

New information: the emerging science of water

Can digital information imprinted onto water change biology and improve health? As we enter a new decade, **NIKI GRATRIX** explores what may be a coming revolution in the use of water as a healing medium.

Our bodies are over 99% water, making it an essential nutrient, and over 70% of the Earth's surface is covered in water. The ubiquitous nature of water has led most of us to think there are no more mysteries to unravel, but nothing could be further from the truth.

The idea that science has discovered everything there is to know about water is a myth.

For example, there are at least 72 anomalous properties of water, as detailed by the English physical chemist Martin Chaplin.(1)

Since the beginning of the millennium, probably the most important contribution to the emerging science of water has been made by Gerald ("Jerry") Pollack, professor of bioengineering at the University of Washington. He gained fame in the 1990s as a researcher of the mechanisms of muscle contraction. He was published in the leading scientific journals such as *Science* and *Nature*, then wrote several books on the mechanisms of cell function, including

Cells, Gels and the Engines of Life: A New Unifying Approach to Cell Function (2001).

The book was intensely reviewed in many scientific journals including *Science*, *Nature*, *Cell*, *Immunology* and others. In 2003 the book won the top prize (Best in Show) by the Society for Technical Communication. The message in the book was so deeply substantiated and convincing, that some of the reviewers of the book characterised it as a "305-page preface to the future of cell biology".

Pollack's main hypothesis is that water is central to all cellular function – including how cells communicate, transport, contract, divide and even how they are powered. And Pollack argued that a fourth "phase" of water is crucial to explaining how water impacts biology.

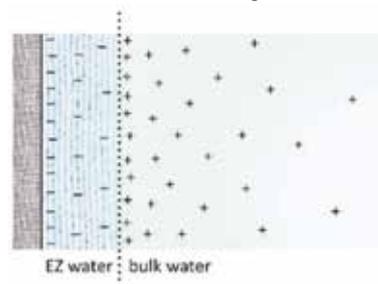
Most of us understand water has three phases: liquid, solid (ice) and vapour (steam). This new fourth phase, called "structured water" is a type of crystalline or gel-like form and turns out to be essential for our health and a major fuel source for the body, according to Pollack.

Yet very few people understand this new science of water – water as energy for life.

Structured Water: Exclusion Zone (EZ) Water – how it works

When you place water into or next to hydrophilic (water-loving) substances like cell membranes, it spreads out (rather than "beading" up like you would see water on a Teflon-coated pan for example). In spreading out it creates "structured water", which means the water splits into positive and negative charges. H₂O becomes H⁺ and OH⁻.

The section which is negatively charged is called EZ water – or "fourth phase" structured



Phases of Water



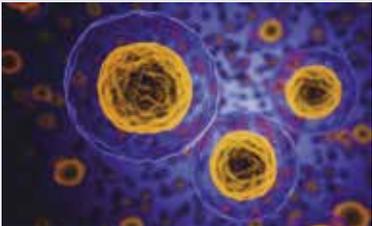
Phase 1. SOLID (Ice)



Phase 2. LIQUID (known as "bulk water")



Phase 3. VAPOUR (Steam)



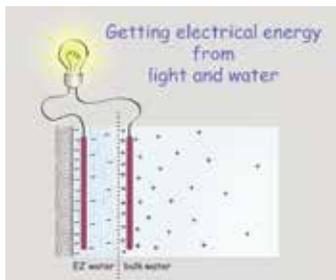
Phase 4: The new kind: Structured or "EZ" water

water. This exclusion zone excludes all solutes. EZ water which appears between the hydrophilic material and + charged water is not H₂O anymore, it is actually H₃O₂. It pushes out all particles and solutes.

