrane water movement is important (eg in renal tubules).

From http://people.csail.mit.edu/seneff/Entropy/entropy-15-03822.pdf

Recent advances in magnetobiology, nanobiology, and colloid and interface science that point compellingly to the crucial role played by the unique physical properties of quantum coherent nanomolecular clusters of magnetized water in enabling life at the cellular level

Interaction with Electric and Magnetic Fields In this section we survey recent literature relating to the effects of electric and magnetic fields on interfacial water structure and properties. We will also consider evidence pointing to the Ca2+ signaling system as the primary cellular target of magnetic fields, as this has important implications for the uptake of toxic xenobiotics, including interfacial water stressors such as Al3+, into the cell. The available evidence points to differing effects of electric and magnetic fields on water structure. In 2008, Rai et al. reported results of density functional theory calculations indicating that applied electric field “opened up” circular- or ring-type water clusters to form linear, branched, or netlike structures by making the dipolar water monomers align along the field axis. In general, the number of hydrogen bonds in a cluster decreased with an increase in the electric field strength. In 2011, Acosta-Gutierrez et al. performed additional computational studies of the physical properties of small water clusters in low and moderate electric fields. At low electric field strengths, the hydrogen bonds oriented the water permanent dipoles along the field, whereas larger field strengths induced more Entropy 2013, 15 3831 extensive structural reorganization, including hydrogen bond-breaking as the cluster stretched along the field direction, with “the larger clusters (N > 10) usually forming helical structures” [81]. In contrast with the computational studies suggesting that external electric fields break up small water clusters and cause water monomers to line up in the direction of the field, the results of molecular dynamics simulations by Chang and Weng imply that external magnetic fields increase the stability and hydrogen bond strength of supramolecular water clusters while decreasing the self-diffusion of individual water molecules . Moreover, experimental data obtained by Pang et al. on the effects of

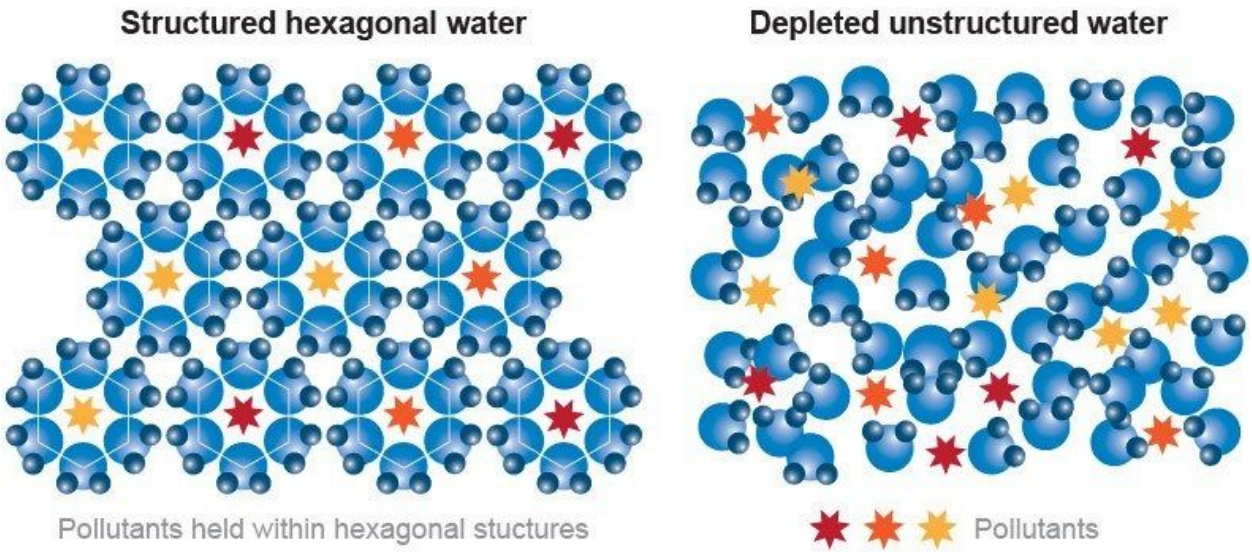
external magnetic fields on water properties support Pang's earlier hypothesis that such fields promote formation of both linear and closed chains of hydrogen-bonded water molecules. Applying magnetic fields ranging from 2000 to 4400 G (0.20–0.44 T), Pang and Deng found that the infrared and ultraviolet absorptions, Raman scattering and X-ray diffraction of magnetized water were greatly changed relative to those of unexposed water: infrared (IR) peak strengths increased, frequencies of some peaks shifted, and some new peaks occurred after water was magnetized. Significant hysteresis effects were observed in the IR absorption spectrum of magnetized water as temperature was increased and then decreased over the range of 25 °C to 70 °C. Importantly, magnetized water displayed a lower contact angle (lower hydrophobicity, or increased ability to solvate hydrophobic surfaces) than non-magnetized water with copper, graphite, and muscovite surfaces. For each surface, the contact angle difference between magnetized and unmagnetized water was small, on the order of 0.4 to 1.4, but still outside the range of experimental error of the instrument. External magnetic fields increased the refractive index, dielectric constant, and electrical conductivity of water while decreasing its viscosity. The longer the magnetization time, the more the viscosity of the magnetized water decreased, until a minimum was reached. As noted above, the results of these experimental studies of magnetic field effects on water properties [83–86] are consistent with Pang's earlier proposal that exposure of water to a magnetic field facilitates formation of linear and closed hydrogen-bonded water clusters, the latter of which can become ring electric-current or "molecular electric-current" elements with magnetism due to their proton conductivity under the action of the Lorentz force. This enables magnetic interactions of these "molecular electric-current" elements with each other or with the externally applied magnetic field to change the distribution and features of water molecules and the "magnetization of water"

