

# Experimental Testing of Spin-Mediated Consciousness Theory and Biological Entanglement:

Photon induced non-local effects of general anesthetics on the brain

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# Preamble

When in the course of scientific endeavor, it becomes apparent that deeper truths exist, a decent respect to Nature requires that such truths be explored. We hold these truths to be scientifically approachable, that all forms of existence are interconnected, that they possess certain fundamental and unalienable properties. That to describe this interconnectedness and these properties, successive theories shall be constructed by mankind, deriving their explanatory and predictive powers from the approximations of laws of Nature. That whenever any theory becomes inadequate of these ends, it is the duties of mankind to modify it or to abolish it, and to establish new ones, laying the foundation on such principles and organizing the structures in such forms, as to mankind shall seem most likely to reflect their understanding and knowledge of Nature.

**In memory of Thomas Jefferson 2003**

Please Go to [http:// quantumbrain.org](http://quantumbrain.org) to Find Our Recent Papers

- 1. Huping Hu and Maoxin Wu, Nonlocal effects of chemical substances on the brain produced through quantum entanglement. Progress in Physics, 3(2): 20-26 (2006).
- 2. Huping Hu and Maoxin Wu, Photon induced non-local effects of general anesthetics on the brain. NeuroQuantology 4(1): 17-31 (2006); Cogprints:ID4783 (2006); arXiv (updated version):quant-ph/ 020868.
- 3. Huping Hu and Maoxin Wu, Thinking outside the box: the essence and implications of quantum entanglement. NeuroQuantology 4(1): 5-16 (2006); Cogprints:ID4581 (2005).
- 4. Huping Hu and Maoxin Wu, Action potential modulation of neural spin networks suggests possible role of spin in memory and consciousness, NeuroQuantology; 1(4): 309-317; Cogprints:ID345 (2004).
- 5. Huping Hu and Maoxin Wu, Spin-mediated consciousness theory;Medical Hypotheses 63(4): 633-646 (2004).

## Continued

- 6. Huping Hu and Maoxin Wu (2003), Spin as primordial self-referential process driving quantum mechanics, spacetime dynamics and consciousness. *NeuroQuantology*; 1(1): 41-49; Cogprints:ID2827 (2004).
- 7. Huping Hu and Maoxin Wu, Spin-mediated consciousness theory. *arXiv:quant-ph/ 0208068* (2002); Cogprints:ID2579 (2002).
- 8. Huping Hu and Maoxin Wu, Mechanism of anesthetic action: oxygen pathway perturbation hypothesis, *Medical Hypotheses* 57(5): 619-627 (2001); *arXiv:physics/ 0101083* (2001).
- Patent pending: Results reported in References 1 & 2 are subject of a provisional Patent Application (App. No. 60/ 767009) filed on February 27, 2006.

# Outline

- What's Spin-Mediated Consciousness Theory
- How to Test the Theory Experimentally
- Materials, Test Subjects & Experimental Designs
- The “Astonishing” Preliminary Findings
- The Meaning of these Experimental Findings
- Implications and Applications
- The Need of Independent Replication

# What's Spin-Mediated Consciousness Theory

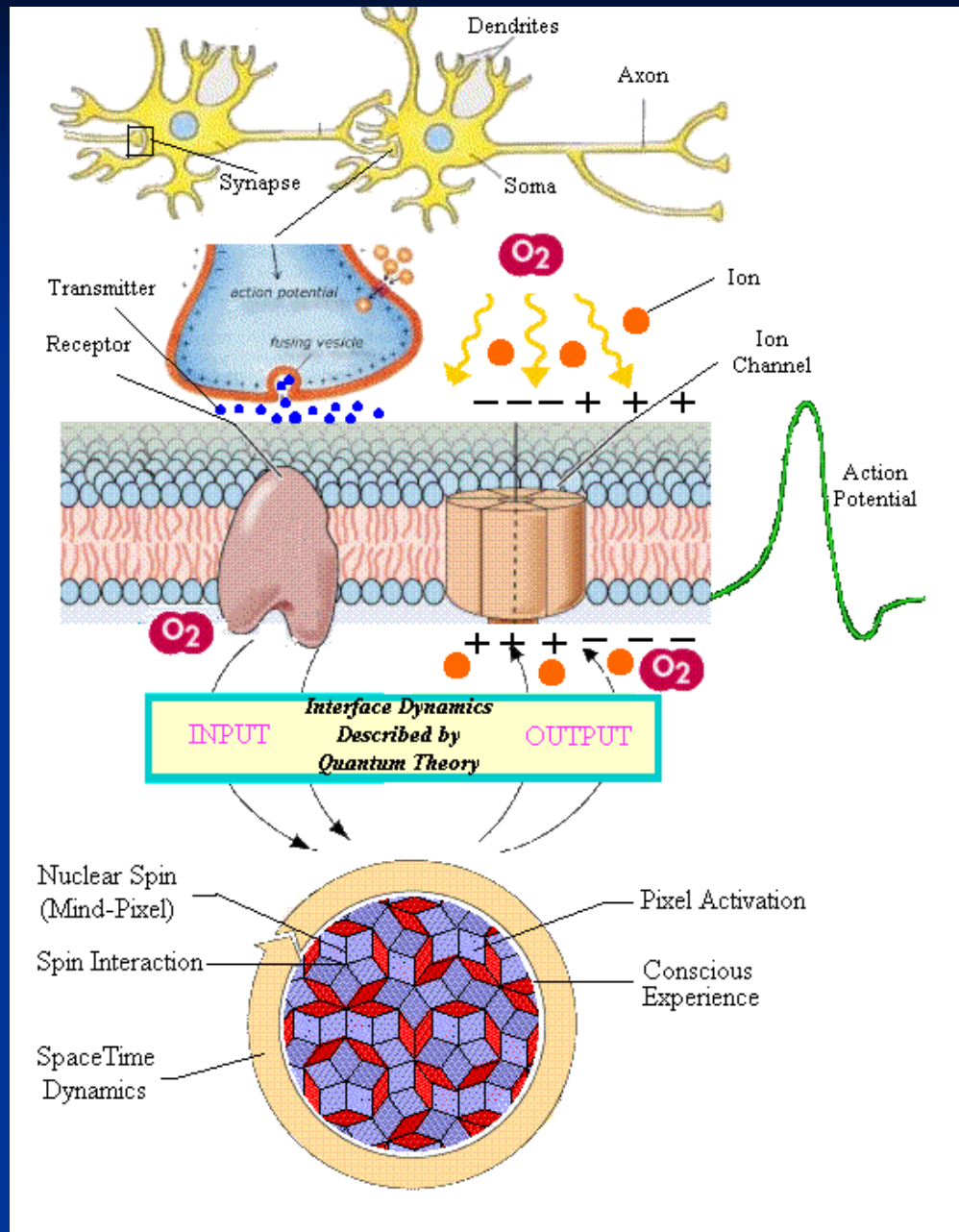
- Quantum spin is the seat of consciousness and the linchpin between mind and the brain, that is, spin is the mind-pixel.
- Consciousness is intrinsically connected to the spin process and emerges from the collective dynamics of spin states inside the brain.
- The unity of mind is achieved by entanglement of these mind-pixels.
- The mind-pixels are made up of nuclear spins and/ or electron spins in neural membranes and proteins.