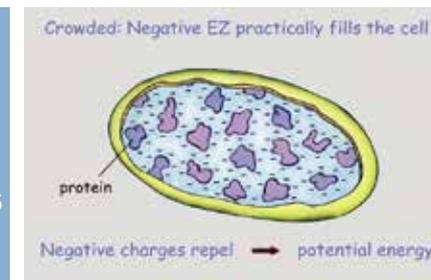
This charge separation is like a battery, and is also similar to the first step of photosynthesis in plants. The positive and negative charges create potential energy: a "battery" of water.

How does the water get "charged" and expand the EZ zone?

Pollack discovered that light increases EZ water by accident – his research student shined light on



Human cells are LIGHT DRIVEN BATTERIES



the EZ just for fun under a microscope and saw, amazingly, that the EZ zone expanded.

They experimented with different wavelengths of light and found that infrared light was by far the most effective. Infrared light is in sunlight and heat – it is everywhere. Therefore, it is a type of free energy (see below).

Remarkably, Pollack believes humans are "charged" by light and that it is a major source of energy (besides food) that is driving biology.(2)

EZ water induces "flow"

Have you noticed how water moves up a drinking straw placed in water without you doing anything? EZ water may explain the self-movement or flow of liquids in narrow tubes – this includes the movement of blood through capillaries. It is the same with the way sap can move up to the tips of very tall trees.

This also means that our heart is not working alone to pump blood through your entire system. Structured water is also driving the flow. When you have high levels of EZ water you have energy, your circulation is better and cells have more energy and oxygen.

Does water have a memory?

How is EZ water linked to the concept of water memory? Again, there is robust evidence for the likelihood that EZ water can store information. Pollack says:

"People have questioned the idea of water memory, for good reason. The good reason is that the studies have shown that in H₂O [bulk water] the molecules are moving around at a very high rate – at a femtosecond rate. So any molecules that are randomly organised and moving around so quickly, it's hard to imagine it can store any information whatsoever.

"But now we've discovered the EZ water that has a crystal-like structure, it's sort of like computer memory. Computer memory is basically silicon dioxide atoms arranged in a regular three-dimensional array, EZ water is similar to that. So there's a possibility the same principle that's used in computer arrays could be used here, so the possibility exists that EZ water can store information.

"When we first started working with water, the idea of information and water seemed weird and strange and maybe possible, but now with each passing year and seeing clear experimental evidence that it can exist, it has changed my view a lot."

As a kind of proof of concept, the properties of magnetised water are well-known, documented and have practical applications. Magnetised water reduces the build-up of deposits of hard water and lime scale in pipes and technical installations.

Most importantly, the effects of magnetising water last long after the magnet field disappears – hours and days.

One reason much of the ongoing research behind water memory is unknown is because it is happening in Russia.

Many of these studies are covered and discussed in the book *The Emerging Science of Water* by Prof Vladimir Voeikov, Faculty of Biology, Lomonosov Moscow State University, and Prof Konstantin Korotkov, from the Department of St Petersburg State University of Information Technologies, Mechanics and Optics.

Studies listed and referenced in major journals show for example: exposure of flatworms to a combined magnetic field increased the intensity of their motor activity. We shouldn't be surprised by this – there are thousands of papers on PubMed confirming the impact of, for example, pulsed electromagnetic fields on biology.(3)

The key point in this paper is that water treated with a magnetic field transferred this effect to untreated planarians.(4)

In humans, the use of magnetic water in an oral irrigator for three months resulted in 64% reduction in dental calculus (tartar) (5).

A permanent magnet installed on a pipe through which flowed water for chicken feed had a significant effects on chicks. After a month, 50 chicks in the experimental group showed an increase in weight by 200g compared with those in the control group.(6)

Magnetised water has a significant effect on seed growth and germination, one study showing a statistically significant increase in seed germination of rice, beans and tomatoes.(7)

Carefully controlled experiments in Australia showed that magnetic water has a stimulating effect on certain kinds of plants and not others – the effect strongly being impacted by the type of water being used.(8) Many more studies on magnetic water are available.(9)

The authors of the *Emerging Science of Water* say: "If electromagnetic effects can really influence the degree of water structuring, they obviously can influence our health, because we consist of over 70% water. Biological effects of electromagnetic waves of Super High Frequency and Extremely High Frequency bands, which are very popular in Russian medicine...prove the effectiveness of the influence of generated fields upon water systems".

