

**The 12th Annual Water
Conference,
Sofia, Bulgaria,
October 26-29, 2017**



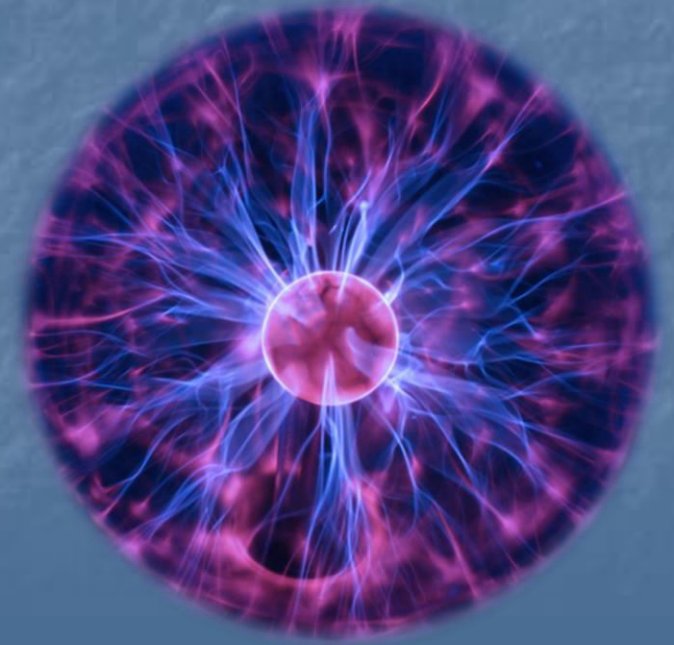
THE QUEST FOR BIOFIELD

Prof. dr. Igor Jerman, PhD in Biology

Bion Institute

Ljubljana, Slovenia, EU

igor.jerman@bion.si



The quest for biofield is the quest for a deeper understanding of life and organisms.

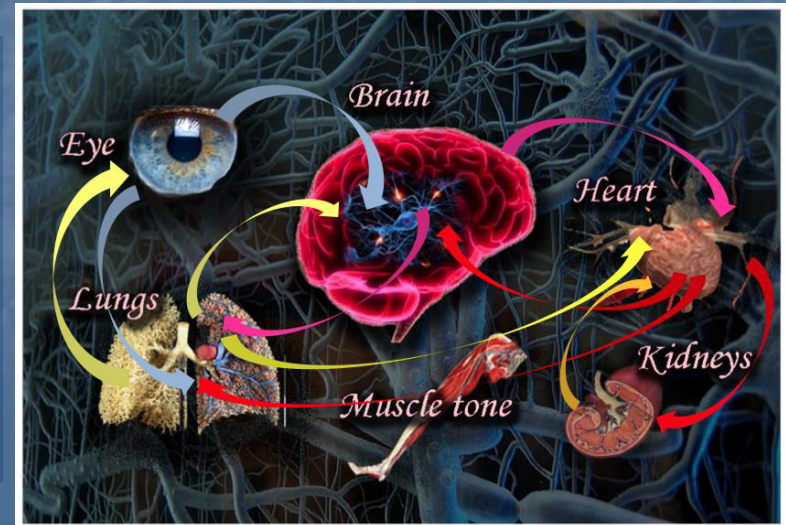


=

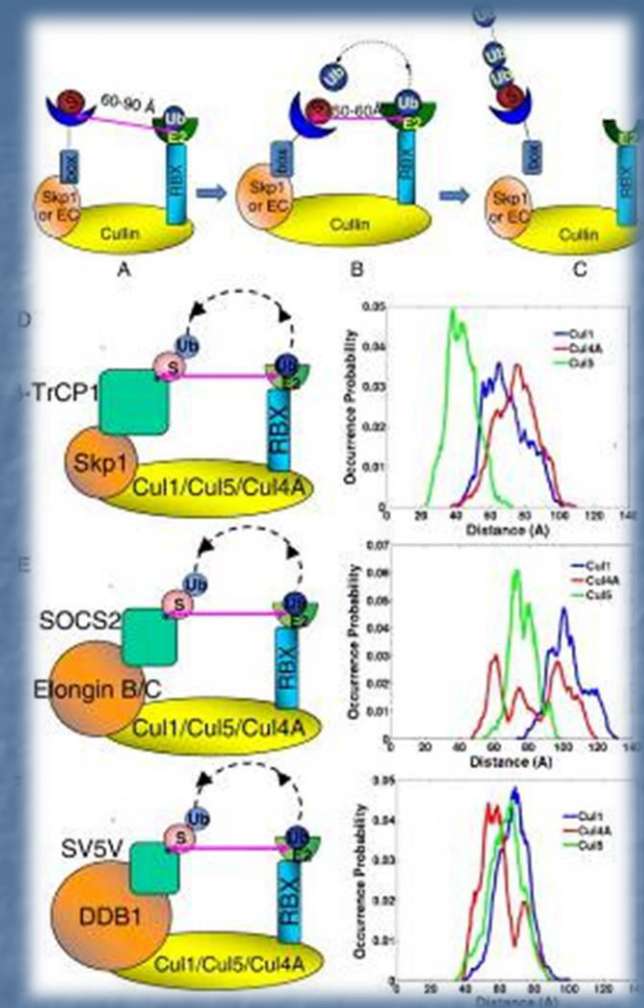
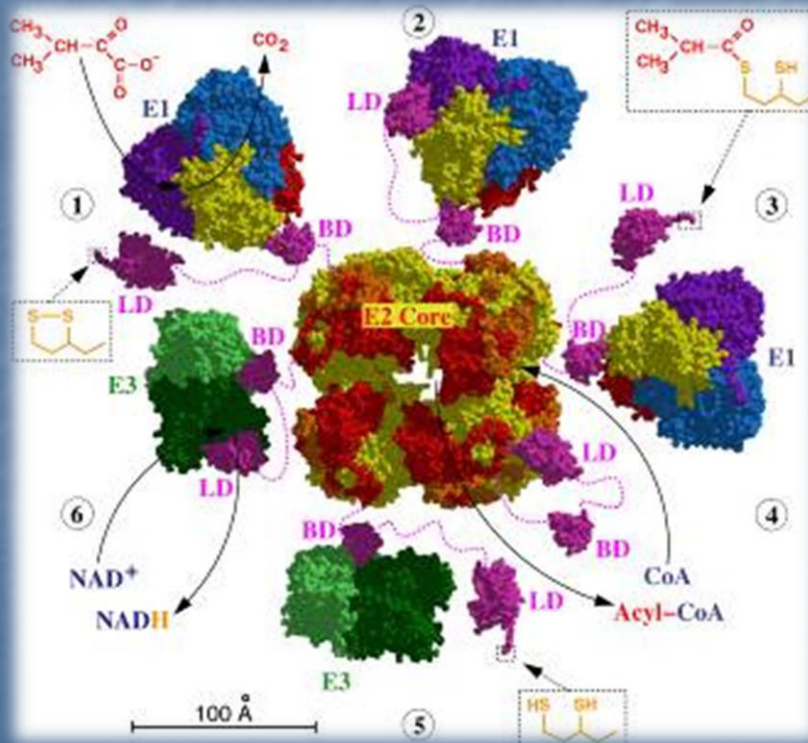


For the 17th and the first half of the 18th century “biology” life was based on **deterministic mechanics**.

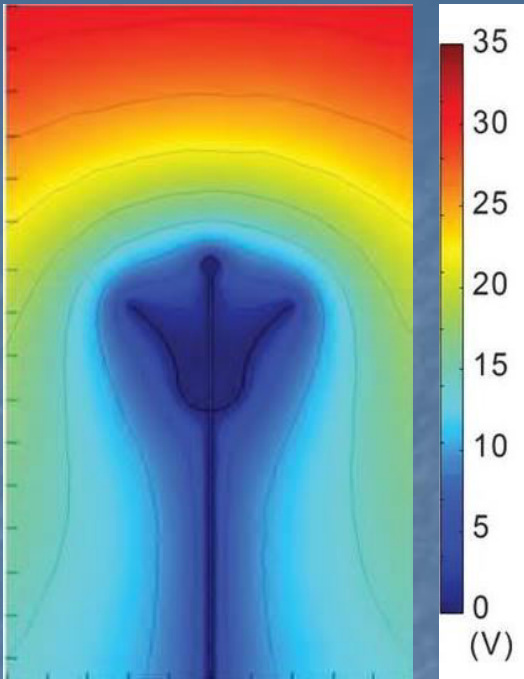
For the 18th and the first half of the 19th century biology, life was based on a special principle of **holistic inner organization**. An organism was seen as an integrated system of harmoniously cooperating organs.



For the **contemporary established science of life** the latter is based on complex molecular interactions; the orthodox biomedical sciences are more than sure that it is the ultimate truth about life. Organism is seen as a molecular automaton.

