

PARAZITOLOGICKÝ SEMINÁŘ Bi6473 Jaro 2018 (semestr 19.2.-22.5.2018)

Masarykova Univerzita, Přírodovědecká fakulta, Kampus Bohunice, Kamenice 753/5, Brno (**každý Čt 16-18:00, A11 234**)

8.3.2018 “Toulky parazitologů po Středomoří, expedice 2017”

Mgr. Michal Benovics, Mgr. Kateřina Vyčítalová, Mgr. Tomáš Pakosta (všichni PŘ.f. MU Brno)

15.3.2018 *Ashworthius sidemi* – (znovu) objevený parazit?

doc. Ing. Jaroslav Vadlejch, Ph.D. (Česká zemědělská univerzita v Praze)

22.3. 2018 Čo nám dokážu napovedať hostiteľsky špecifické parazity o evolúcii ich hostiteľov?

Príklad kaprovitých rýb a žiabrových parazitov rodu *Dactylogyrus*.

Mgr. Michal Benovics (PŘ.f. MU Brno)

29.3. 2018 Neglected role of parasites in food webs.

Mgr. Miroslava Soldánová, Ph.D. (Biologické centrum AV ČR, Parazitologický ústav)

5.4. 2018 Biology of marine early emergent apicomplexans.

Mgr. Andrei Diakin (PŘ.f. MU Brno)

12.4. 2018 Biorezonance – mýtus nebo realita?

Mgr. Michal Teplan, Ph.D. (Ústav merania, SAV, Bratislava)

Ing. Michal Cifra, Ph.D. (Ústav fotoniky a elektroniky AV ČR, Praha)

19.4. 2018 Understanding *Fasciola hepatica* infection using ‘omics’ tools

Dr. Krystyna Cwiklinski (Queen’s University Belfast, UK)

26.4. 2018

Proteolýza fasciolidních motolic. Bc. Kistýna Peterková (Přf. UK Praha)

Current trends in diagnostics of larval toxocarosis. Mgr. Kateřina Skulinová (Přf. UK Praha)

3.5. 2018 A genomic perspective on the evolution of *Gyrodactylus salaris* and related species

Dr. Christoph Hahn (University of Graz, Austria)

10.5. 2018 BUDE UPŘESNĚNO

Prof. Serge Morand (University of Montpellier, France)

17.5.2018 Prezentace bakalářských a diplomových prací studentů, kteří budou obhajovat v jarním semestru 2018

(Bc. Daniela Slamková, Bc. Gabriela Sajlerová, Bc. Jitka Fojtů.....)

Biorezonancia – mýtus alebo realita?

Michal Teplan

OZ Cahust
Ústav merania SAV, Slovensko

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Michal Cifra

Ústav fotoniky a elektroniky
AV ČR, Praha

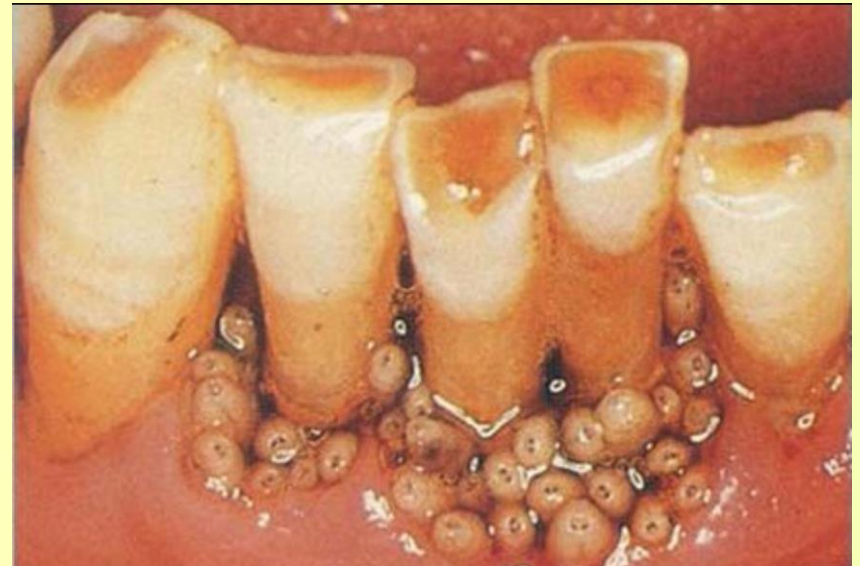
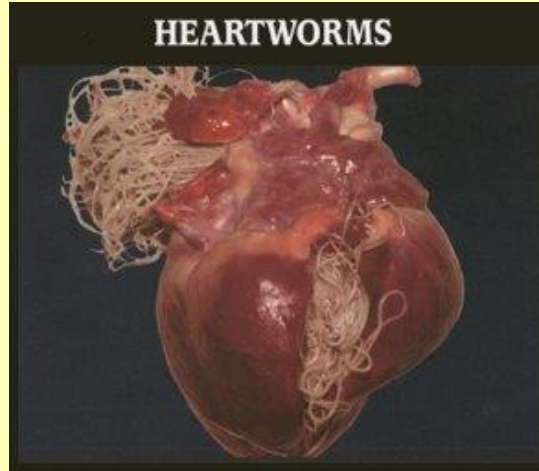
Úvod