There are plenty of studies confirming that the structure of water influences both the shape and function of proteins and DNA.

In a 2016 paper in the *Proceedings of the*

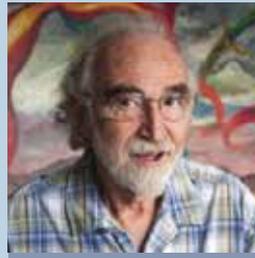
“Discovery of the century”

Dr Jerry Pollack is actively researching in his lab at the University of Washington in Seattle, as well as driving funding for truly innovative science. He says:

“The overriding philosophy of the laboratory is that science is essentially simple. Although intricacy is undeniable, the foundational principles are ultimately simple, and if a mechanism appears complicated – if you find it difficult to understand – then it is probably not because you are inept, but that the foundational ‘principle’ on which it is based may itself not be correct. Sound mechanisms rarely rest on shaky foundations.

“Our work has been oriented toward uncovering those fundamental principles.

We target areas in which understanding seems too complex to be valid, and penetrate – or at least we try to penetrate – toward the core of truth. Often the ideas that come out of these excursions are controversial, as they inevitably upset the status quo, sometimes at its very core. Hence, the reactions range from non-printable expletives at one extreme, to enthusiastic comments such as a recent one from a well-known physicist about our findings on water: “the most significant scientific discovery of this century”.



Dr Jerry Pollack: “Science is essentially simple”.

So how do you increase EZ water in your body?

- Drinking water – this is the raw material/building block for EZ, ie stay hydrated.
- Green vegetable juices (from plants that photosynthesise): water in plants is EZ water!
- Infrared sauna, infrared light and infrared heat lamps light are powerful EZ builders.
- Turmeric – Pollack has found this can increase EZ water.
- Coconut water – also found by Pollack’s team to increase EZ water.
- Grounding – connecting to the ground.
- Sunlight – builds EZ.
- Two expert Russian scientists who wrote *The Emerging Science of Water* book discussed here, use a filter to structure their drinking water similar to those found at: <https://www.greenfieldnaturals.com>.

→ *National Academy of Sciences* observing ultrafast water-protein interactions, Dr Zhong from the Department of Physics, Chemistry and Biochemistry at Ohio State University stated: “Here, we’ve show the final shape of a protein depends on two things: water and the amino acids themselves. We can now say that, on ultrafast timescales, the protein surface fluctuations are controlled by water fluctuations. Water molecules work like a big network to drive the movement of proteins.” (10)

Similarly, German researchers from the Biophysics Division at the Institute of Radiochemistry in Dresden, Germany, discovered that the structure of water impacts the shape of DNA.(11) Oscillations of the water bonds in the hydration shell of the double helix can be excited by infrared light. The higher the frequency of the oscillation, the looser the hydrogen bond. This, in turn, changes the geometry of the DNA strand: The backbone of the double helix, which consists of sugar and phosphate groups, bends slightly.

“The precise DNA structure depends on the specific amount of water surrounding the molecule”, summarizes lead author Prof Karim Fahmy.

Femtobiology, water and quantum coherence

Dr Ahmed Zaweil was the first Egyptian to win a science Nobel Prize – for his work developing ultra-fast laser technology at Caltech. Ultra-fast lasers led to the development of new fields of science including femtochemistry and femtobiology. These are sciences studying biochemical reactions at the speed of femtoseconds (one quadrillionth of a second). (12) Highly important biological reactions occurring at the speed of femtoseconds include:

- Protein and DNA folding and unfolding
- Hydration
- Electron transfer
- Molecular recognition
- Enzyme catalysts

Chemical reactions at this speed and size can be governed by fields, according to what we have learned from quantum physics. Remember, in the “weird” and wonderful realm of quantum physics, particles appear

not just as discrete particles, but also as waves.

