

How might homeopathy work?

New research suggests that water may be an information 'superhighway' and a tape recorder of molecular signalling

Many scientists debunk the idea of homeopathy because it doesn't seem to conform to the natural laws of science. If solutions with active substances are diluted to the point where there's virtually none of the original substance left, as they are with homeopathy, the only way such a medicine could work, so the argument goes, is if there's both a special quality to water and an ability by molecules to leave behind essential 'information' as a 'memory'. Now, increasingly, scientists believe that both these requirements may be true.

In all aspects of life, molecules must speak to each other. When you're excited, your adrenals pump out more adrenaline, which tells specific receptors to get your heart beating faster. The usual theory—called the Quantitative Structure–Activity Relationship (QSAR)—is that two molecules that match each other structurally exchange specific (chemical) information, an energy transfer that happens when they bump into each other. It's rather like a key finding its own keyhole (which is why this theory is often also called the key–keyhole or lock-and-key interaction model).

Biologists still adhere to the mechanistic notions of Descartes that there can only be reaction through contact involving some sort of impulsive force. Although they accept gravity, they reject any other notions of action at a distance. If these contacts are due to chance, there's very little statistical hope of their happening, considering the universe of the cell.

In the average cell, which contains one molecule of protein for every 10,000

molecules of water, the proteins jostle around in the cell like a handful of tennis balls floating about in a swimming pool. The central problem with the current theory is that it's too dependent upon chance and also requires a good deal of time waiting for that collision to occur.

It can't begin to account for the speed of biological processes triggered by anger, joy, sadness or fear. The late French biologist Jacques Benveniste carried out countless studies decisively demonstrating that cells don't rely on the happenstance of collision, but on electromagnetic wave signalling at low frequencies (less than 20 kHz). The electromagnetic frequencies that Benveniste studied correspond to the audio range, even though they don't emit noise that we can detect.

According to Benveniste's theory, two molecules can be attuned to each other even over long distances and so resonate at the same frequency. These two resonating molecules then create another frequency

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that, in turn, resonates with the next molecule or group of molecules in the next stage of the biological reaction. This would explain, in Benveniste's view, why tiny changes in a molecule—the switching of a peptide, say—can have a radical effect on what that molecule actually does.

This idea is not so farfetched considering what we already know about how molecules vibrate. Both specific molecules and intermolecular bonds emit specific frequencies, which can be detected billions of light years away by the most sensitive of modern telescopes. Yet, although such frequencies have long been accepted by physicists, few have paused to consider whether they actually have some purpose.

Although other scientists have conducted extensive experimentation on electromagnetic frequencies in living things, Benveniste's contribution was to show that molecules and atoms have their own unique frequencies by using modern technology to record those frequencies and then using the recordings to accomplish cellular communication.

In extensive tests carried out in the early 1990s, Benveniste demonstrated that he could transfer specific molecular signals simply by using an amplifier and electromagnetic coils. Over thousands of experiments, Benveniste recorded the activity of the molecule on a computer and replayed the recording to a biological system sensitive to that molecule. In every instance the biological system was fooled into thinking it was interacting with the molecule itself and acted accordingly, initiating a biological chain reaction just as it would have in the presence of the actual molecule.¹

Despite the virtually universal derision of Jacques Benveniste's results by the scientific and medical Establishment, reputable research slowly began to appear elsewhere. In 1992, the Federation of American Societies for Experimental Biology (FASEB) held a symposium, organized by the International Society for Bioelectricity, to examine the interactions of electromagnetic fields in biological systems.² Numerous other scientists have also replicated the high-dilution experiments,³ while others have endorsed and successfully repeated tests using digitized information for molecular communication.² Professor Madelene Ennis of Queen's University in Belfast joined a large pan-European research team with hopes of showing, once and for all, that homeopathy and water memory were utter nonsense. Her

consortium of four independent laboratories in Italy, France, Belgium and Holland, led by Professor M. Roberfroid of the Catholic University of Louvain in Brussels, carried out a variation of Benveniste's original experiments. The experiment was impeccable. None of the researchers knew which was the homeopathic solution and which was pure water. All the solutions had even been prepared by labs that had nothing further to do with the trial. The results were coded, decoded and tabulated by an independent researcher who also had no connection to the study. In the end, three of the four labs found statistically significant results with the homeopathic preparations.