- Dezinformácia a manipulácia na internete: zvyšujúci sa trend, silnejúci dopad na fungovanie spoločnosti
- Typická oblasť: Alternatívna medicína vrátane biorezonancie
- Má zmysel takéto témy skúmať a prezentovať?
- Mali by sa skúmať na poli oficiálnej vedy?
- Zástanci vs. skeptici: Argumentačná vyváženosť?
- Ako pristupovať k táborom zástancov a táborom odporcov?

Introduction

- What is resonance in biological system:
larger effects are evoked due to feeble stimulus characterized by specific parameters (frequency, intensity, concentration), while they are absent for slightly shifted values of these parameters
- beneficial and adverse health effects
- rich potential for diagnostics and therapy
- claims on resonance in evidence based and alternative medicine: is there any reasonable border?

Motivácia ?



Motivácia

The image shows a Google search interface. The search bar contains the word "bioresonance". Below the search bar, there are navigation tabs for "All", "Images", "Videos", "News", "Maps", and "More". The "All" tab is selected. The search results show "About 410,000 results (0.51 seconds)". The first result is a text snippet defining bioresonance as a non-invasive therapy. To the right of the text is a photograph of a piece of medical equipment with various dials and buttons. Below the text is a link to "Bioresonance, non-invasive therapy, Rosedale Clinic, Reading ..." with the URL "https://www.rosedaleclinic.co.uk/therapies/bioresonance". To the right of the main result is a box titled "See results about" with a link to "Bioresonance center Bratislava (Health in Bratislava, Slovakia) Pluhová 40, 831 03 Bratislava". Below the main result are "People also ask" questions, with the last one selected: "What is therapeutic touch How is it used?".


Google

bioresonance

All Images Videos News Maps More Settings Tools

About 410,000 results (0.51 seconds)

Bioresonance is a non-invasive therapy which involves placing electrodes on your skin for diagnosis and treatment. The electrodes are connected to a Bicom machine which checks the energy wavelengths coming from your body, and then counteracts bad frequencies by restoring the optimum balance.



Bioresonance, non-invasive therapy, Rosedale Clinic, Reading ...
<https://www.rosedaleclinic.co.uk/therapies/bioresonance>