With 99% of all molecules in the human body being water molecules, the role of structured water in all these reactions may be crucial.

Italian theoretical physicist Emilio Del Giudice pioneered string theory in the early 1970s. Later, he became known for his work with Giuliano Preparata at the Italian Institute for Nuclear Physics (INFN). He is best known for pioneering the quantum field theory of condensed soft matter, especially water. Del Giudice and colleagues suggest that EZ water studied by Pollack is in fact a giant “coherence domain”.(13)

Quantum coherence can be visualised when considering laser light. In laser light, all the waves of photons are exactly lined up, peak to peak, trough to trough, creating a precise alignment. This alignment on a photonic (sub-atomic) level produces quantum coherence.

In a similar way, in structured water, hydrogen and oxygen molecules align themselves precisely; and as mentioned above, these molecules in the gel-like exclusion zone are also able to take on a quantum coherent relationship. It is this coherence that allows both lasers and structured water to store and transmit information.

When water is combined with energy from infrared light (per Pollack’s discovery), it is able to mechanically move amino acids to create proteins, from the genetic blueprint, and affect all kinds of reactions occurring at super-fast timescales in our bodies.

Water can both provide direction (information) to biochemical processes and energy to do the biochemical work.

Benveniste and the memory of water

Can the informational signal of a molecule, drug, plant or other substance be imprinted onto water, and used to create biological change?

Perhaps the most famous study in water memory research is that of Dr Jacques Benveniste (935-2004), who was one of the world’s best-known immunologists and former head of INSERM, France’s national institute of health and medical research. (15) His study testing the biological effect of homeopathic

→ remedies was published in 1988 in one of the world's leading scientific journals, *Nature*.

Benveniste experimented on basophils. These white blood cells “degranulate” and release their antimicrobial molecules in response to antibodies. Benveniste diluted the antibody IgE until it contained no physical antibody – but the water containing the “frequency” or information alone caused the physical basophil cell to respond and degranulate, just like it would in response to a physical antibody.

Although Benveniste's findings were rejected and his reputation ruined, as Prof Pollack points out: “This experiment has now been repeated by many people and confirmed. So there is no doubt about the authenticity of the result”.

Just a few other examples in a 2015 paper in *Homeopathy* included:

- The informational signal of acetylcholine and histamine increased coronary flow in guinea-pig hearts.
- The informational signal of the molecule phorbol-myristate acetate causes human neutrophils to produce reactive oxygen species.
- The informational signal of a direct thrombin inhibitor delayed blood coagulation. (16)

A Nobel Prize winner “teleports” DNA

Dr Luc Montagnier, the 2008 Nobel Prize winner for co-discovering the HIV virus, showed in a paper published in 2015 that he could imprint the electromagnetic frequency of DNA onto water. (17)

Like Benveniste's work, this was not well received in the scientific community, nor by his Nobel colleagues, perhaps because he not only claimed to have regenerated DNA from its “quantum imprint”, but had “teleported” the signal (saved as a sound file) from Paris to colleagues in Italy – via email.

The experiment: DNA from an HIV patient is placed in a tube of water. It is diluted until no physical DNA is present. Only the very low frequency signal remains in the water. This frequency is recorded by a microphone coil and saved as a six-second .WAV file in Paris. The file is emailed to colleagues in Italy. The Italian team emits the EMS signal in the .WAV file for one hour on a sample of distilled water in a sealed metal tube. The distilled water is then placed in a polymerase chain reaction (PCR) machine, which then produces DNA 98% identical to the original DNA in Paris.

This is an astounding experiment – by a Nobel Prize winner – which confirms that DNA has an electromagnetic field or signal, AND that water can store that signal.

Russians may have been first

Russian researchers had discovered findings similar to Benveniste's 60 years before (19), and hundreds of these types of studies can be found through the *International Journal of High Dilution Research*. (20)

Hasn't research on homeopathy debunked the memory of water?