## Rational Behind Spin-Mediated Consciousness Theory

- Spin is basic quantum bit for encoding information and, on the other hand, neural membranes and proteins are saturated with nuclear spin carrying nuclei and form the matrices of brain electrical activities.
- In the Hestenes picture spin was shown to be responsible for the quantum effects of the fermion.
- In the Bohm picture spin was shown to be responsible for the quantum potential which, in turn, is responsible for quantum effects.
- Spin is embedded in the microscopic structure of spacetime as reflected by Dirac equation and is likely more fundamental than spacetime itself as implicated by Roger Penrose's work.



# Biological Model





# How to Test Spin-Mediated Consciousness Theory

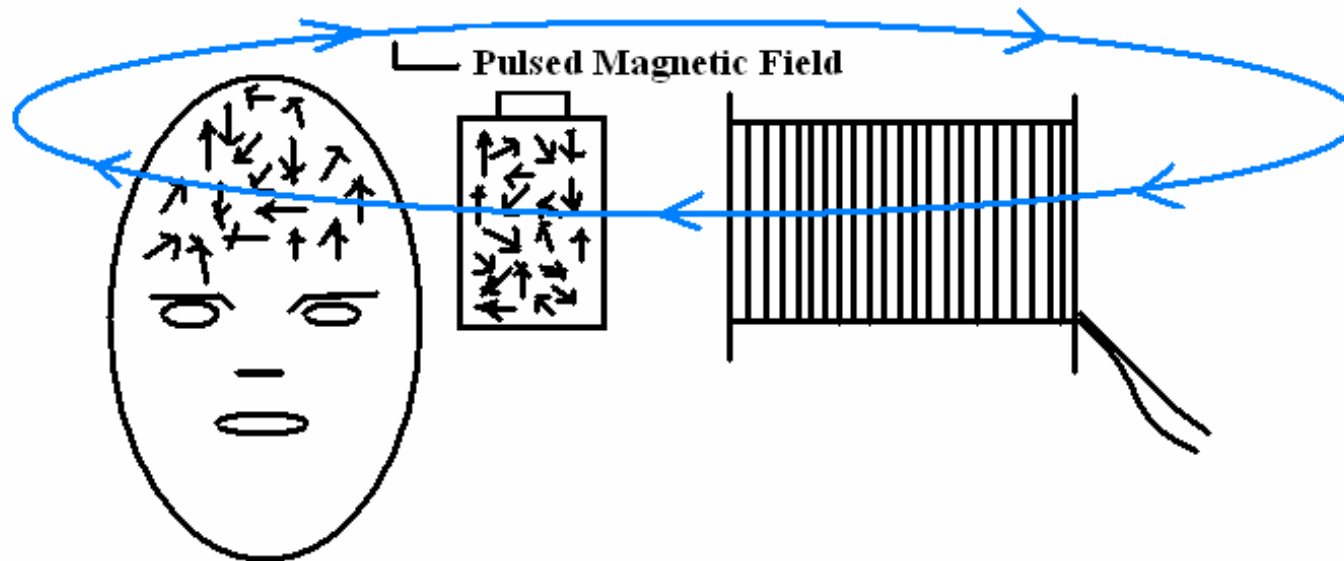
## Thought Experiment

- Try to quantum-entangle the nuclear/ electronic spin ensemble inside the brain with that in an external brain-influencing substance such as a general anesthetic.
- Assuming the said two spin ensembles can be quantum-entangled for certain length of time, one takes a leap of faith to further assume that a quantum entity such as spin can directly sense and utilize quantum entanglement.

## Doing the Experiment

- “Shut up and do the experiments” to see whether anything would happen.
- If something happens, one digs further.

# Using Non-local Bell Measurement to Entangle Two Spin Ensembles



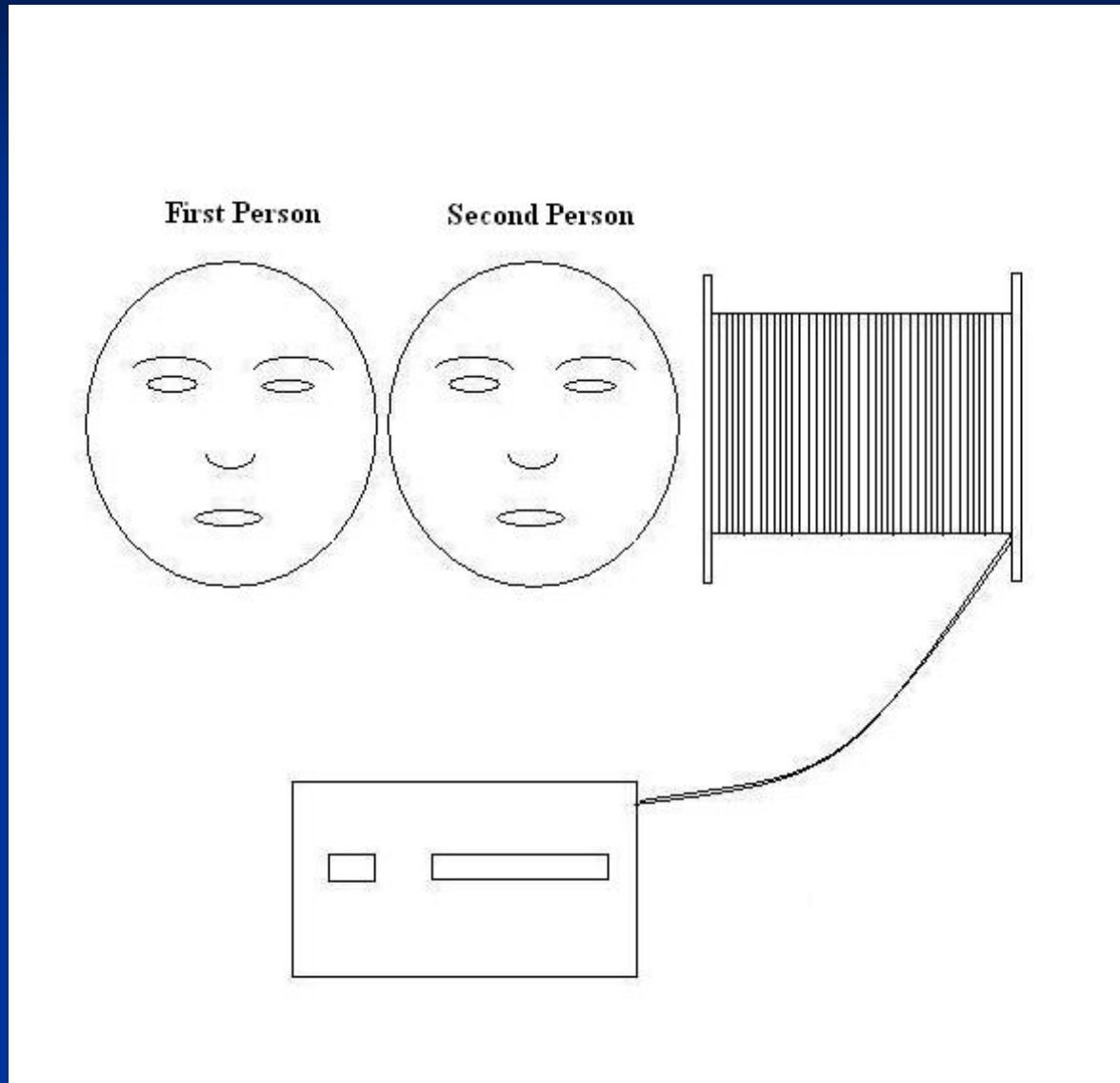
$$|S\rangle = a|\uparrow_s\rangle + b|\downarrow_s\rangle$$

$$|B\rangle = c|\uparrow_b\rangle + d|\downarrow_b\rangle$$

**Magnetic Pulses = Non-local Bell Measurement**

$$|BS\rangle = |\uparrow_b\rangle \otimes |\uparrow_s\rangle + |\downarrow_b\rangle \otimes |\downarrow_s\rangle$$