About this result Feedback

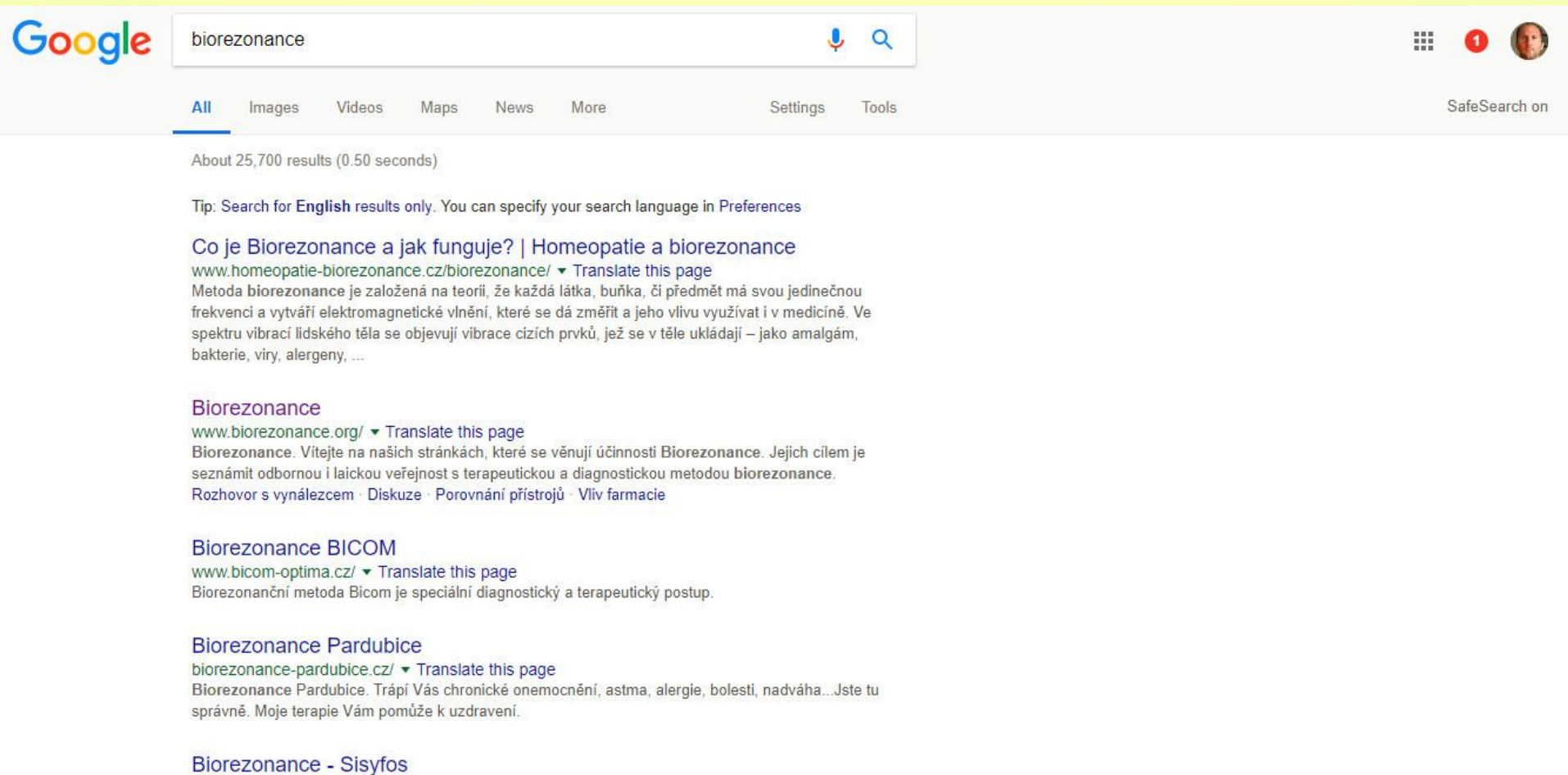
See results about
Bioresonance center Bratislava (Health in Bratislava, Slovakia)
Pluhová 40, 831 03 Bratislava

People also ask

- What is a healing vortex?
- What is a Mora therapist?
- What is Quantum therapy?
- What is therapeutic touch How is it used?

Feedback

Motivácia



The image shows a Google search interface. At the top left is the Google logo. The search bar contains the text "biorezonance". To the right of the search bar are icons for voice search and a magnifying glass. On the far right, there is a grid icon, a red notification bubble with the number "1", and a profile picture. Below the search bar, there are tabs for "All", "Images", "Videos", "Maps", "News", "More", "Settings", and "Tools". The "All" tab is selected. Below the tabs, it says "About 25,700 results (0.50 seconds)". A tip suggests searching for English results. The first search result is titled "Co je Biorezonance a jak funguje? | Homeopatie a biorezonance" from the website www.homeopatie-biorezonance.cz. The second result is titled "Biorezonance" from www.biorezonance.org. The third result is titled "Biorezonance BICOM" from www.bicom-optima.cz. The fourth result is titled "Biorezonance Pardubice" from biorezonance-pardubice.cz. The fifth result is titled "Biorezonance - Sisyfos".

Google

biorezonance

All Images Videos Maps News More Settings Tools

SafeSearch on

About 25,700 results (0.50 seconds)

Tip: Search for **English** results only. You can specify your search language in [Preferences](#)

Co je Biorezonance a jak funguje? | Homeopatie a biorezonance
www.homeopatie-biorezonance.cz/biorezonance/ [Translate this page](#)
Metoda biorezonance je založená na teorii, že každá látka, buňka, či předmět má svou jedinečnou frekvenci a vytváří elektromagnetické vlnění, které se dá změřit a jeho vlivu využívat i v medicíně. Ve spektru vibrací lidského těla se objevují vibrace cizích prvků, jež se v těle ukládají – jako amalgám, bakterie, viry, alergený, ...

