

GURVITCH EXPERIMENTS REVISITED

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Conference on the Physics, Chemistry, & Biology of Water 2009

One of the accepted paradigms is that molecules interact with target systems via various physicochemical forces. For instance, the action of a molecule involves interaction with its receptor, to trigger a cascade of biochemical events that activate biological functions. Within this paradigm, the presence of the molecule is necessary. One question is whether a chemical reaction between for instance a protein and its receptor protein is needed, or whether this interaction does not require that the molecule actually come into physical contact to activate the receptor protein (1-3)

Others experiments related to non-chemical and non-contact communication between biological systems can be traced back to 1920 [4]. A. Gurvitch showed that onions kept closely together stimulate growth of each other's roots. He separated the roots by encasing them in different materials and showed that this was not simply a chemical influence. Further, the effects of growth stimulation occurred when quartz was used but not UV-opaque glass. Since then, there is an increasing body of evidence to suggest unconventional forms of intercellular communication. For instance, in 1992 G. Albrecht-Buehler observed that distant cells align themselves in culture media through cell to cell communication (5). Together, these phenomena suggest the existence of non-chemical signal(s) that convey messages to or between cells.

New experimental studies related to distant non-chemical communication using different cells models will be presented. We will discuss the current state of knowledge and envision different hypotheses regarding the nature of these "informational signals".

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