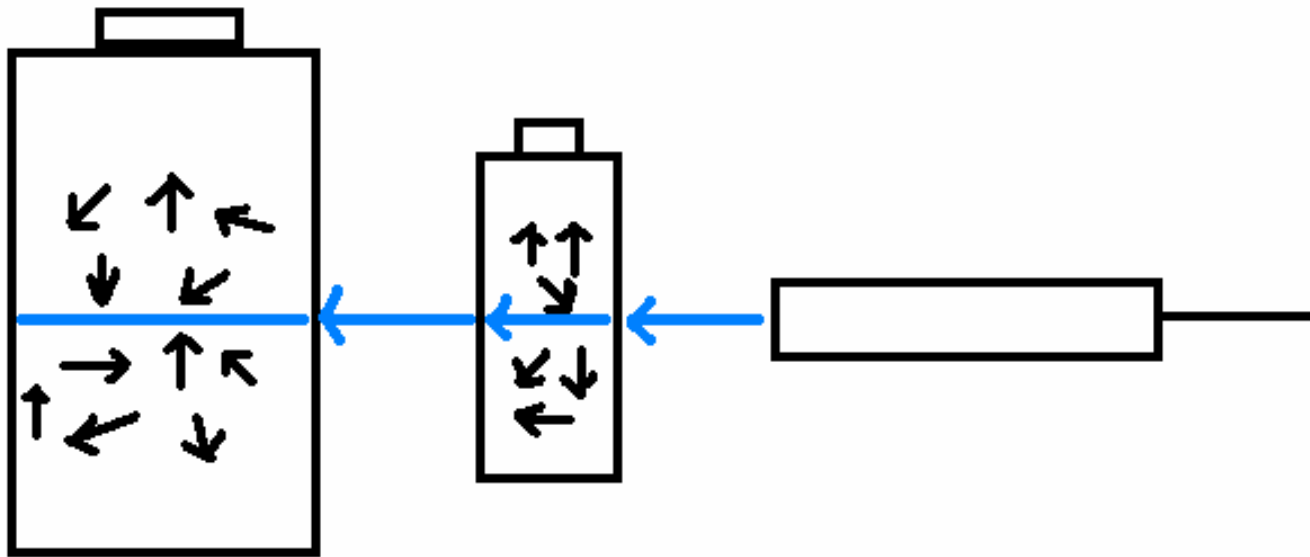
# How to Entangle Two Brains?



## What is Non-local Bell measurement

- The Bell measurement is an important concept in quantum information science: It is a joint quantum-mechanical measurement of two qubits that determines in which of the four Bell states the two qubits are in.
- If the qubits were not in a Bell state before, they get projected into a Bell state (according to the projection rule of quantum measurements), and as Bell states are entangled, a Bell measurement is an entangling operation.
- It is the crucial part of quantum teleportation (see there).
- Retrieved from "[http:// en.wikipedia.org/ wiki/ Bell\\_measurement](http://en.wikipedia.org/wiki/Bell_measurement)"

## Using Forward Light Scattering (Both Elastic and Inelastic)



**Ref. Julsgaard, B. et al. Experimentally long-lived entanglement of two macroscopic objects. Nature 413, 400–403 (2001)**

# Materials

- Anesthetics:

- $\text{CHCl}_3$  (Chloroform, pure)
- $\text{CDCl}_3$  (Chloroform D, pure)
- $\text{CF}_3\text{-CHCl-O-CHF}_2$  (Isoflurane, pure)
- $\text{CH}_3\text{-O-CH}_3$  (Dimethyl Ether, pure)
- $\text{CH}_3\text{-CH}_2\text{-OH}$  (Ethanol, pure)
- $\text{CBr}_3\text{-CH}_2\text{-OH}$  (Tribromoethanol, 50:1 by weight)

- Medications:

- Morphine Sulfate (Solution, 20mg/ ml, 20ml sample size)
- Fentanyl (Patch, 10mg/ patch, magnetic coil only)
- Nicotine (Patch, 21mg/ patch, magnetic coil only)
- Coffee (Instant coffee powder, 10g/ bag, magnetic coil only)

# Test Subjects

- Subject A: Huping Hu (male, age 43)
- Subject B: Yongchang Hu (male, age 66)
- Subject C: Maoxin Wu (female, age 44)
- Subject D: Cuifang Sun (female, age 63)



# Setup for the First Set of Experiment



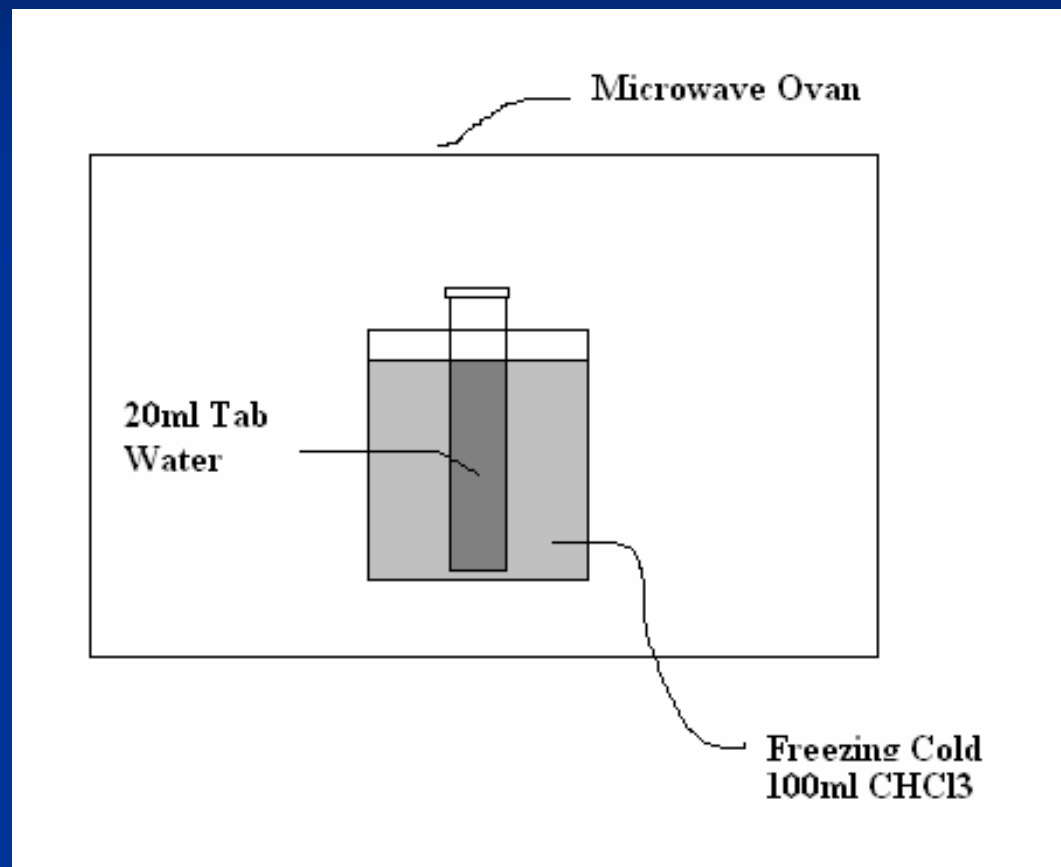
## Setup for the 2nd Set of Experiment - Magnetic Coil