Biorezonance
www.biorezonance.org/ [Translate this page](#)
Biorezonance. Vítejte na našich stránkách, které se věnují účinnosti Biorezonance. Jejich cílem je seznámit odbornou i laickou veřejnost s terapeutickou a diagnostickou metodou biorezonance. [Rozhovor s vynálezcem](#) · [Diskuze](#) · [Porovnání přístrojů](#) · [Vliv farmacie](#)

Biorezonance BICOM
www.bicom-optima.cz/ [Translate this page](#)
Biorezonanční metoda Bicom je speciální diagnostický a terapeutický postup.

Biorezonance Pardubice
biorezonance-pardubice.cz/ [Translate this page](#)
Biorezonance Pardubice. Trápí Vás chronické onemocnění, astma, alergie, bolesti, nadváha...Jste tu správně. Moje terapie Vám pomůže k uzdravení.

Biorezonance - Sisyfos

Motivácia

Google biorezonancia

All Images Videos Maps News More Settings Tools

About 69,300 results (0.52 seconds)

Biorezonancia Bratislava - Biorezonančná terapia BICOM
www.biorezonancia-bratislava.sk/ Translate this page
Biorezonancia je prelomový diagnostický a terapeutický postup - nový smer medicíny. Vďaka prístroju BICOM Optima môžu byť liečené skutočné príčiny ochorenia.

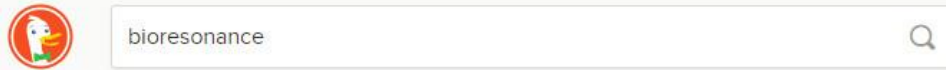
Čo je biorezonancia? | - Biorezonančné centrum
www.biorezonancnecentrum.sk/co-je-biorezonancia/ Translate this page
Cieľom biorezonančnej metódy (biorezonancia) je dostať organizmus do stavu, v ktorom sa obnovia jeho prirodzené samoregulačné schopnosti. Každá jedna bunka v našom tele má svoju frekvenciu. Prístroj BICOM Optima dokáže zistiť a napraviť disharmónie v týchto frekvenciách. Tak riešime zdravotné problémy ešte ...

Biorezonancia - Lovci šarlatánov
www.lovcisarlatanov.sk/tag/biorezonancia/ Translate this page
Biorezonancia a elektroakupunktúra – stanovisko nemeckej odbornej spoločnosti. Stanovisko Nemeckej spoločnosti pre alergológiu a klinickú imunológiu k biorezonancii a elektroakupunktúre: Biorezonančné techniky, pravdepodobne aj ďalšie resp. skryto odvodené techniky ako Bicom, sú diagnosticky a terapeuticky ...

BIOREZONANCIA BICOM BRATISLAVA: Uvod
biorezonancia-bratislava.com/ Translate this page
BIOREZONANCIA BICOM®. Biorezonančná terapia BICOM je špeciálny diagnostický a terapeutický postup, nový smer v medicíne. Vďaka prístroju BICOM môžu byť u mnohých prípadov zistené a skutočne riešené, často skryté príčiny ochorenia.

Biorezonancia Bratislava
Website Directions Save
5.0 ★★★★★ 2 Google reviews
Alternative medicine practitioner in Bratislava, Slovakia
Address: Tomášikova 223/26, 821 01 Bratislava
Hours: Open · Closes 8PM
Phone: 0915 727 726
Suggest an edit
Know this place? Answer quick questions

Motivácia



Privacy, simplified. ▾



Web Images Videos

Slovakia ▾ Safe Search: Strict ▾ Any Time ▾

Bioresonance Therapy: Better Diagnostic Method? - Dr. Weil

Bioresonance therapy is also called electrodermal testing, bio-physical information therapy, BIT, bio-energetic therapy, energy medicine and vibrational medicine.

 <https://www.drweil.com/health-wellness/balanced-living/healthy-l...>

Bioresonance Healing - Home

Bioresonance therapy is an alternative method to assess variety of health problems of a patient. It's a non-invasive method, which means the patient does not have to ...

bioresonancehealing.com

Bioresonance Therapy Information | Bicom Therapist

Bioresonance is a non invasive treatment and diagnostic tool. Treatment using bicom bioresonance therapy for allergies, parasites, bacteria, toxins, viruses.