Dr Ted Kaptchuk and his team at Harvard published a positive review study in 2016 in the *American Journal of Public Health* noting that studies of homeopathy “...suggest potential public health benefits such as reductions in unnecessary antibiotic usage, reductions in costs to treat certain respiratory diseases, improvements in peri-menopausal depression, improved health outcomes in chronically ill individuals, and control of a Leptospirosis epidemic in Cuba”. (21)

Other large studies have been less positive. A meta study by the National Health and Medical Research Council of Australia in 2015 reviewed 57 systematic reviews (on 68 conditions), which contained 176 individual studies, and found no discernible convincing effects beyond placebo. (23)

Homeopathy was created by Samuel Hahnemann (1755-1843). Given the research on structured water and water memory, of course he was on to something. Hahnemann created homeopathy based on the idea that “like cures like”. Substances which cause similar symptoms to the disease, will cure the person. For example, in 1789, Hahnemann used bark from the Peruvian cinchona tree to create a fever similar to the fever of malaria, in order to cure malaria. This indirect method for creating a healing response, sometimes by giving the informational signature of a toxin, may be an unnecessary limitation. Why not, for example, see if the digital imprint of a drug can be imprinted on water, conferring the benefits without side-effects? Or what if the informational signature of a healthy organ can be imprinted onto water and positively affect biology?

Researchers from Mexico found the informational signal of metronidazole (an anti-parasite drug) imprinted onto water inhibited the growth of two parasites on *Entamoeba histolytica* and *Trichomonas vaginalis* (published in *Experimental Parasitology* in 2011). (25) The same researchers found that informational signal of the anti-fungal drug Amphotericin B imprinted on to water inhibited the growth of *Candida albicans*. (26)

The informational signal of the antibiotic drug vancomycin imprinted onto water inhibited the growth of resistant *Staphylococcus aureus* bacteria. (27) Other

“The quantum coherence of water is really what makes life possible”.

– Dr Mae-Wan Ho, PhD, (14)

researchers found that the informational signal of ampicillin (a penicillin-like antibiotic) imprinted onto water inhibited the growth of *E. Coli*. (28) The informational signals of antiviral and immunostimulant drug arbidol and the immunosuppressant drug dexamethasone imprinted onto water respectively stimulated or inhibited the immune systems in mice. (29)

This research suggests that we will soon move on from pharmaceuticals and nutraceuticals to “infoceuticals” as the next evolution in medicine.

An informational copy of the human body

If all chemical, bioactive and living substances have an “informational copy”, this implies that of course our human bodies have an “informational copy” as well. Researchers are seeing if they can identify the informational signal from healthy meridians, organs and bodily systems, imprinting this onto water for ingestion and health improvement. The late professor of acupuncture Peter Fraser and his business partner at NESHealth Harry Massey detailed this research in their book *Decoding the Human Body-Field: The New Science of Information as Medicine* (2008). IHCAN

• References online at www.ihcan-mag.com/references.

About the author



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Energy Expert” (www.nikigratrix.com). Niki served as the Deputy Chair from April 2012 to April 2013 of the British Association for Applied Nutrition and Nutritional Therapy (BANT). In 2005 she co-founded one of the largest mind-body clinics in integrative medicine in the UK. In 2009 the clinic won the CAM Award for Outstanding Practice. The results with patients at the clinic were later published as a preliminary study in 2012 in the *British Medical Journal Open*. She was a contributing editor for CAM magazine (now IHCAN). She has trained with Dr Deitrich Klinghardt in his 5 Levels of Healing Model, and uses it alongside Ken Wilber's Integral Theory approach in her coaching model. Niki is also a graduate of Mastery University, the set of training seminars on health, wealth and relationships run by Tony Robbins. She is currently a member of the National Association of Nutritional Professionals in the USA (www.nanp.org).

• www.NESHealth.com.