## Setup for the 2nd Set of Experiment – Red Laser



## Setup for the 2nd Set of Experiment – Microwave

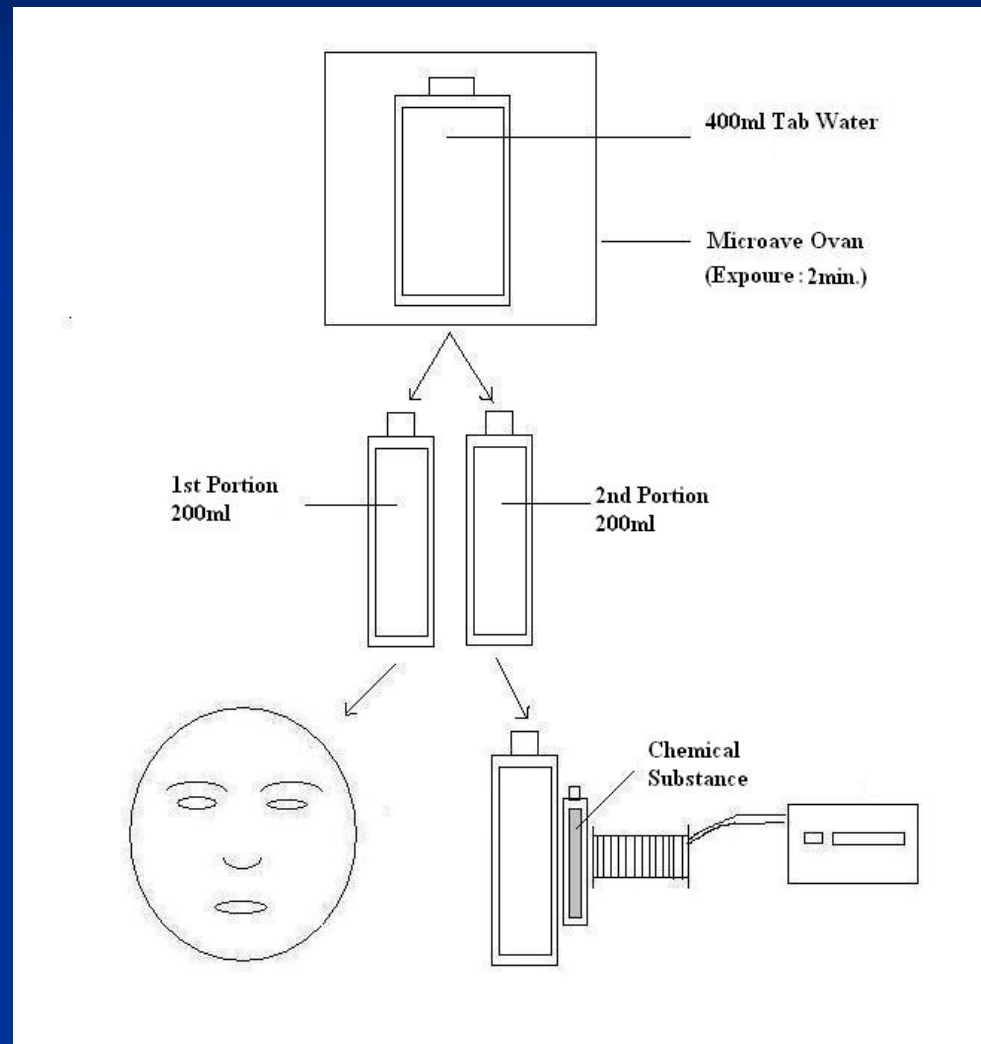


# First Set of Entanglement Verification Experiments

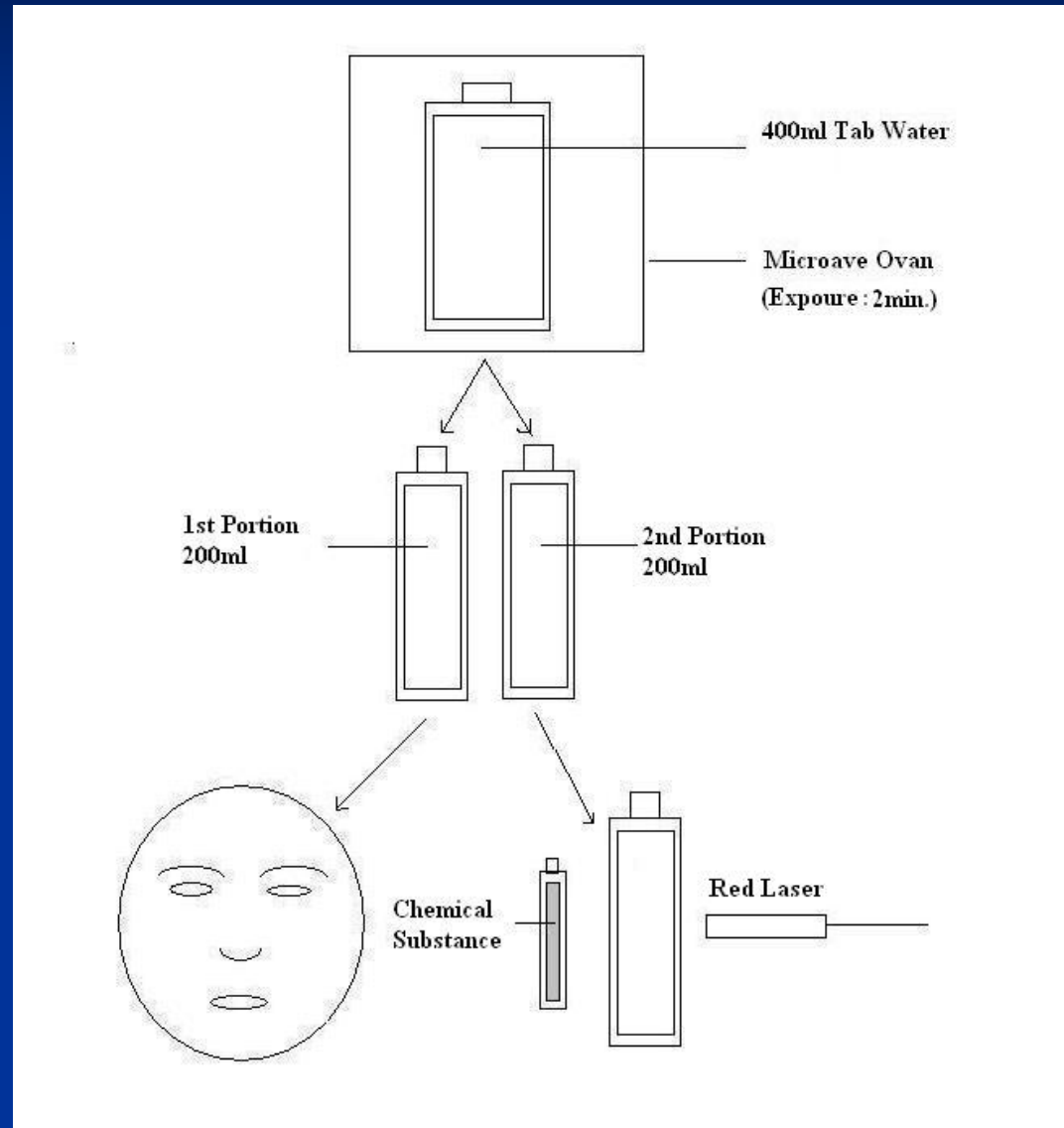




# 2nd Set of Entanglement Verification Experiments I

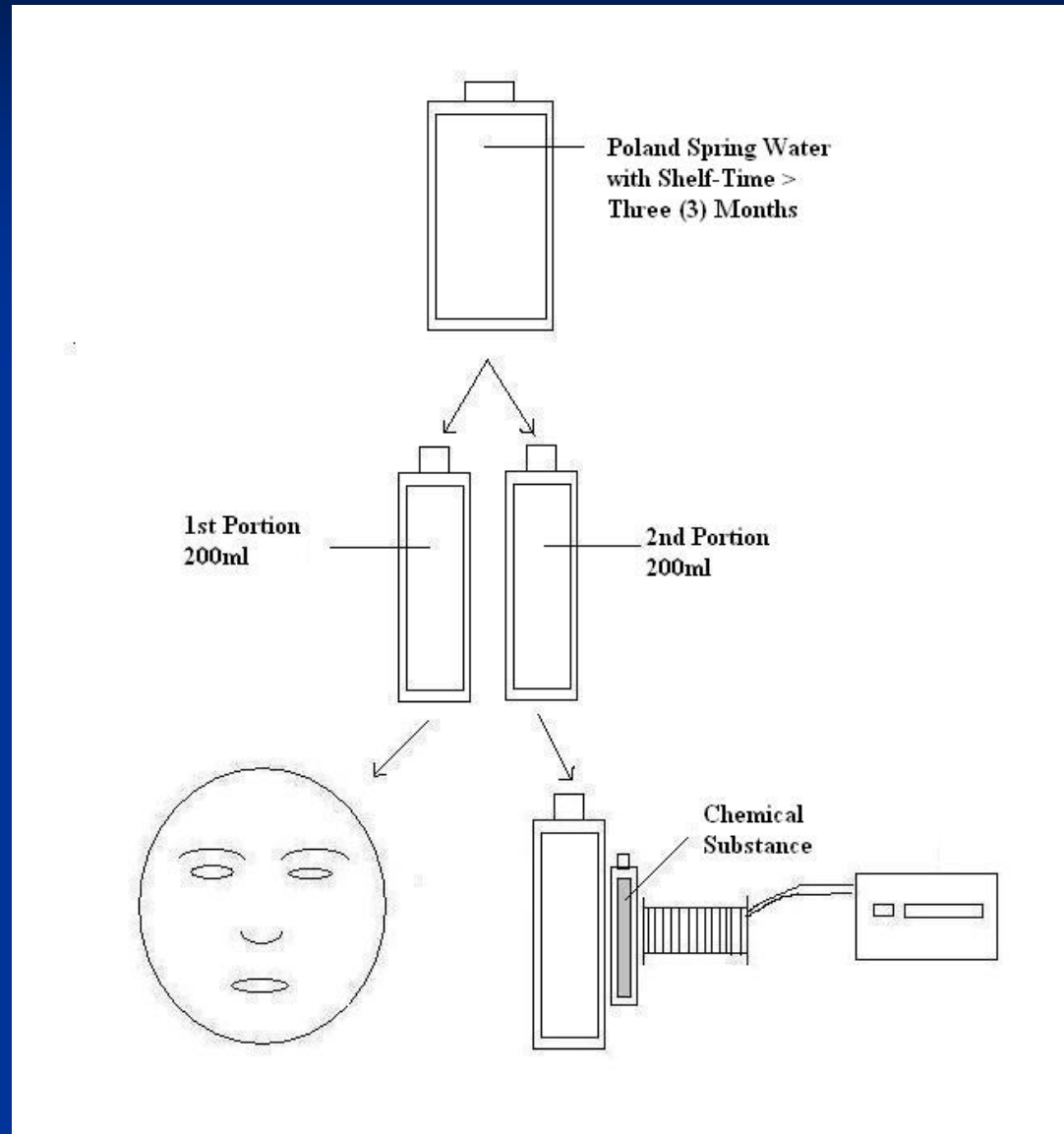


## 2nd Set of Entanglement Verification Experiments II

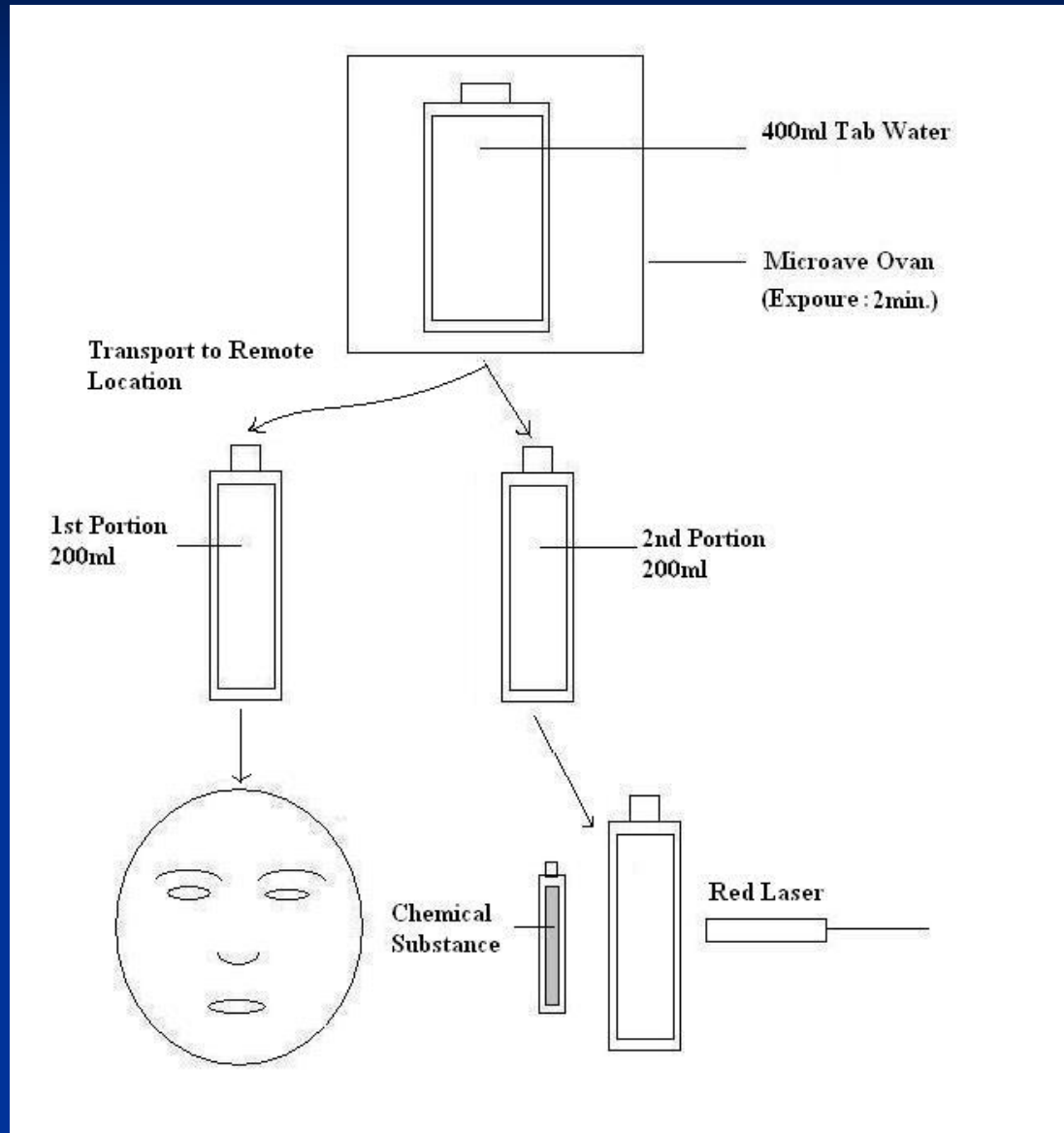




# 3rd Set of Entanglement Verification Experiments



# 4th Set of Entanglement Verification Experiments



# How to Entangle Two Biological System

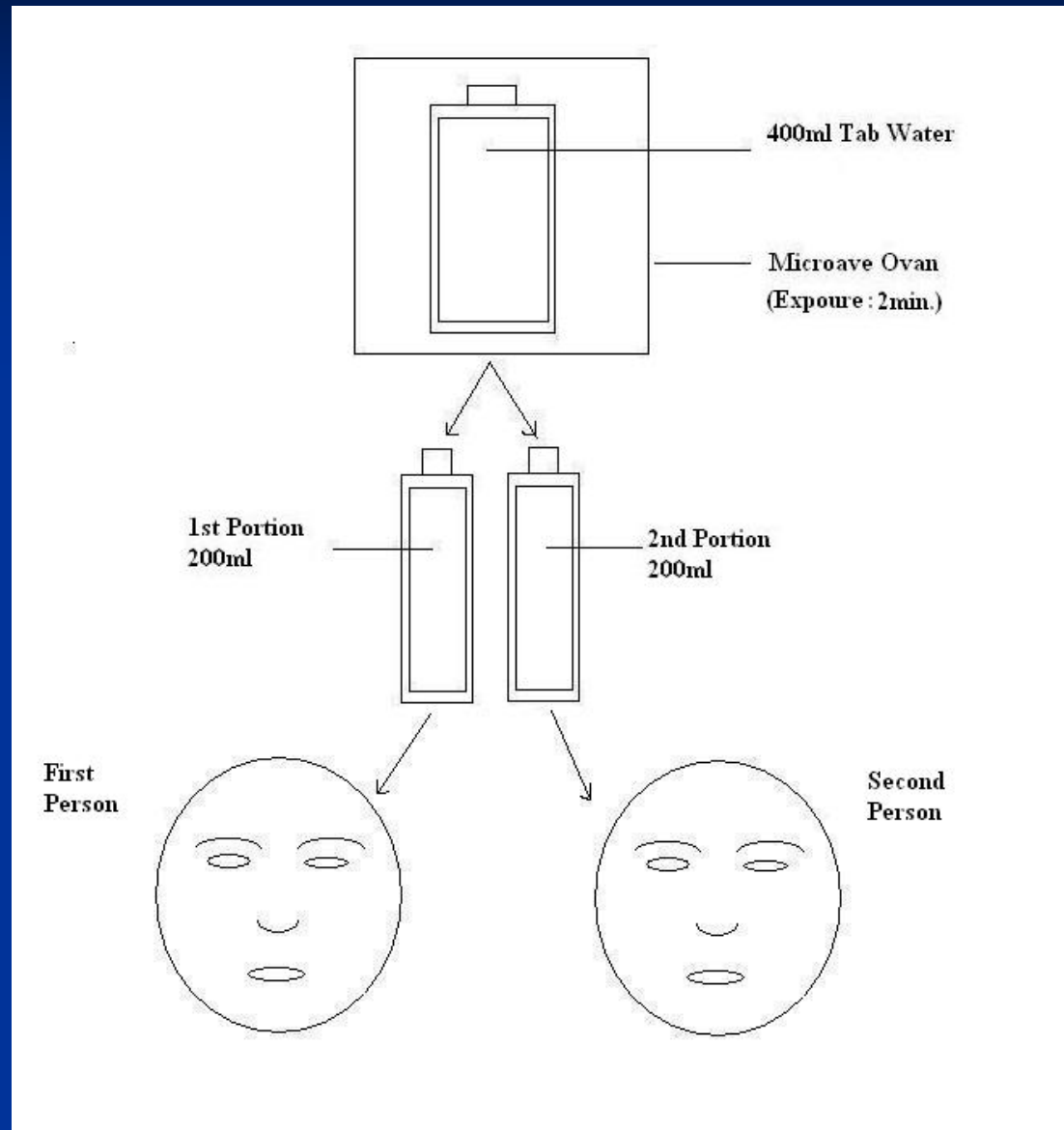


Table 1. Summary of results obtained from the first two sets of experiments

	1st Set: Magn. Coil		2nd Set: Magn. Coil		Laser Light		Flashlight		Microwave	