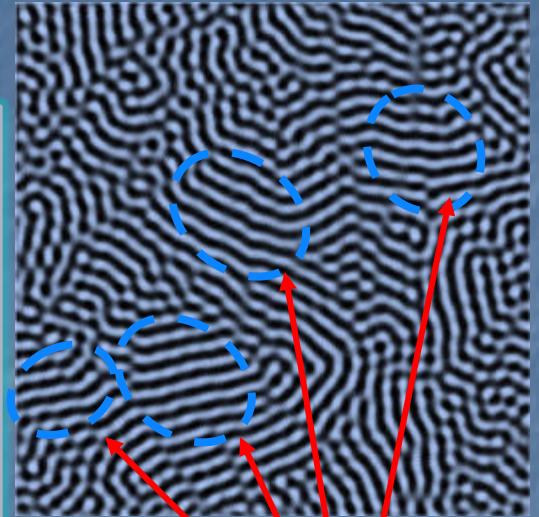


Complex molecular automata

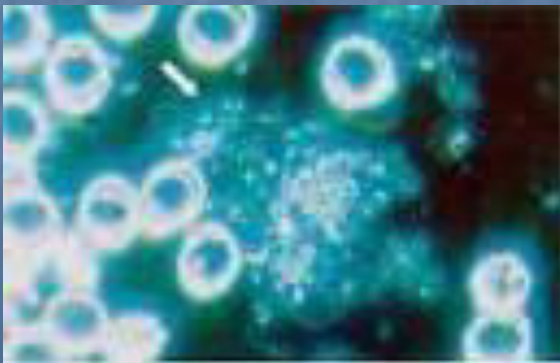


Electric field
around a plant

Yet the **new science of water**, the research in **bioelectromagnetics** and some other mostly **biophysical researches** show that this “ultimate truth” is highly endangered.

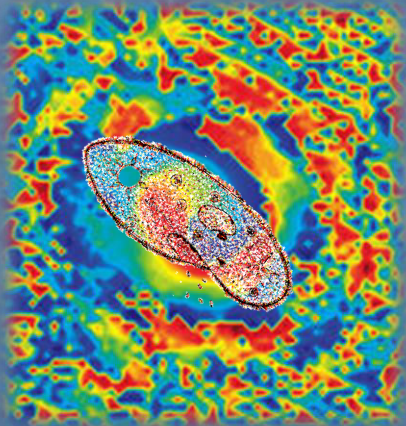
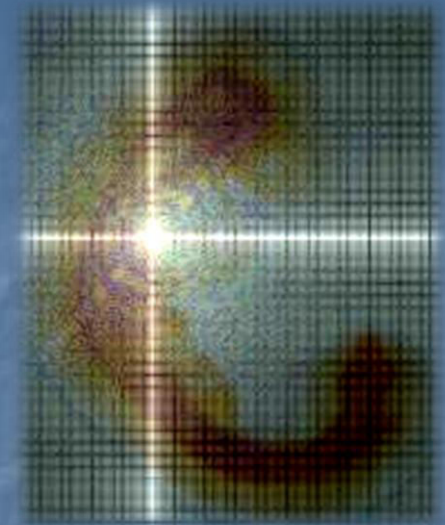


Coherent domains or
stable and ordered
oscillating water
clusters

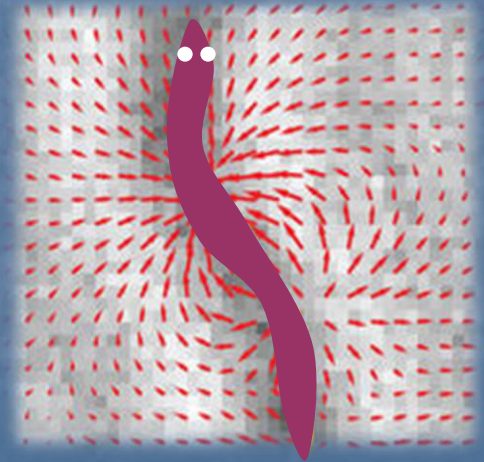


Ultra-weak photon
emission from
organisms (photon-
field)

On the grounds of many findings and deep considerations pioneering scientists concluded that organisms should possess **a field** that dynamically integrates all biochemical and physiological processes and thereby organisms into a functioning whole. We shall call this field **the biofield**.



For the scientists that accept the biofield's existence the latter is **a complex field that regulates countless biochemical and electrochemical processes within the organism** and may expand also in its vicinity.



(the images are purely symbolic)

Scientific issue of the biofield

As such the biofield is unrecognized in contemporary established sciences: physics, biology and medicine, yet it is recognized in advanced branches of these same sciences:

- Physics

- established: nonexistent phantasy
- advanced: quantum field phenomenon

- Biology

- established: a remnant of medieval mysticism and vitalism.
- advanced, holistic: morphogenetic or bioelectromagnetic field

- Medicine

- established: placebo or fraud
- alternative: macroscopic quantum phenomenon or just biofield

In any case it **lacks a good empirical validation** as well as a solid and at least in advanced scientific circles **generally accepted theory**.

History of the term biofield

The term biofield was coined in 1994 by an ad hoc committee of CAM practitioners and researchers convened by the newly established Office of Alternative Medicine (OAM) at the US National Institutes of Health (*, **).



The committee sought to bring unity to the diversity of medical practices by creating a term that would be amenable to the scientific and broader healthcare communities (♣). If the role of biochemistry stands for the structural, energetic and short range informational aspects of the living process, the biofield represents mainly the long range integration of

- a) a living being with itself and
- b) the living being with its environment.

* Kafatos et al., 2015. Biofield science: current physics perspectives. *Global Advances in Health and Medicine*, 4(Suppl.), 25-34.

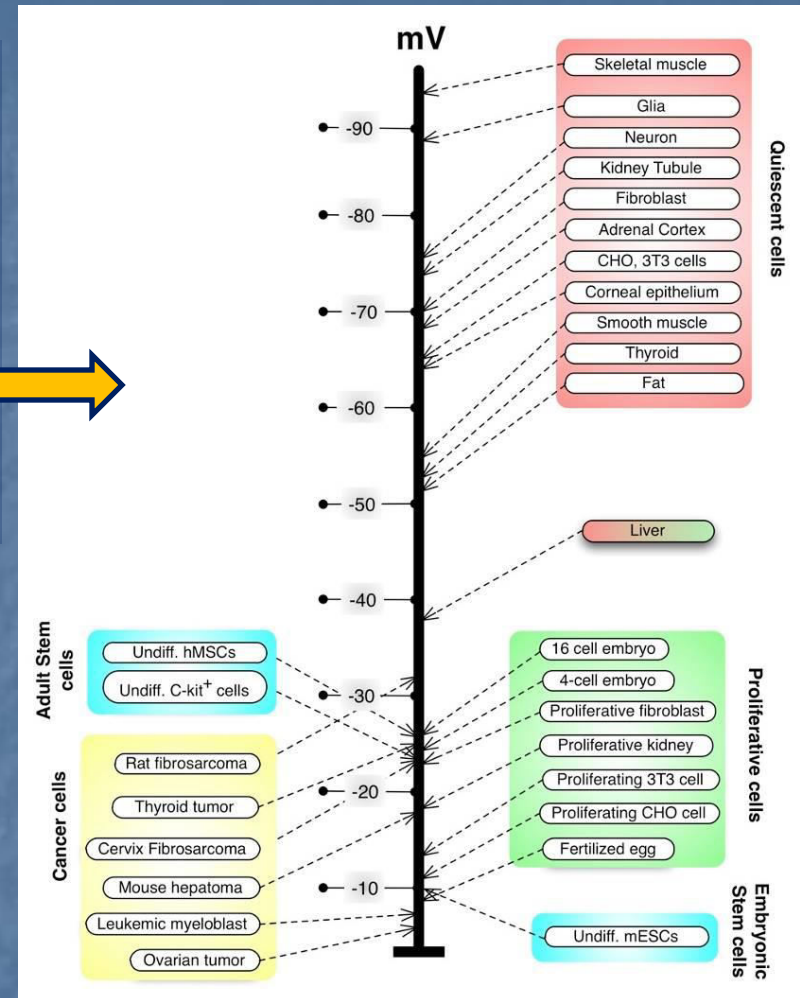
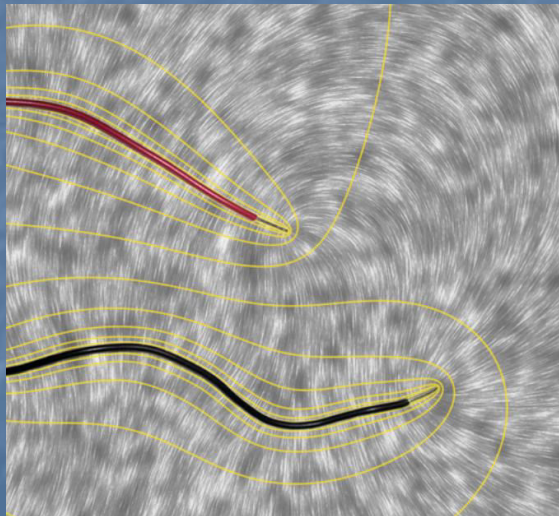
** Rubik B., 2002, The biofield hypothesis: its biophysical basis and role in medicine. *J Altern Complement Med.*, 8(6), 703-17.

♣ Rubik B., et al., 2015. Biofield science and healing: history, terminology, and concepts. *Global advances in health and medicine*, 4(Suppl), 8-14.

Contemporary theoretical considerations based on empirical research

The biofield is mostly seen as a **complex and hierarchically structured** field.

□ On the most basic level it is a **bioelectric field** known for long time, but only recently recognized as potentially influencing morphogenesis (*).



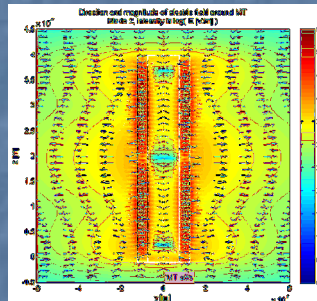
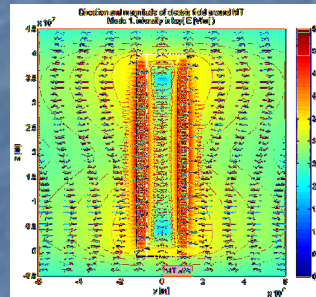
* Levin, M., 2012. Morphogenetic fields in embryogenesis, regeneration, and cancer: non-local control of complex patterning. *Biosystems*, 109(3), pp.243-261.