I have run tests to show that water becomes structured on the PyraLight in 5 minutes or more. Not only is it easy identified subjectively by many testers, but the pH of the water rises from 7 (or 6.5 for low quality bottled water) to pH 8 in this time.

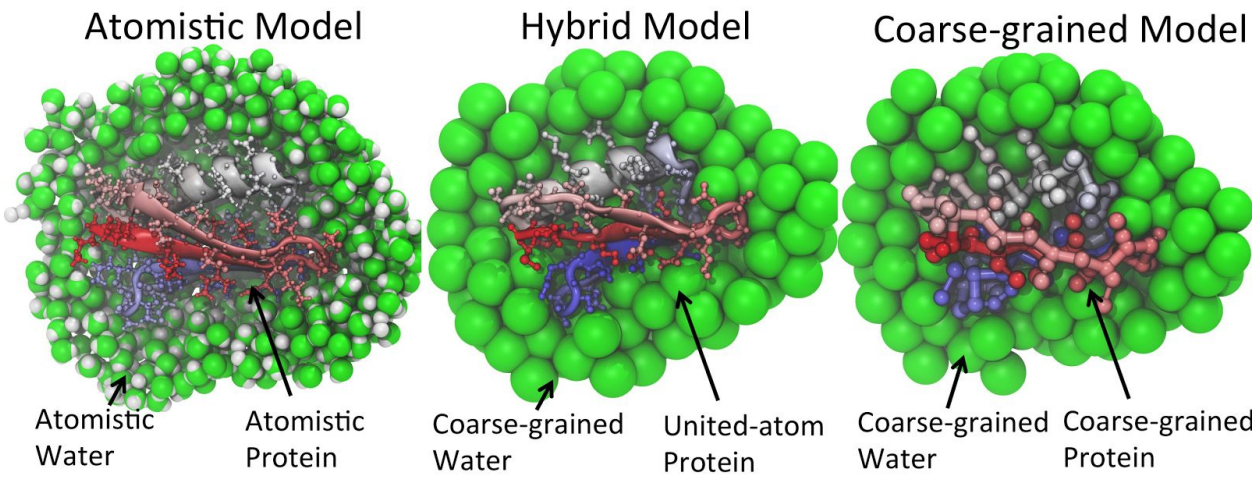
Many people believe that drinking alkaline water will alkalize the cellular environment, but clearly that is absurd. Water passes through the stomach which is in the range of pH 1.5 to 3, This strong stomach acid reduces the pH of alkalized water to that same acid pH range 1.5 to 3 before passing to the small intestine and colon, where water is absorbed into the body.

Therefore it is not possible to alkalize the cellular environment through drinking alkaline water. Eating a plant based diet,which is dairy, meat, sugar and grain free does create an alkali environment as these effects are internal to cells, occurring after absorption .of nutrients after they have left the acid environment of the stomach.

The PyraLight pad structures and alkalizes all the water in its locality. I know that the range is at least 6m for structuring water in a few hours. Therefore by placing the pad under your pillow overnight, or on top of your body, alkalizes the water in the cell environment as well as structuring water. So the cells are able to absorb water around them as well as having a pH of about 8, which is the -50mV voltage difference to ground needed for cells to replace themselves.If the pad is used longer than a few minutes, then the voltage at the cells is higher. This is one of the reasons that using the pad under the pillow overnight, every day for weeks or months, is so effective in helping people with long term chronic conditions such as poor sleep quality, frequent nocturnal urination, back pain or diabetes.



Proteins are held together by water molecules which surround them. Without the water and its electrical and magnetic “glue” the proteins would fall apart. The electrical properties of the water around the proteins is affected by the structure of the water surrounding each protein molecule. Therefore the PyraLight pad, by structuring water inside the body, optimises the electrical properties of the proteins, and therefore their harmonious operation in conducting electricity.


Atomistic Model
Hybrid Model
Coarse-grained Model
Atomistic Water
Atomistic Protein
Coarse-grained Water
United-atom Protein
Coarse-grained Water
Coarse-grained Protein