	Test#	Effect	Test #	Effect	Test #	Effect	Test#	Effect	Test #	Effect
Anesthetics										
■ Subject A	13	Yes	16	Yes	22	Yes	8	Yes	3	Yes
■ Subject B	2	Yes	2	Yes	3	Yes	0	N/ A	1	Yes
■ Subject C	2	Yes	6	Yes	6	Yes	0	N/ A	1	Yes
■ Subject D	2	Yes	1	Yes	5	Yes	0	N/ A	0	N/ A
Medications										
■ Subject A	17	Yes	14	Yes	16	Yes	1	Yes	3	Yes
■ Subject B	1	Yes	1	Yes	3	Yes	0	N/ A	2	Yes
■ Subject C	3	Yes	1	Yes	4	Yes	0	N/ A	1	Yes
■ Subject D	0	N/ A	0	N/ A	3	Yes	0	N/ A	1	Yes
Control										
■ Subject A	12	No	5	No	11	No				
■ Subject B	3	No	0	N/ A	1	No				
■ Subject C	1	No	2	No	4	No				
■ Subject D	0	N/ A	0	N/ A	1	No				

**Table 2. Breakdowns of the summary in Table 1 into each general anesthetic studied plus morphine in the case of medications.**

	1st Set: Magn. Coil		2nd Set: Magn. Coil		Laser Light		Flashlight		Microwave	
	Test#	Effect	Test #	Effect	Test #	Effect	Test#	Effect	Test #	Effect
<b>Chloroform</b>										
■ Subject A	2	Yes	2	Yes	5	Yes	2	Yes	3	Yes
■ Subject B	0	N/ A	0	N/ A	1	Yes	0	N/ A	1	Yes
■ Subject C	1	Yes	2	Yes	3	Yes	0	N/ A	1	Yes
■ Subject D	1	Yes	0	N/ A	2	Yes	0	N/ A	0	N/ A
<b>Chloroform D</b>										
■ Subject A	3	Yes	2	Yes	2	Yes	1	Yes		
■ Subject B	1	Yes	0	N/ A	1	Yes	0	N/ A		
■ Subject C	0	N/ A	0	N/ A	1	Yes	0	N/ A		
■ Subject D	0	N/ A	0	N/ A	0	N/ A	0	N/ A		
<b>Isoflurance</b>										
■ Subject A	3	Yes	6	Yes	5	Yes	4	Yes		
■ Subject B	0	N/ A	1	Yes	0	N/ A	0	N/ A		
■ Subject C	0	N/ A	1	Yes	1	Yes	0	N/ A		
■ Subject D	1	Yes	1	Yes	1	Yes	0	N/ A		