Contemporary theoretical considerations based on empirical research

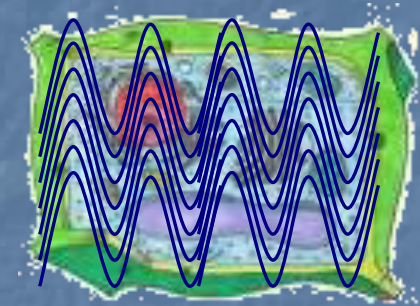
□ On another level it may be the **endogenous bioelectromagnetic field** proposed and researched by many scientists (like Fröhlich, Giudice, Vitiello). This component of the biofield spans from microtubules up to the whole organism, but is most important on the cellular level.



microtubules



Microtubular EM field at two different frequencies *

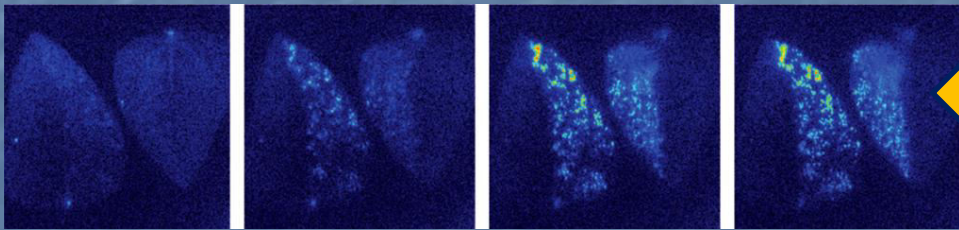


Scheme of cellular bioelectric field

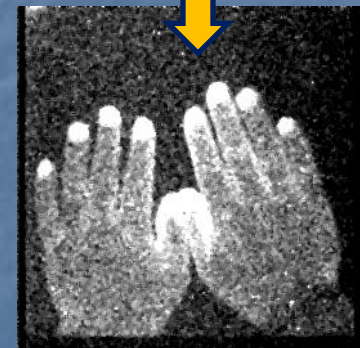
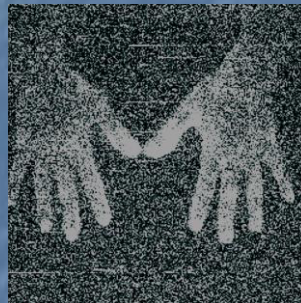
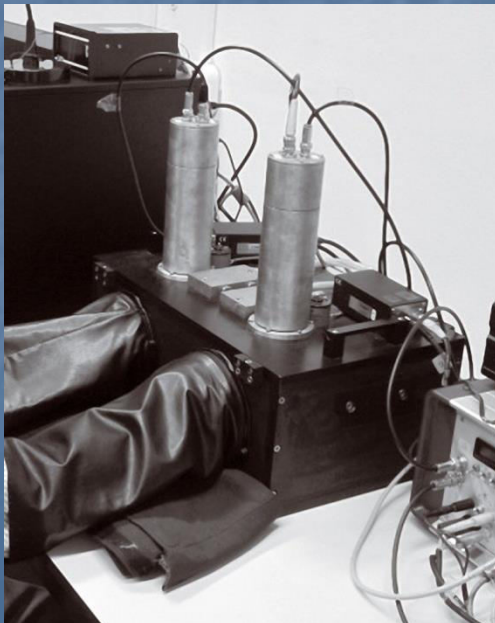
* Cifra, M., Pokorný, J., Havelka, D. and Kučera, O., 2010. Electric field generated by axial longitudinal vibration modes of microtubule. *BioSystems*, 100(2), pp.122-131.

Contemporary theoretical considerations based on empirical research

□ in addition to this cellular endogenous EM field some scientists speak also about the **photonfield**; both fields could have classical and quantum behavior.

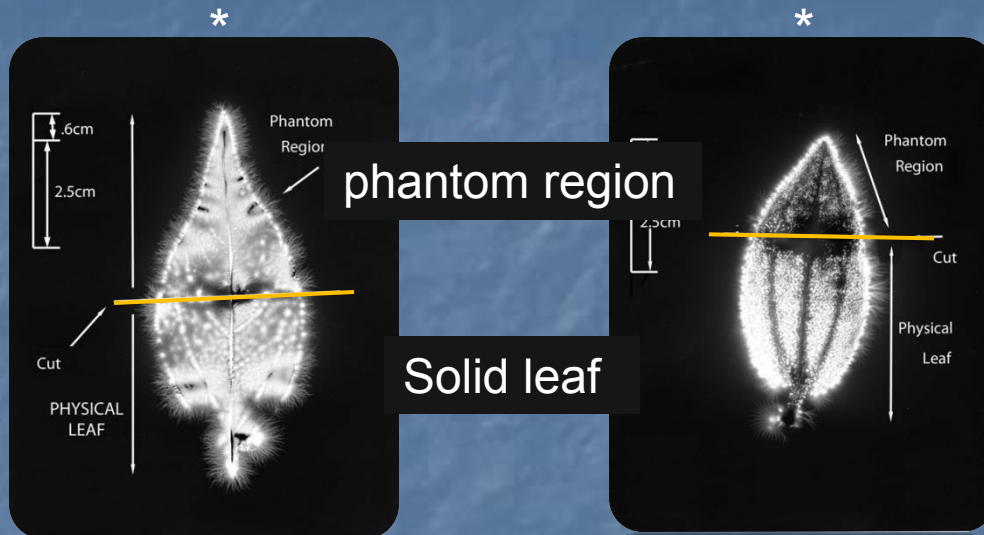


Ultraweak photon emission from leafs (response to stress) and human palms (normal oscillations*)

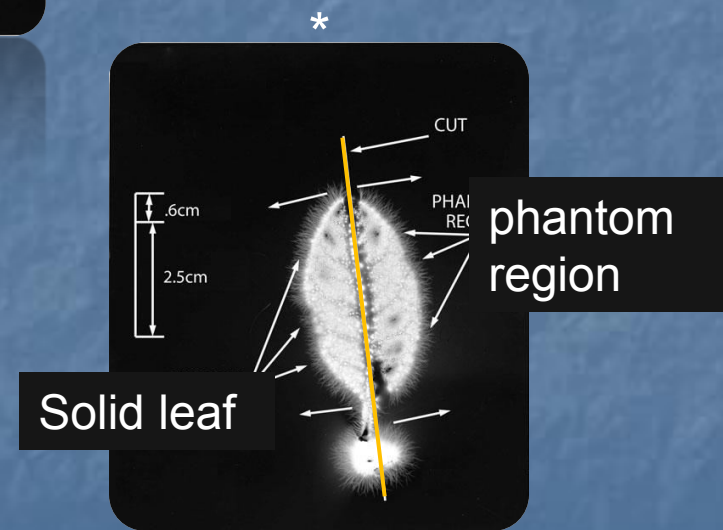
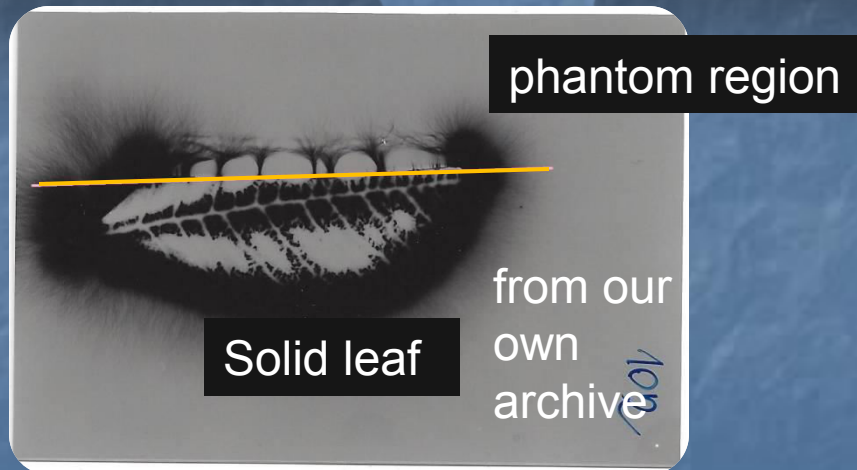


* See for instance Cifra M et al., 2007, Spontaneous ultra-weak photon emission from human hands is time dependent, Radioengineering, 15(2), 15-19

□ the “**fifth field**”, orgone energy, qi, prana, (a)ether ...



The field of as yet physically unknown nature with strong **morphogenetic features**. It cannot be identified as a form of the already known electromagnetic field

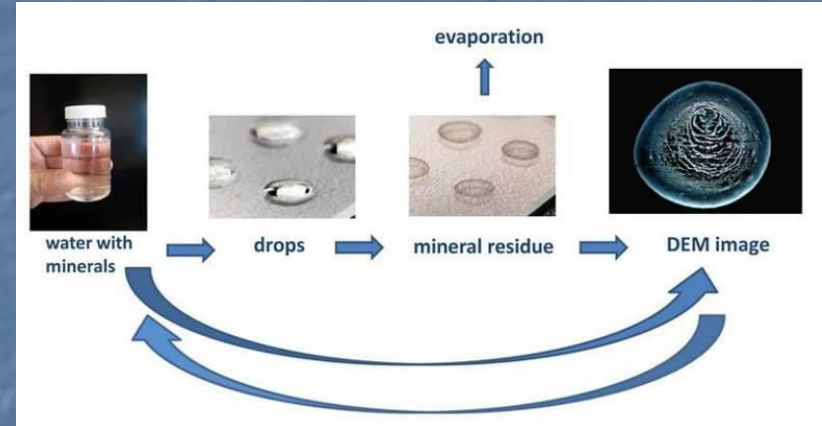


* from Hubacher, J., 2015. The phantom leaf effect: A replication, Part 1. The Journal of Alternative and Complementary Medicine, 21(2), pp.83-90.

