

https://en.wikipedia.org/wiki/Jacques_Benveniste Provides negative findings on B's digital biology. Try to find positive findings

Benveniste was at the centre of a major international controversy in 1988, when he published a paper in the prestigious [scientific journal](#) *Nature* describing the action of very high dilutions of [anti-IgE antibody](#) on the degranulation of human [basophils](#), findings which seemed to support the concept of [homeopathy](#). Biologists were puzzled by Benveniste's results, as only molecules of water, and no molecules of the original antibody, remained in these high dilutions. Benveniste concluded that the configuration of molecules in water was biologically active; a journalist coined the term [water memory](#) for this hypothesis. Much later, in the nineties, Benveniste also asserted that this "memory" could be digitized, transmitted, and reinserted into another sample of water, which would then contain the same active qualities as the first sample.

As a condition for publication, *Nature* asked for the results to be replicated by independent laboratories. The controversial paper published in *Nature* was eventually co-authored by four laboratories worldwide, in Canada, Italy, Israel, and France.^[1] After the article was published, a follow-up investigation was set up by a team including physicist and *Nature* editor [John Maddox](#), illusionist and well-known [skeptical James Randi](#), as well as fraud expert Walter Stewart who had recently raised suspicion on the work of Nobel Laureate [David Baltimore](#).^[2] With the cooperation of Benveniste's own team, the group failed to replicate the original results, and subsequent investigations did not support Benveniste's findings either. Benveniste refused to retract his controversial article, and he explained (notably in letters to *Nature*) that the protocol used in these investigations was not identical to his own. However, his reputation was damaged, so he began to fund his research himself as his external sources of funding were withdrawn. In 1997, he founded the company DigiBio to "develop and commercialise applications of Digital Biology."

A week after publication of the article, *Nature* sent a team of three investigators to Benveniste's lab to attempt to replicate his results under controlled conditions. The team consisted of *Nature* editor and physicist Sir [John Maddox](#), American scientific fraud investigator and chemist [Walter W. Stewart](#), and [skeptical](#) and former magician [James Randi](#).

The team pored over the laboratory's records and oversaw seven attempts to replicate Benveniste's study. Three of the first four attempts turned out somewhat favorable to Benveniste; however the *Nature* team was not satisfied with the rigor of the methodology. Benveniste invited them to design a [double blind](#) procedure, which they did, and conducted three more attempts. The samples were randomized, and Randi wrapped the codes which identified the samples in tinfoil before fixing it on to the ceiling with adhesive tape.^[3] Before fully revealing the results, the team asked if there were any complaints about the procedure, but none were brought up.^[4] These stricter attempts turned out negative for Benveniste. In response to Benveniste's refusal to withdraw his claims, the team published in the July 1988 edition of *Nature*.^[4] Since multiple readings of the samples were closer than statistically expected for the non-double blind tests, the team argued that unintentional bias was the culprit.^[3]

In the same issue of the journal *Nature*, and in subsequent commentary, Benveniste denied all the claims and stated that such "[Salem witchhunts](#) or [McCarthy-like](#) prosecutions will kill science."^[4]

Although the new findings fell substantially short of confirming the patterns previously claimed by Benveniste, writer Yves Lignon quotes study co-author and statistician Alfred Spira, who said that "the transmission of information persisted at high dilution", and acknowledged that a "weakness in the experimental procedure was possible".

Ovelgonne et al.

A group of Dutch researchers reported their failure to duplicate the results in *Experientia* in 1992:

"In fact, in our hands no effect of extreme dilutions was shown at all. We conclude that the effect of extreme dilutions of anti-IgE, reported by Davenas et al., needs further clarification and that in this process the reproducibility of results between experimenters should be carefully determined."

A group of English researchers reported another failure to duplicate the results in *Nature* in 1993:

"Following as closely as possible the methods of the original study, we can find no evidence for any periodic or polynomial change of degranulation as a function of anti-IgE dilution."

However, Benveniste in a 1994 letter to *Nature* argued that the study neglected to faithfully follow his methods. The study has also been criticized on the grounds that its results were more favourable to Benveniste's claims than the study authors acknowledged in their conclusion.^f

After the *Nature* controversy, Benveniste gained the public support of [Brian Josephson](#),^[10] a [Nobel laureate](#) physicist with a reputation for openness to paranormal claims. Experiments continued along the same basic lines, culminating with a 1997 paper claiming the effect could be transmitted over phone lines.^[11] This was followed by two additional papers in 1999^[12] and another on remote-transmission in 2000 by which time it was claimed that it could also be sent over the [Internet](#).^[13]

Time magazine reported in 1999 that, in response to skepticism from physicist [Robert Park](#), Josephson had challenged the [American Physical Society](#) (APS) to oversee a replication by Benveniste. This challenge was to be "a randomized double-blind test", of his claimed ability to transfer the characteristics of homeopathically altered solutions over the Internet:

"[Benveniste's] latest theory, and the cause of the current flap, is that the 'memory' of water in a homeopathic solution has an electromagnetic 'signature.' This signature, he says, can be captured by a copper coil, digitized and transmitted by wire--or, for extra flourish, over the Internet--to a container of ordinary water, converting it to a homeopathic solution."^[14]

The APS accepted the challenge and offered to cover the costs of the test. When he heard of this, Randi offered to throw in the long-standing [\\$1 million prize](#) for any positive demonstration of the paranormal, to which Benveniste replied: "Fine to us."^[15] in his *DigiBio NewsLetter*. Randi later noted that Benveniste and Josephson did not follow up on their challenge, mocking their silence on the topic as if they were missing persons.^[16]

Ennis et al.

Ennis states that she began the research as a skeptic, but concluded that the "results compel me to suspend my disbelief and start searching for rational explanations for our findings."¹

Digital Biology

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Intrigued by Benveniste's claims that biological interactions could be digitized, the US Defence Advanced Research Projects Agency (DARPA) asked Dr. Wayne Jonas, homeopath and then director of the [US National Center for Complementary and Alternative Medicine](#), to organize an attempt at independently replicating the claimed results. An independent test of the 2000 remote-transmission experiment was carried out in the USA by a team funded by the [US Department of Defense](#). Using the same experimental devices and setup as the Benveniste team, they failed to find any effect when running the experiment. Several positive results were noted, but only when a particular one of Benveniste's researchers was running the equipment. Benveniste admitted to having noticed this himself, and offered a variety of reasons to explain what appeared to be another example of [experimenter effect](#). The experiment is also notable for the way it attempted to avoid the confrontational nature of the earlier Maddox test.^[22] The study implemented "A social and communication management process that was capable of dealing with conflicting interpersonal dynamics among vested parties in the research effort." One of Benveniste's machines was used, and, in the design and pilot project phase in 2001, Benveniste and other members of his DigiBio lab participated as consultants. Interviews at the time indicated study participants were satisfied with the way the study was being conducted. In the end, the authors reported in the *FASEB Journal* in 2006 that "Our team found no replicable effects from digital signals".

2010 Ennis Review

In 2010, a review of the attempts to replicate studies into the activation and inhibition of human basophils with homeopathic dilutions was published in the journal *Homeopathy*.^[23] Entitled *Basophil models of homeopathy: a sceptical view*, and written by Madeleine Ennis of The Queen's University of Belfast, the paper reviewed a list of studies to find out what can be confidently said about the 20 years of research into the subject.

Ennis concludes,

"The methods are poorly standardized between laboratories – although the same is true for conventional studies as described above. Certainly there appears to be some evidence for an effect – albeit small in some cases – with the high dilutions in several different laboratories using the flow cytometric methodologies. How much of the effect is due to artifacts remains to be investigated."

Ennis believes that in order to draw the "never-ending story" of homeopathic inhibition of basophils to a close then a new multi-centre trial would be required. Before such a trial could take place there would need to be agreement about how best to undertake the experiment, including how to source donor cells, how to prepare histamine solutions and how to detect activation. Importantly, independent laboratories should prepare the solutions and encode to ensure proper blinding and randomization. Independent statisticians should analyze the results. Such an approach might provide a definitive result.

Miscellaneous

Benveniste has been awarded two [Ig Nobel Prizes](#) in [Chemistry](#). They are a [parody](#) of the [Nobel Prizes](#). The first in 1991 describes Jacques Benveniste as a "prolific proselytizer and dedicated correspondent of *Nature*, for his persistent belief that water, H₂O, is an intelligent liquid, and for demonstrating to his satisfaction that water is able to remember events long after all trace of those events has vanished." The second in 1998 cites "his homeopathic discovery that not only does water have memory, but that the information can be transmitted over telephone lines and the Internet."^[25]

25{{cite journal. Despite its critics, Nobel Laureate Luc Montagnier who is credited with identifying the aids virus has subsequently taken up Benveniste's work on water memory and he and a number of other scientists have successfully replicated Benveniste's experiments (Ref: the 2014 documentary on Luc Montagnier titled "Water Memory").

Bibliography

12 articles by Benveniste, plus

See also

- [Experimental errors and frauds in physics](#)
- [Junk science](#)
- [Pathological science](#)
- [Protoscience](#)
- [Topics characterized as pseudoscience](#)
- [Scientific misconduct](#)

Note 16:

James Randi, [Computer problems, a Nobel Laureate reneges, more magnetic shoes, the metric system, and ...](#), *Commentary*, 26 January 2001

References:

Chaplin, Martin (2000–2006) "[Water Structure and Behavior](#) London South Bank University