**Table 2. Breakdowns of the summary in Table 1 (continued).**

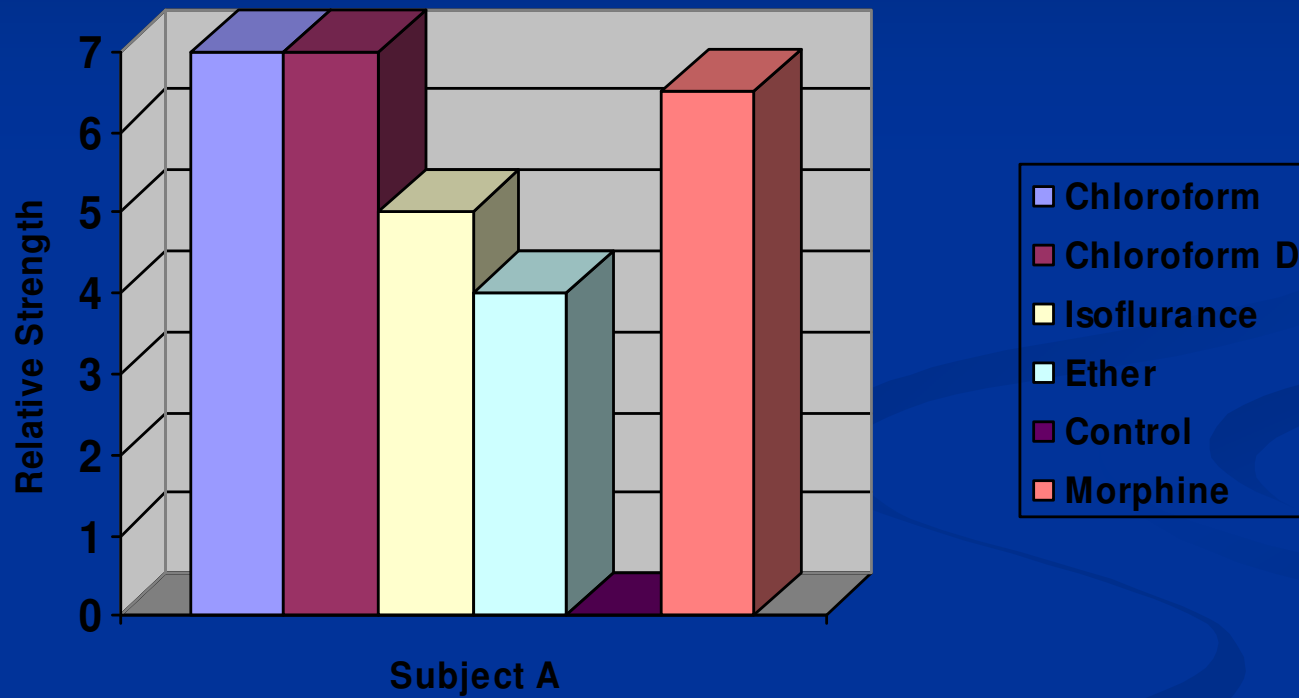
	1st Set: Magn. Coil		2nd Set: Magn. Coil		Laser Light		Flashlight		Microwave	
	Test#	Effect	Test #	Effect	Test #	Effect	Test#	Effect	Test #	Effect
<b>Diethyl Ether</b>										
■ Subject A	5	Yes	6	Yes	10	Yes	1	Yes		
■ Subject B	1	Yes	1	Yes	1	Yes	0	N/ A		
■ Subject C	1	Yes	3	Yes	1	Yes	0	N/ A		
■ Subject D	0	N/ A	0	N/ A	2	Yes	0	N/ A		
<b>Morphine</b>										
■ Subject A	5	Yes	7	Yes	5	Yes				
■ Subject B	0	N/ A	1	Yes	2	Yes				
■ Subject C	0	N/ A	1	Yes	2	Yes				
■ Subject D	0	N/ A	0	N/ A	2	Yes				
<b>Other Medications</b>										
■ Subject A	7	Yes	4	Yes						
■ Subject B	1	Yes	0	N/ A						
■ Subject C	3	Yes	0	N/ A						
■ Subject D	0	N/ A	0	N/ A						

**Table 3. Summary of the results obtained with the entanglement verification experiments carried out so far with chloroform, deuterated chloroform, diethyl ether and morphine.**

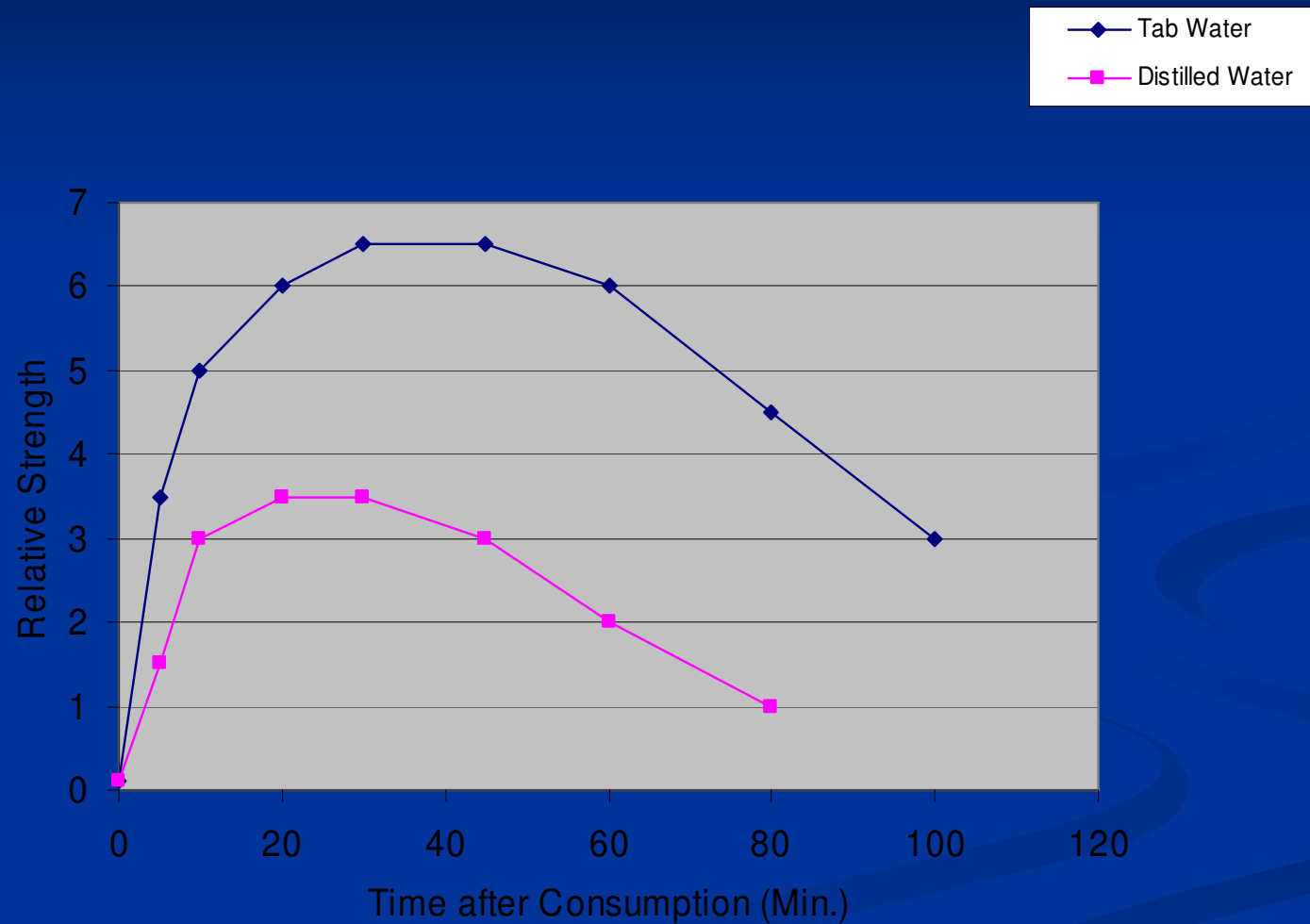
■		First Set		Second Set		Third Set		Fourth Set	
		Test#	Effect	Test#	Effect	Test#	Effect	Test#	Effect
■	Subject A	8	Yes	8	Yes	3	Yes	3	Yes
■	Subject B	2	Yes	3	Yes	2	Yes	1	Yes
■	Subject C	3	Yes	2	Yes	1	Yes	1	Yes
Control									
■	Subject A	2	No	8	No	3	No	3	No
■	Subject B	0	N/ A	3	No	2	No	1	No
■	Subject C	1	No	2	No	1	No	1	No