Research of the biofield at the Institute Bion



☐ physiological measurements



☐ detection using droplet evaporation method



☐ detection by MU EIS Impedance spectrometry

Testing the effects of biofield radiation on volunteers by physiological measurements

❑ As it was seen all levels of the biofield **can be detected** by the appropriate methods.

❑ In the measurements that will be presented here we made certain **assumptions** (hypotheses).

❑ 1) It may be assumed that the biofield works also **at a distance**, where any biochemical and classical electromagnetic influences should be excluded.

❑ 2) It may be also assumed that the biofield radiation, even if classically considered as (ultra)weak may still **have a measurable effect on humans**.

❑ 3) The third assumption is that the biofield's radiation **demonstrates a particular strength from bioenergy therapists**.

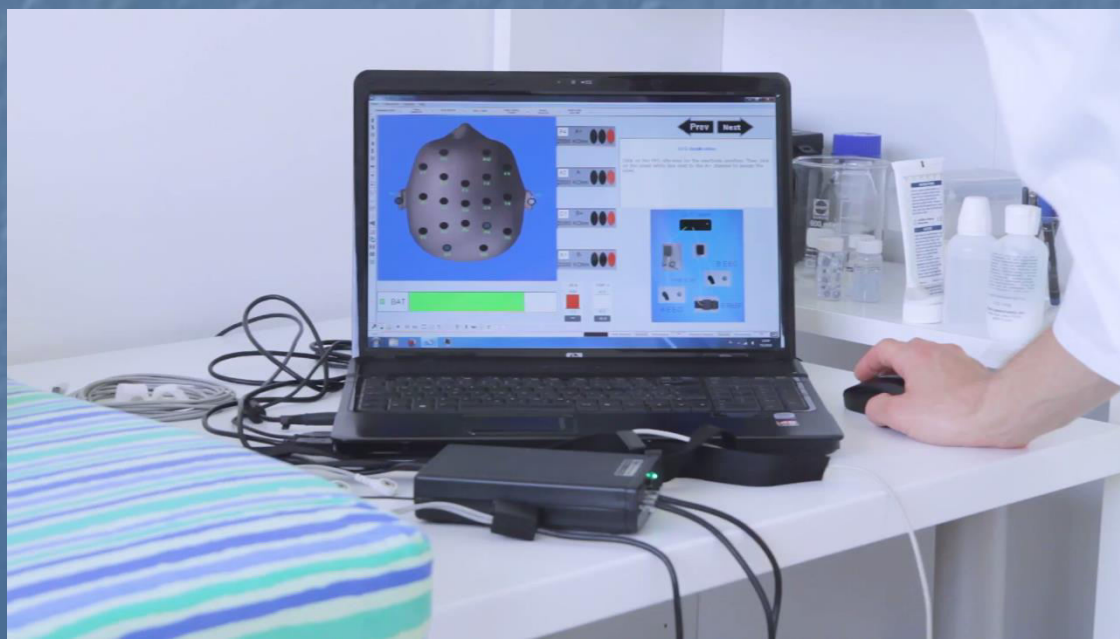




According to the aforementioned assumptions we decided to try to detect and test the biofield of bioenergy therapists in a **blind experimental** situation, comparing their capability with the control (no therapist or no irradiation). With experiments involving humans we decided to measure **physiological parameters** of volunteers exposed to bioenergy treatment or no treatment.

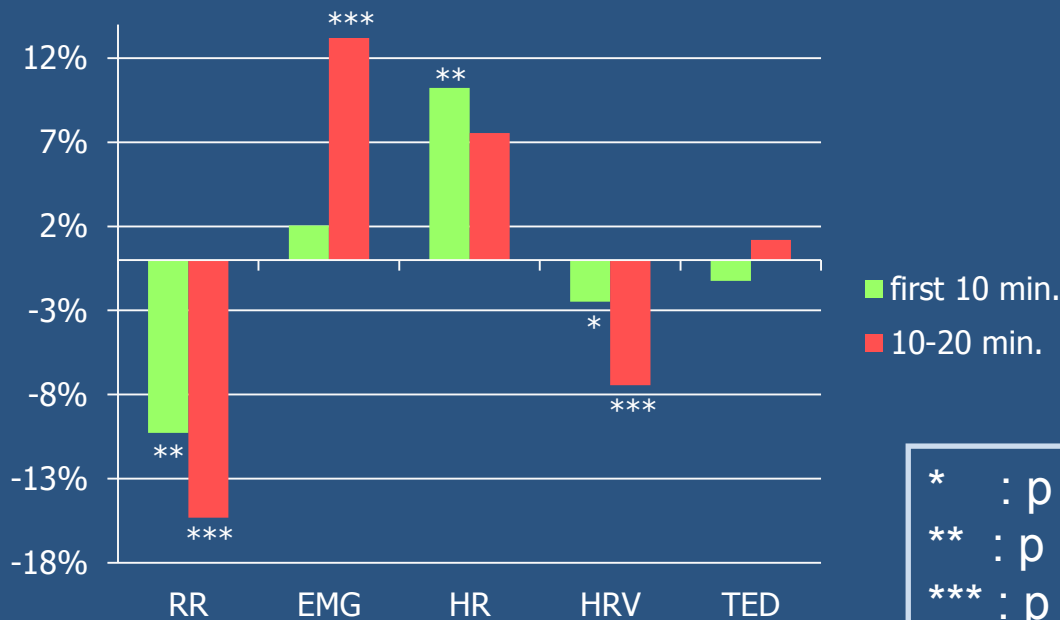
3-5 volunteers were used per tested therapist; they were once exposed and on other occasion unexposed (**blind test**) to the influence of the therapist.

The following **physiological parameters** were used: skin conductance, heart rate, heart rate variability, muscle tension, various breathing parameters and temperature.



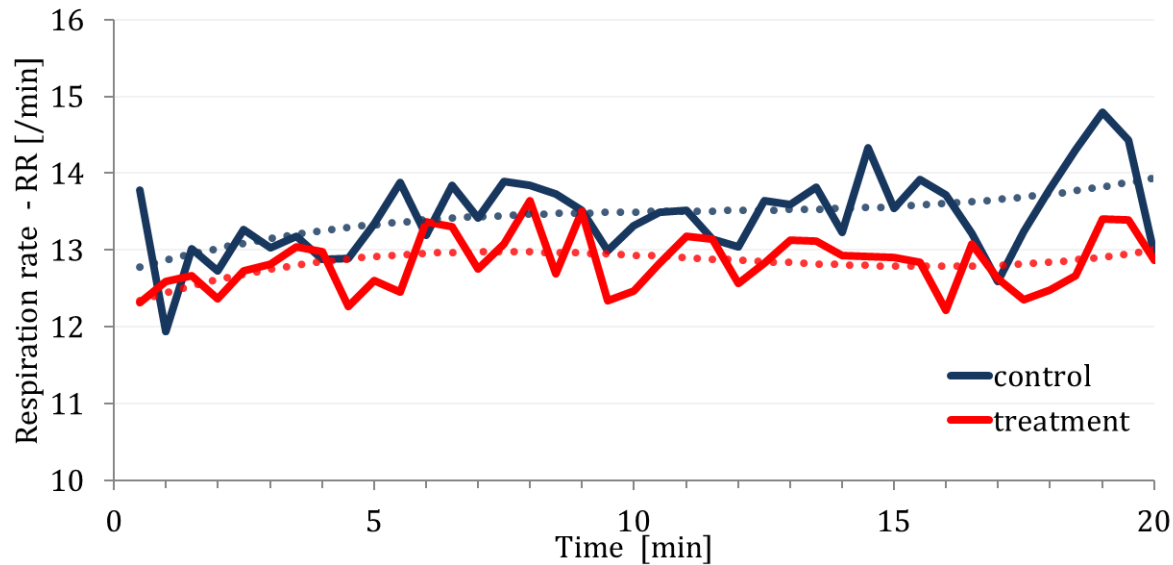
The research comprised 13 therapists and around 30 different volunteers. The volunteers had different health issues and therapists tried to treat them individually. With this relatively high initial variability it was very bold to expect some congruent results for all 47 therapies vs. 47 controls (sham exposure). However, we still found some general effects of bioenergy on humans in at least 4 parameters as seen on Graph 1.