Professor Ennis still didn't believe these results and put them down to human error. To eliminate the possible vagaries of humans, she applied an automated counting protocol to the figures she had. Yet even the automated results arrived at the same conclusion.

High dilutions of the active ingredient worked regardless of whether the active ingredient was actually present or the water was so diluted that none of the original substance apparently remained. Ennis was forced to concede: "The results compel me to suspend my disbelief and to start searching for rational explanations for our findings."¹²

The mystery of water

What is the role of water in all this? Water is among the most mysterious of substances because it's a compound made up of two gases (hydrogen and oxygen), yet is liquid at normal temperatures and pressures. Two Italian physicists at the Milan National Institute of Nuclear Research, the late Giuliano Preparata and his colleague Emilio Del Giudice, demonstrated mathematically that, when closely packed together, atoms and molecules exhibit collective behaviours and form what they termed 'coherent domains'. They were particularly interested in this phenomenon as observed in water, and published a paper demonstrating that water molecules create coherent domains much as a laser does.¹³

Light is normally composed of photons of many different wavelengths, like colours in a rainbow, but photons in a laser have a high degree of 'coherence', rather like a giant single wave of just one intense colour.

As Del Giudice and Preparata theorized, and other scientists went on to investigate, single wavelengths of water molecules appear to become 'informed' in the presence of other molecules—that is, they tend to polarize

Benveniste's radical ideas are being vindicated by the work of French scientist and Nobel Laureate Luc Montagnier, who concluded that 'High dilutions of something are not nothing. They are water structures which mimic the original molecules'

around any charged molecule—storing and carrying its frequency so it can be read at a distance.¹⁴ This suggests that water can act like a tape recorder, retaining and carrying information whether the original molecule is still there or not.

So vital may water be to the transmission of energy and information that Benveniste's own studies actually demonstrated that molecular signals cannot be transmitted in the body unless it's done through the medium of water,¹⁵ and rigorous shaking (succussion) of the containers, as done in homeopathy, may serve to speed up the process. In Japan, physicist Kunio Yasue of the Research Institute for Informatics and Science, Notre Dame Seishin University in Okayama, Japan, also found that water molecules have the ability to organize discordant energy into coherent photons—a process known as 'superradiance'.¹⁶

Benveniste found that water seems to 'memorize' the unique signature frequencies of molecules. In his studies, when water was exposed to a chemical, then diluted to the point that none of the original molecules remain, the water sample could still be used in place of the chemical to trigger a reaction.

In one study, Benveniste took a test tube of blood plasma and added water exposed to the 'sound' of heparin—an anticoagulant drug that prevents blood from clotting—transmitted via its digitized signature electromagnetic frequency.

This signature frequency worked as though the molecules of heparin itself were there: in its presence, blood was more reluctant than usual to coagulate.

This means that water, as the natural medium of all cells, may be acting as the essential carrier of a molecule's signature frequency in all biological processes, and that

water molecules organize themselves into a pattern on which wave information can be imprinted. Water appears to not only send the signal, but also amplify it.

More recently, another group of Italian scientists, including Claudio Cardella of the Sapienza University of Rome and Laura de Magistris of the Second University of Naples, carried out three years of research that confirmed Preparata's and Del Giudice's findings that certain electronic resonance signals can create permanent changes in the physicochemical properties of water.¹⁷

Benveniste's radical ideas are also being vindicated by the work of French scientist and Nobel Laureate Luc Montagnier, co-discoverer of the human immunodeficiency virus (HIV), who has carried out experiments showing that some bacterial and viral DNA sequences can induce low-frequency electromagnetic waves at high aqueous dilutions.¹⁸ In one dramatic experiment he showed that a virtually identical copy of a DNA fragment in one test tube could be "teleported" via electromagnetic signals to a second test tube containing nothing but pure water.¹⁹ As Montagnier concluded, "High dilutions of something are not nothing. They are water structures which mimic the original molecules."

Montagnier has accepted a position at Jiaotong University in Shanghai, China, at a new institute bearing his name to carry out further research into the phenomenon of electromagnetic waves produced by DNA in water.

If he and his colleagues are correct, the fact that water can serve as an information highway for all living things is extraordinarily significant when you consider that water is the basic component of the planet (70 per cent of which is water) and, indeed, the basic substrate of life.

Water comprises approximately 70–80 per cent of animals and 90 per cent of plants.

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