**Figure 1. Illustration of Brain Effects of General Anesthetics and Morphine  
(tab water treated with magnetic pulses for 30 minutes)**



**Figure 2. Illustration of Brain Effect of Water Exposed to Morphine (tab water treated with magnetic pulses for 30 minutes)**



## **First-person experience of the overall effect produced by drinking 200ml tap water exposed to magnetic pulses for 30min in the presence of 20ml Chloroform**

- Within 10-15 minutes after consumption, felt gradually increasing brain effect as expansion and woodenness inside head and indescribable sickening sensation.
- Accompanied by stiffness in neck muscle, discomfort in stomach and throat, nausea, sneezing, eye ball pressure and pain and feeling of overall fatigue.
- These effects first gradually increased and then peaked between 30 minute to 60 minutes and then gradually weakened.
- However, residual effect much like hangover from heavy drinking would remain for more than 24 hours.

**First-person experience of the overall effect produced by drinking 200ml tap water exposed to magnetic pulses for 30min in the presence of 20ml Morphine**

- Within 10-15 minutes after consumption, felt gradually increasing brain effect as indescribable pleasant but unsettling sensation or euphoria plus expansion in head.
- Accompanied by drowsiness, warmth over the body, light nausea and bloated eye.
- These effects first gradually increased and then peaked between 30 minute to 60 minutes and then gradually weakened.
- However, residual effect remained for more than 12 hours.

# Is quantum entanglement the cause of the brain effects and other accompanying biological effects?

The answer is YES, indeed.

- With respect to the 2<sup>nd</sup>, 3<sup>rd</sup> & 4<sup>th</sup> sets of entanglement verification experiments, the only possible explanation for the brain effects experienced by the test subjects are that they were the consequences of quantum entanglement because the water consumed by the test subjects was never directly exposed to the magnetic pulses or the laser lights in the presence of the chemical substances under study.
- There are other indications that quantum entanglement was the cause: (1) the brain effect inducing mean could not be transmitted through an electrical wire; (2) the said inducing mean did not depend on the wavelengths of the photons generated; and (3) as shown in the first set of verification experiment, the order of interaction is irrelevant, mere interactions among the photons, a chemical substance and water will induce brain effects after a test subject consumes the water so interacted.

# How to Explain the brain effects experienced by the Test Subjects

- The brain effects experienced by the test subjects in the first set of experiments were the consequence of quantum entanglement between the quantum entities in the brain and those in the chemical substances induced by the photons of the magnetic pulses.
- The brain effects experienced by the test subjects in the second sets of experiments were the consequences of quantum entanglement between the quantum entities in the chemical substance and those in the water induced by the photons of the magnetic pulses or applied light and the subsequent physical transport of the water entangled with the said chemical substance to the brain after consumption by the test subject and entanglement of the quantum entities inside the brain with those in the consumed water.

## Do These Results Support Our Spin-Mediated Consciousness Theory

The answer again is YES, because the quantum entities responsible for the observed brain effects are likely nuclear spin inside the brain.

- The Non-local Bell measurement through magnetic pulse quantum-entangles quantum spin (only).
- Neural membranes and proteins contain vast numbers of nuclear spins such as  $^1\text{H}$ ,  $^{13}\text{C}$ ,  $^{31}\text{P}$  and  $^{15}\text{N}$  which are the natural targets of interaction with the photons of the magnetic pulses or applied lights.
- Nuclear spins form complex spin networks inside the brain and have relatively long relaxation times after excitations (gas sample keeps its polarization for days.)
- Spin has been shown to be responsible for all quantum effects in both Hestenes and Bohmian quantum mechanics.



## Implications of Our Experimental Findings

- **Biologically/ chemically meaningful information can be transmitted through quantum entanglement from one place to another by photons and other quantum objects.**
- **Both classical and quantum information can be transmitted between locations of arbitrary distances through quantum entanglement alone.**
- **Instantaneous signalling is physically real which implies that Einstein's theory of relativity is in real (not just superficial) conflict with quantum theory.**
- **Brain processes such as perception and other biological processes likely involve quantum information and nuclear and/ or electronic spins possibly play important roles in these processes.**
- **Our findings provide important new insights into the essence and implications of the mysterious quantum entanglement and clues for solving the long-standing measurement problem in quantum theory including the roles of the observer and/ or consciousness.**
- **Very importantly, our findings also provide a unified scientific framework for explaining many paranormal and/ or anomalous effects such as telepathy, telekinesis and homeopathy, if they do indeed exist, thus transforming these paranormal and/ or anomalous effects into the domains of conventional sciences.**

## **Applications of Our Experimental Findings**

**Our findings enable various quantum entanglement technologies be developed.**

- **Some of these technologies can be used to deliver on site or from remote locations of arbitrary distances the therapeutic effects of many drugs to various biological systems such as human bodies without physically administering the same to the said systems.**
- **Of course, any substances of nutritional and recreational values can be repeatedly administered to desired biological systems such as human bodies through the said technologies either on site or from remote locations.**
- **Other such technologies can be used for instantaneous communications between remote locations of arbitrary distances in various ways.**
- **Potentially, these technologies can also be used to entangle two or more human minds for legitimate and beneficial purposes.**

# The Need for Independent Replication

- Our indicators used to measure the brain effects were qualitative and subjective.
- But they reflect the first-person experiences of the qualities, intensities and durations of these effects by the test subjects since their brains were directly used as experimental probes.
- Further, these effects are completely reproducible under blind experimental settings so that possible placebo effects were excluded.
- However, as with many other important new results, replications by others are the key to independently confirm our results reported here.
- Especially, these experiments may appear simple and even “primitive” but the results and implications are profound.
- So Please do your experiments (some groups are either planning or actually carrying out independent replications using both subjective and objective parameters).