Bioenergy impact normalized by standard deviation (n=47)



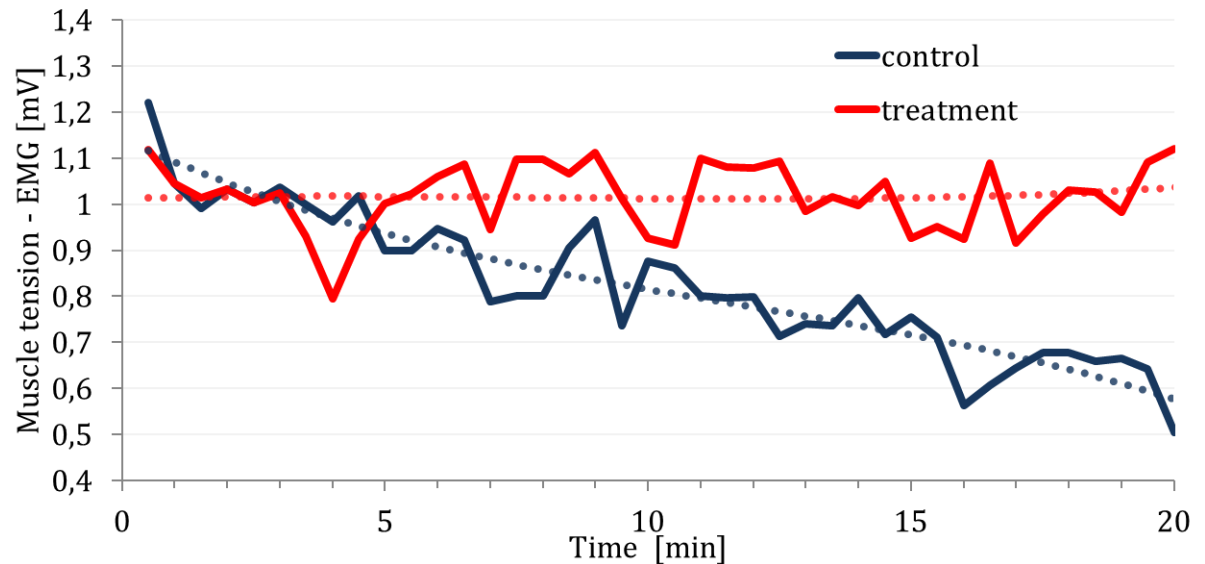
Graph 1: The results of bioenergy impact of therapists (therapy vs. control, 47 cases) in 5 physiological parameters:
 RR – respiration rate (/min)
 EMG – muscle tension
 HR – heart rate
 HRV – heart rate variability
 TED – thorax expansion difference

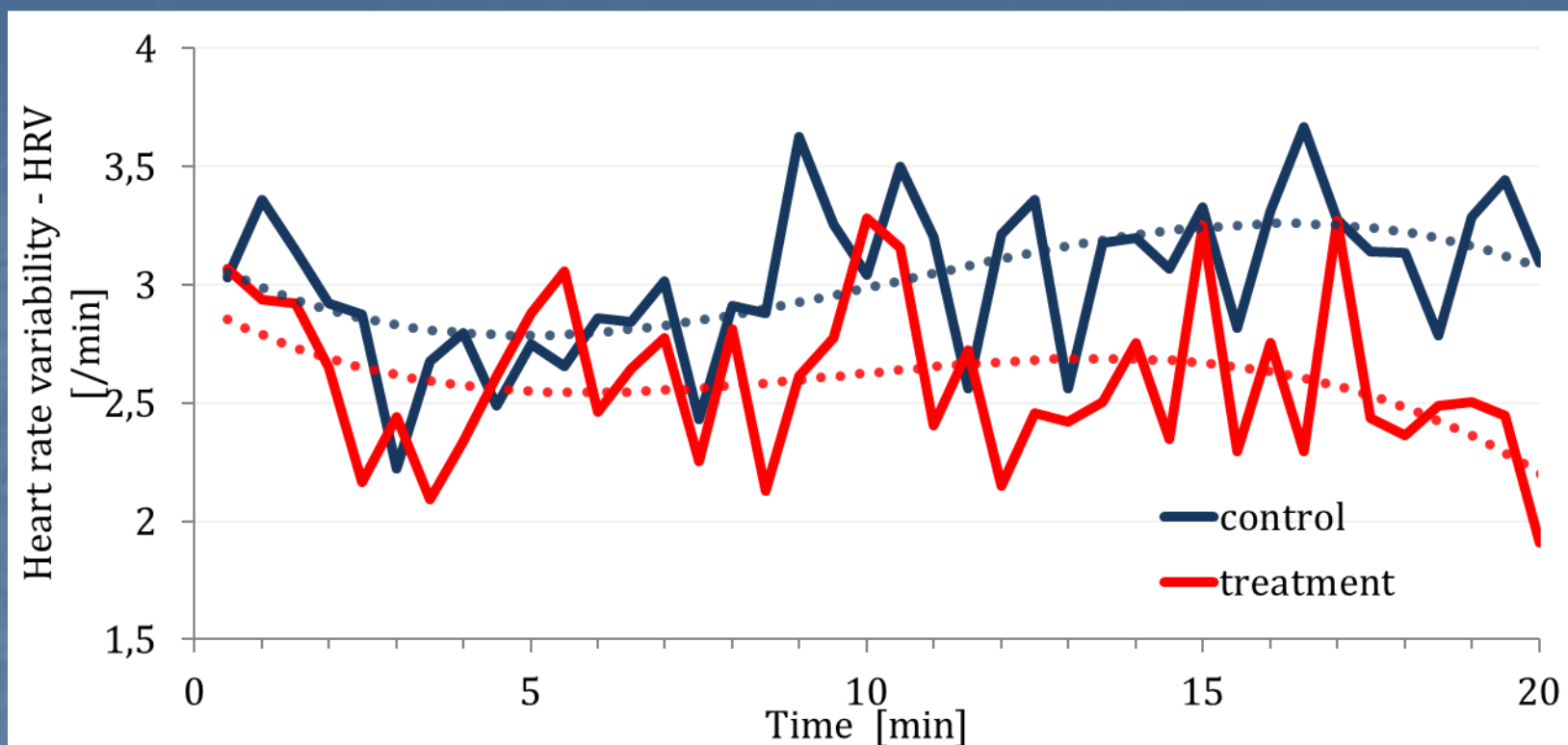
* : p < 0.05
 ** : p < 0.01
 *** : p < 0.001



Graph 2:
Respiration rate median values for treatment (red line) and sham exposure (blue line) (47 measurements)

Graph 3: Median muscle tension or activity (MA) values for treatment (red line) and sham exposure (blue line) (47 measurements)

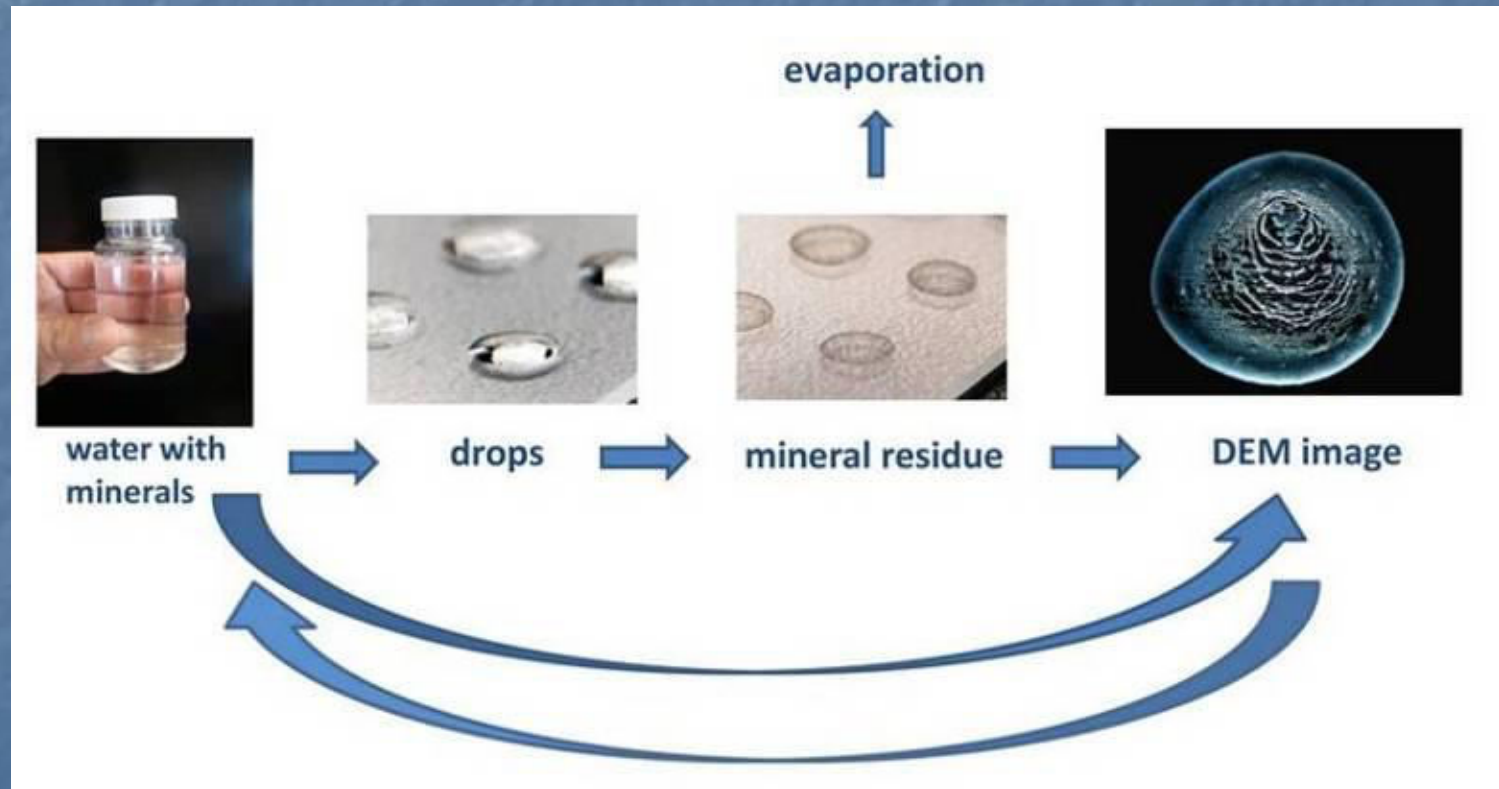




Graph 4: Median *heart rate variability* values for treatment (red line) and sham (blue line) exposure (47 measurements)

Taking into account all these results we can safely assume that the biofield emanating from the bioenergy therapists demonstrate some general characteristics.

Testing changes in water oscillatory structures via dark field microscopy of dried water drops previously exposed to the therapists' biofield



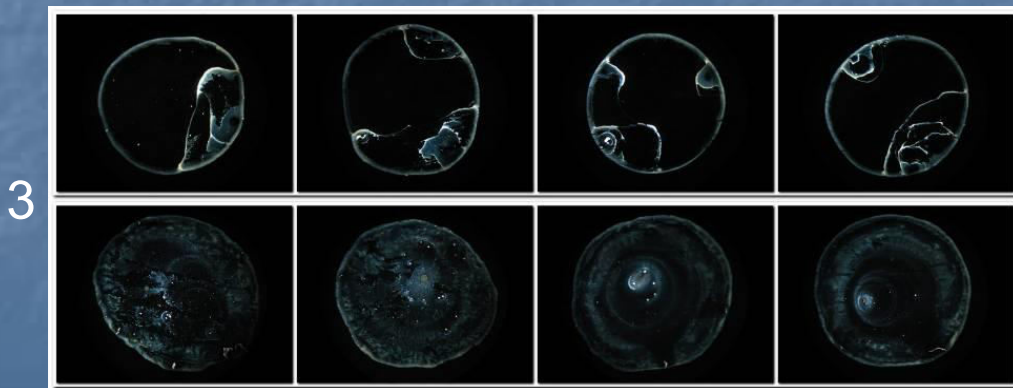
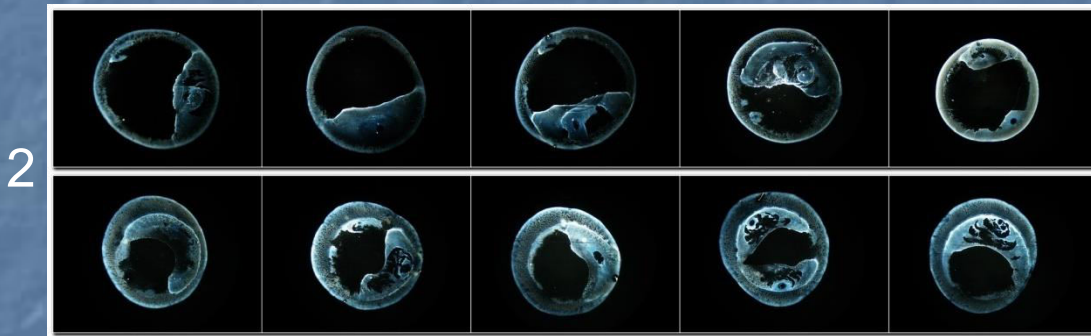
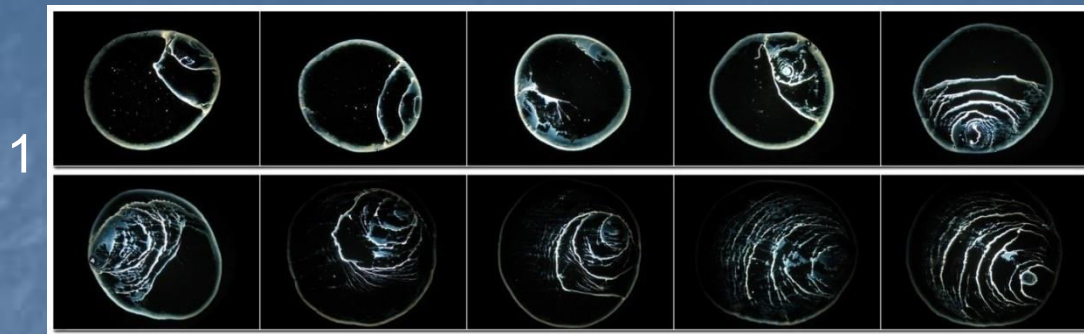
Bion Institute's Experiments with biotherapists using Droplet Evaporation Method (DEM)

The method consisted of creating drops of a standard water solutions on clean microscope slides and drying them under defined conditions. Dry residues were then observed under the microscope. Afterwards they were photographed and analyzed by visual assessment or a specially made software.



We tested the possibilities of detecting the biofield emanations from bioenergy therapists by a direct influence of the therapists on water structuring monitored by the DEM. From 16 such tests 11 succeeded to change the DEM residues structures in a significant manner while 5 did not succeed (more than 2/3 of successful trials). The research spanned 3 year.



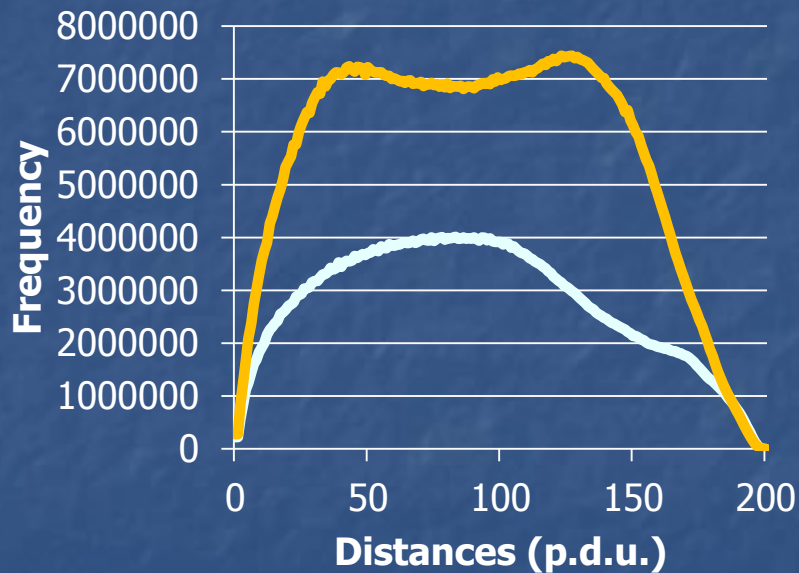


Three examples of influencing water by (ultra)weak EM emission from hands of three different therapists.* The upper row: evapo images of the control, the lower row: images of the exposed water.

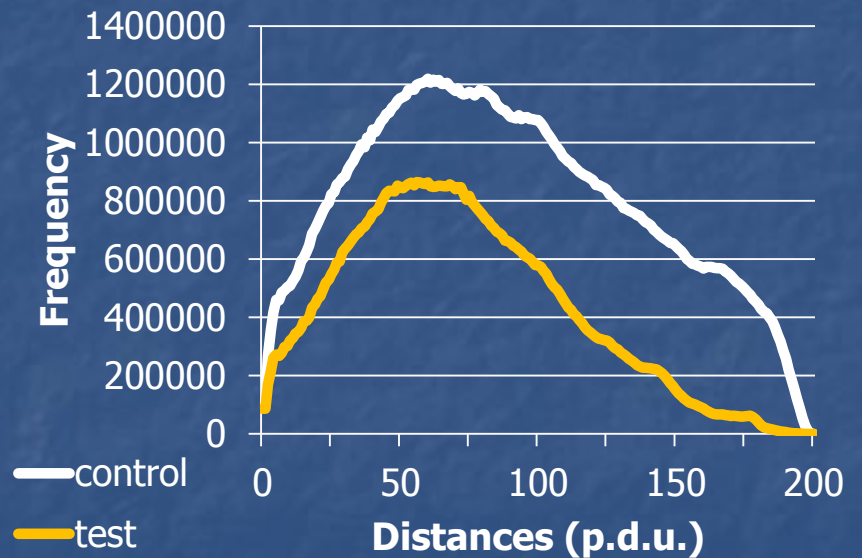
* To be published as Jerman I, Dovč P., Detection and evaluation of weak emissions effects on humans by clinical tests using physiological parameters in Handbook of Biophysics and Psychotronics, editor Serge Kernbach, 2018, Pan Stanford Publishing.

On **Graphs 5** and **6** the frequency distribution involving special computer analysis of water droplets for two different cases shown on the previous slides. Control and test water are from the same source and involve treatment in the same way save for the biofield irradiation of the tested water from the therapist.

Graph 5:

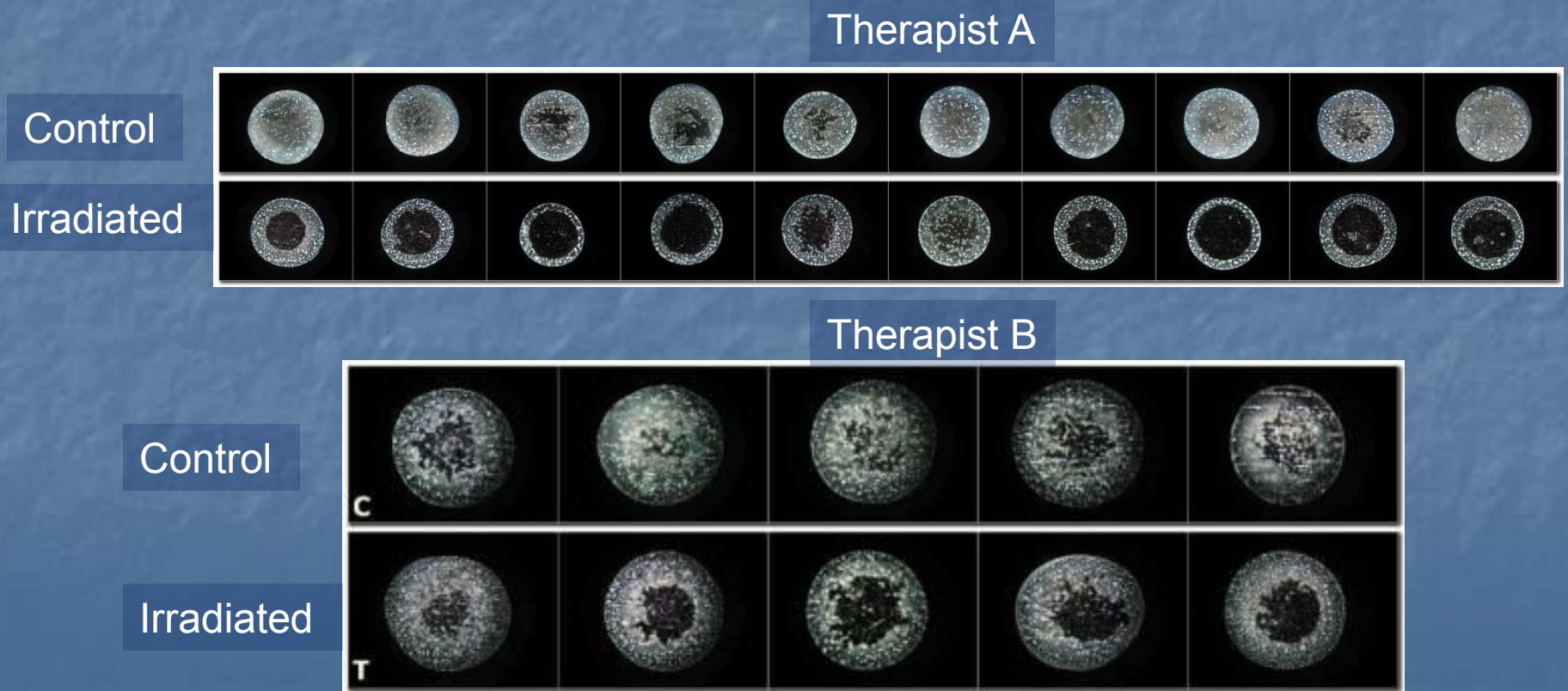


Graph 6:



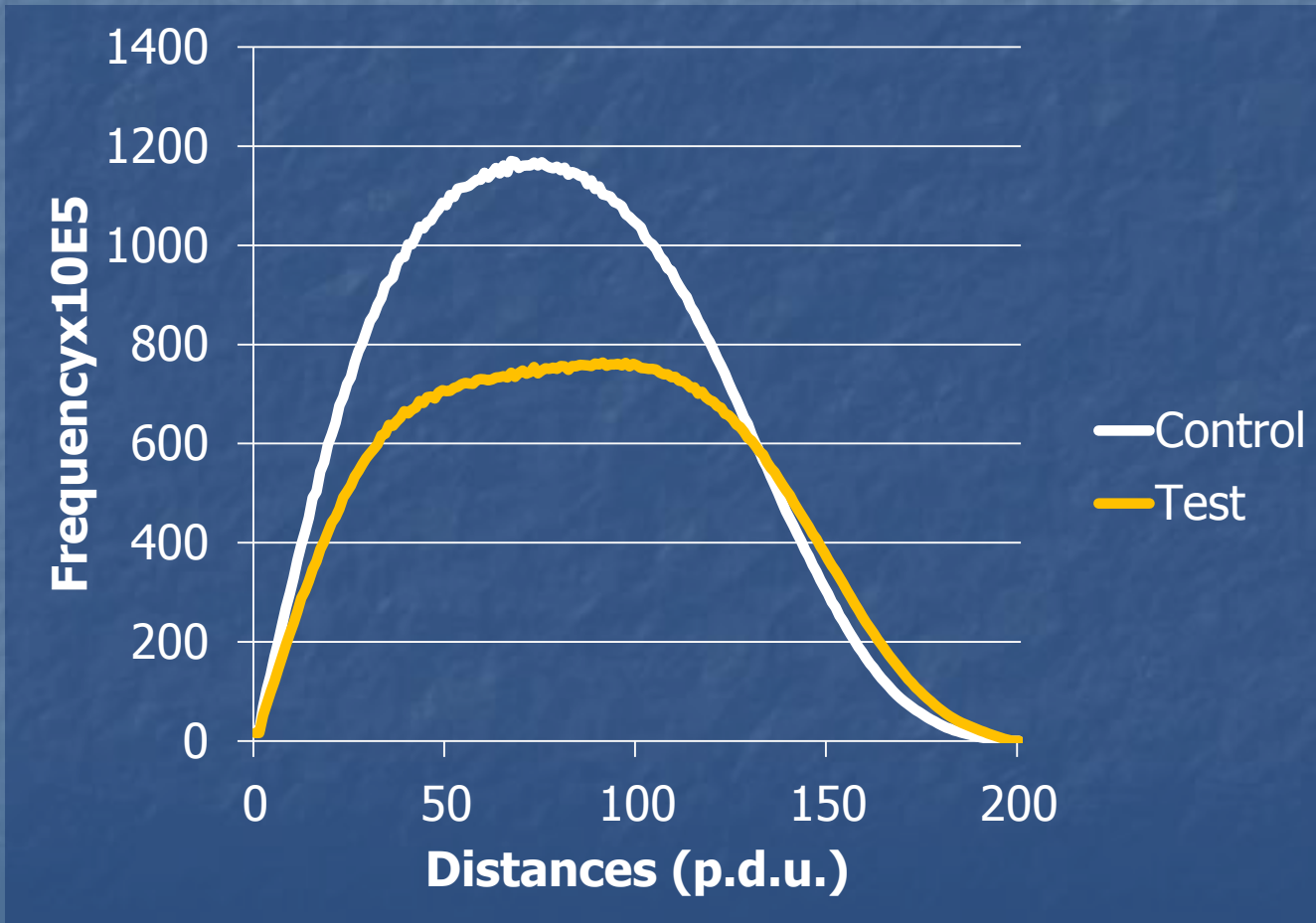
Experiments with mental impact of biotherapists on water

In another group of experiments we tested therapists' capability of mentally directing the formation of ring patterns, as presented on the lower figure. From 14 such tests 7 succeeded to narrow the ring of droplet remnants, 4 did not succeed, while with 3 cases water did not yield the possibility to form rings (a little less than 2/3 of successful trials).



Therapist B: frequency distribution analysis for her mental intention in the formation of ring structure

Graph 7: Frequency distribution analysis



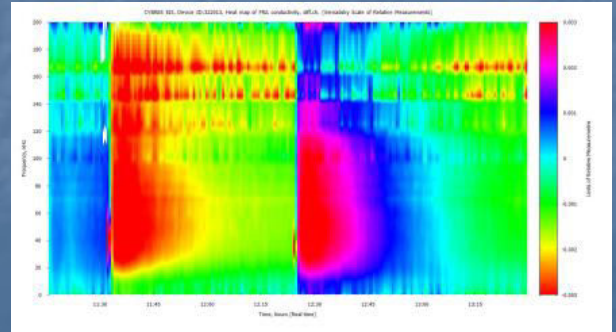
MU EIS impedance spectrometry experiments of biofield impact on water

The EIS device measures very subtle changes in **water impedance** and some other parameters in a direct or differential way.

Since **temperature** effects can strongly influence the experimental outcome, we decided to diminish them as much as possible.

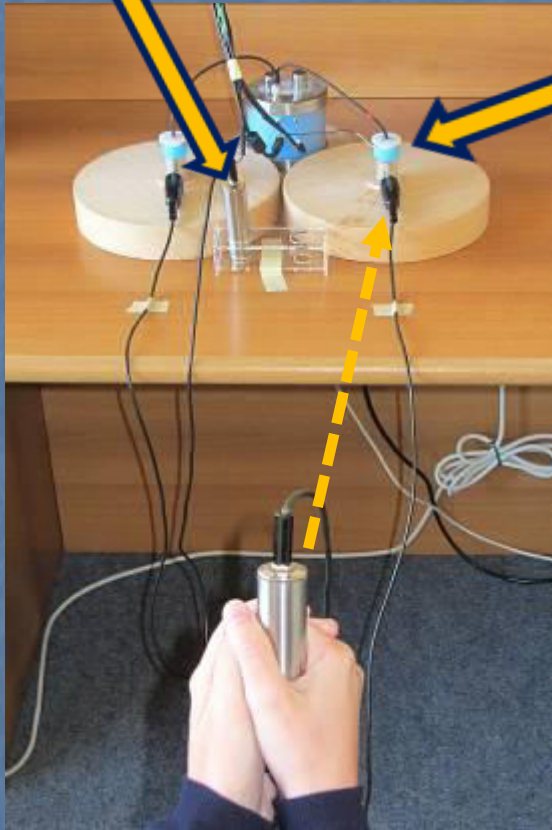
Therefore, we did mostly the experiments (still in a pilot phase) where the influencing person (bio-therapist) or a lay person did not touch the sensor chamber – we conducted the biofield via a wire attached to an aluminum foil wrapped around the chamber.

Sensor chamber

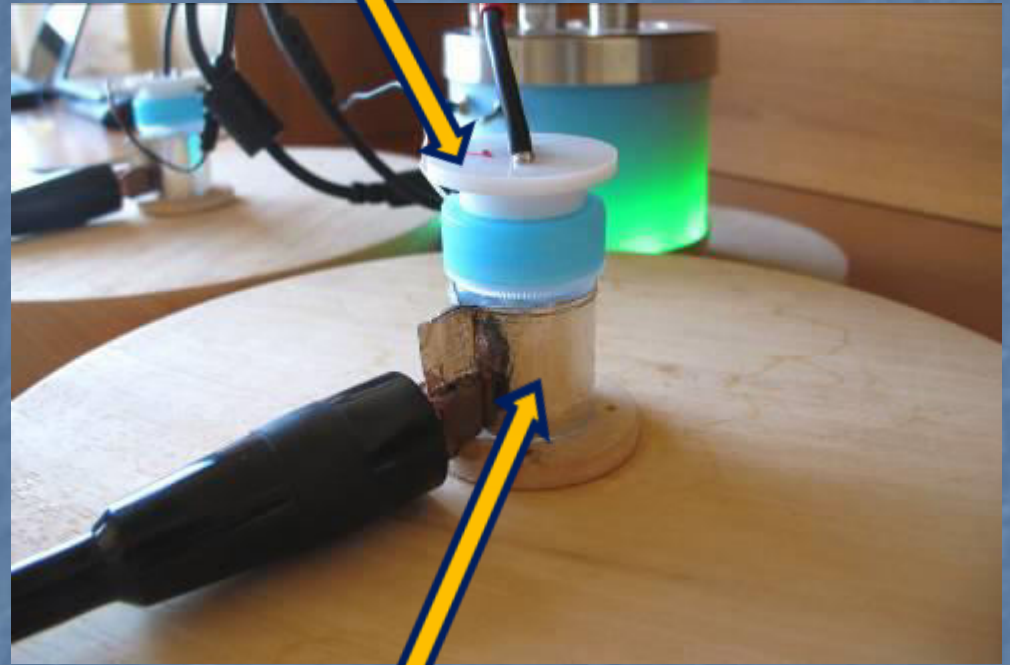


Experimental situation

Control electrode for control chamber (left)

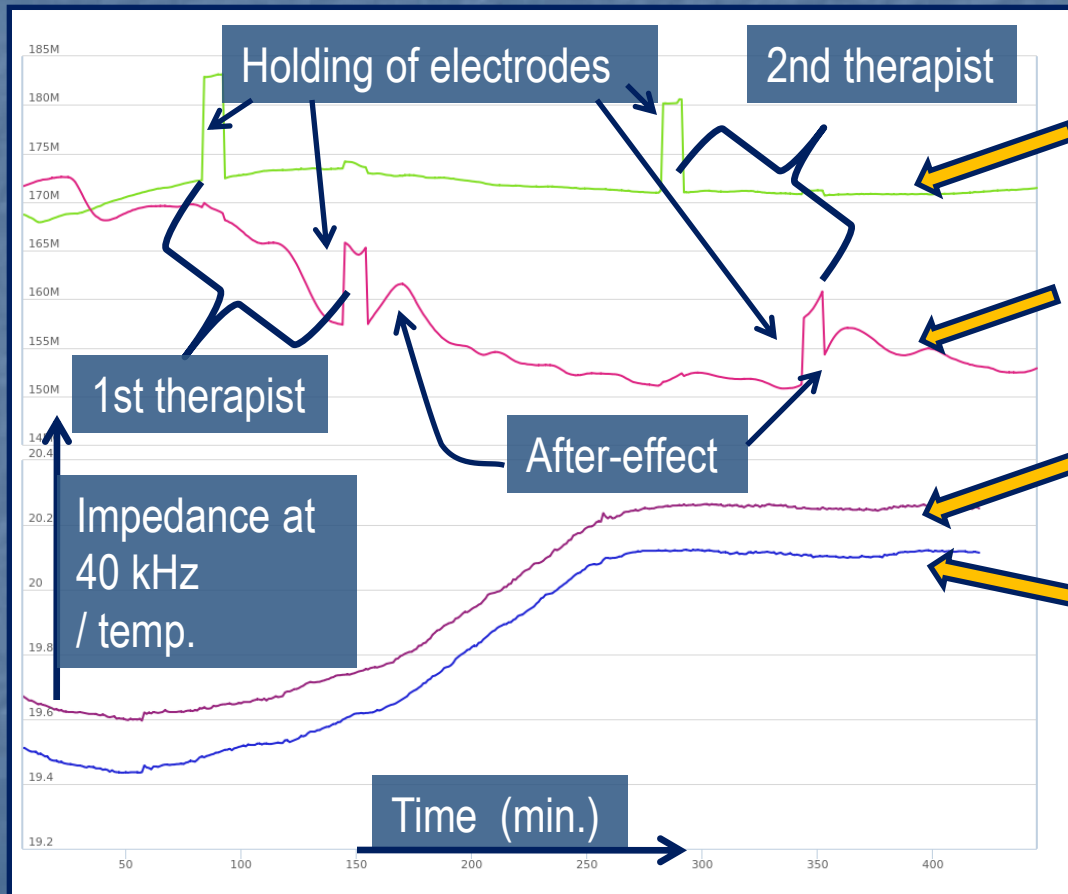


Sensor chamber



Aluminum foil wrapped around the sensor chamber.

An experiment where the first touch (first chamber) involved no intention to influence water, while at the second one (second chamber) the therapist put a strong effort into influencing the water in the chamber.



First chamber (measuring channel), **control**

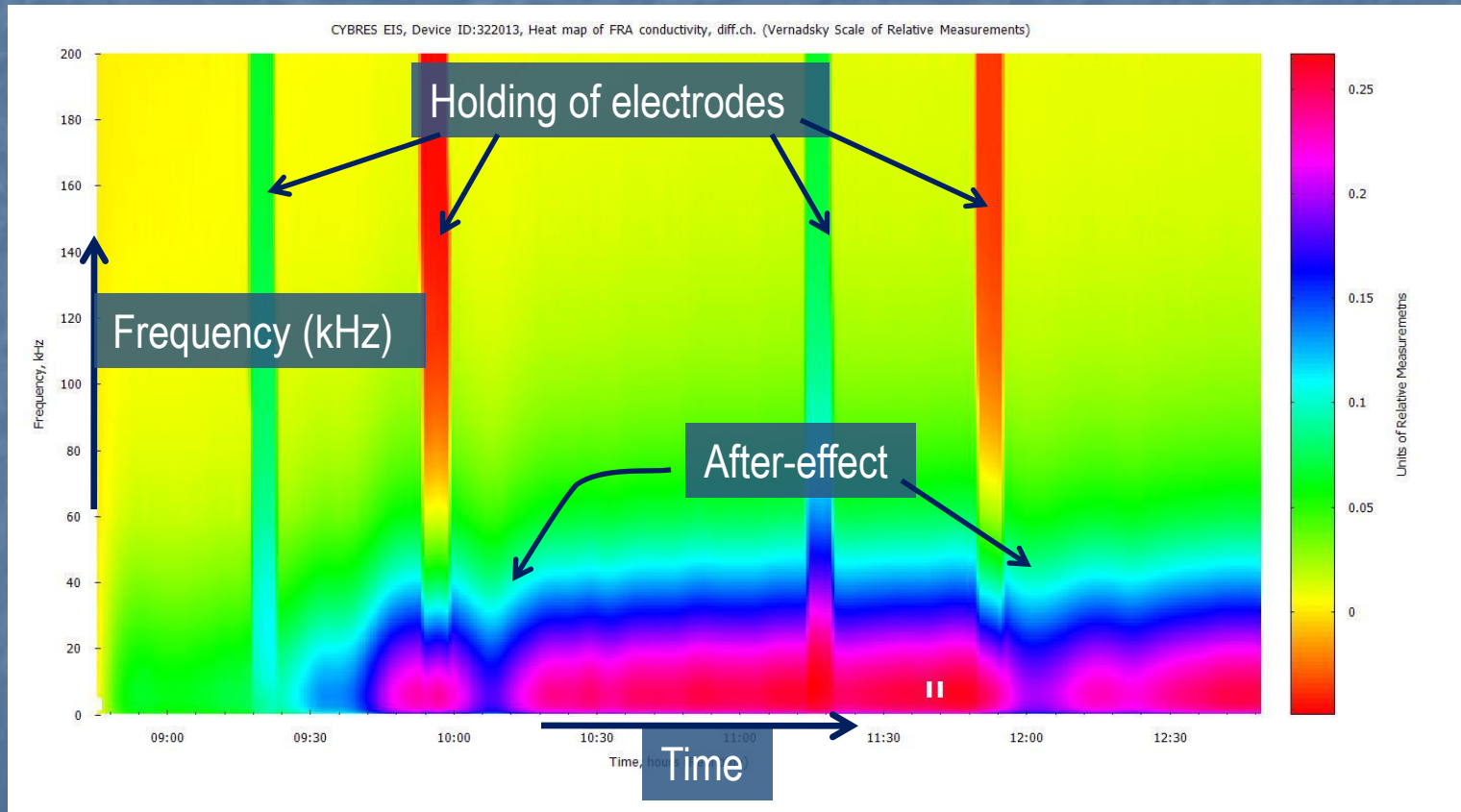
Second chamber (intention of **biofield influence**)

First chamber temperature

Second chamber temperature

No after-effect is seen for the first chamber.

Same exp.: normalized differences in conductivity between the two channels in color coding.

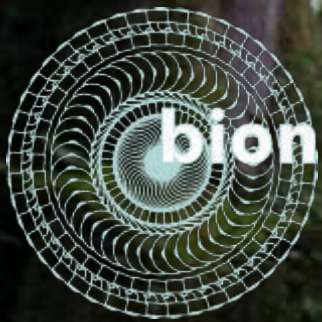


Conclusion

The **established science** has its own belief system based on its long history of experimentation and theoretical generalizations. As yet it excludes the biofield from its possible consideration – it has a strong prejudice against it since the concept of the field reminds it on various vitalistic concepts. It regards the biofield as a pseudoscientific concept that should be banned from any further serious scientific considerations.

However, up to now sufficient theoretical as well as empirical evidence accumulated that permits to take the **biofield hypothesis seriously** and to begin a thorough, systematic and wide research to ascertain its nature and role in supporting life and health of organisms.





Thanks for your attention

I would like to express my gratitude and thanks to Manta Ltd., Sežana, Slovenia, who partially sponsored this work.