 <https://bioresonancetherapy.com>

Bioresonance - YouTube

BioResonance Therapy uses concepts of energy medicine and quantum physics to help the body's self regulatory system. It describes the interaction between the...

 https://www.youtube.com/channel/UCgMgef-nxELn8jaHV01w_Gw

[Energy medicine - Wikipedia](#)

Bioresonance therapy

Bioresonance therapy is a **pseudoscientific medical practice** in which it is proposed that electromagnetic waves can be used to diagnose and treat human illness.

 [More at Wikipedia](#)

[Feedback](#)

Send feedback

Controversial history of electromagnetic phenomena in biology and medicine

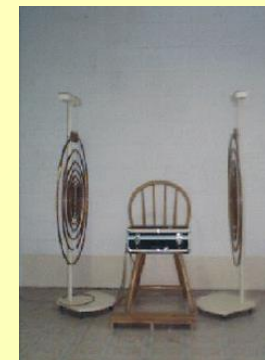
● Dr. Royal Raymond Rife (USA - physics, medicine)

- **Universal microscope** (Report of Smithsonian Inst. Reprint from J. Franklin Institute, vo.237, N2, 1944)
- **Plasma ray tube with audio oscillator**, 140 kHz – 20 MHz clinical instrument, search for frequencies destroying pathogens



● Prof. Georges Lakhovsky (France, electronics, medicine)

- **Multiple Wave Oscillator** 750 kHz – 3 GHz, successful experiments with artificially induced tumors in plants, reports on healing in NYC hospital
- Book **“The Secret of Life”** (1939) – postulates on electrical attributes of living cells; all living cells generate EM oscillations, introduced an energetic view of diseases



Controversial history of electromagnetic phenomena in biology and medicine

● Prof. Antoine Prioré (France - physics, medicine)

- **magnetron oscillator** microwave generator 9.4 GHz with μ s pulses at 1 kHz rate
- **plasma ray tube with audio oscillator**, short Radio Waves - 17.6 and 15.8 MHz
- **research report for the Bordeaux University, 1974:** "*Healing of the acute and chronic experimental Trypanosomiasis*", a hypothesis on stimulation of defense mechanism



● Prof. Bjorn Nordenstrom (Sweden, diagnostic radiology)

- **biologically closed electric circuits** Karolinska Institute and Hospital, postulates on electrical activity in tumors, questions on its oscillations



Investigation into bioresonance

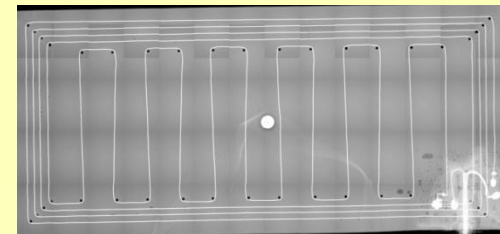
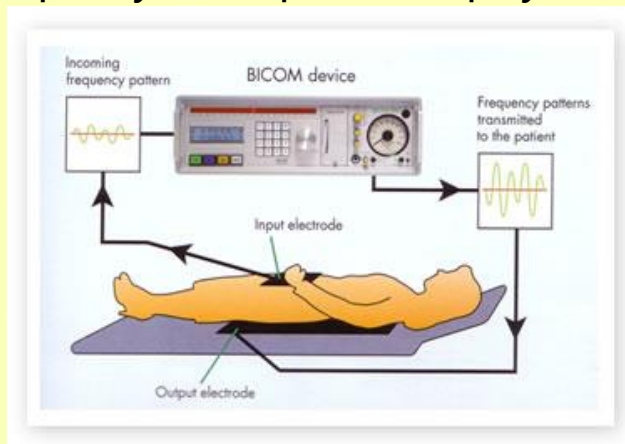
- commercial branch within Alternative and complementary medicine
- extrapolated simplifications suggested that every alive and even lifeless form or material has its own subtle energy field with characteristic vibrations that can be measured and afterwards strengthen or eliminated
- from this concept a claim of a cure for virtually every illness and condition has arisen
- members of official mainstream science in general deny these issues without deeper explanation. However, in privacy more and more educated people are in favor of bioresonance

Bioresonance: phenomenon in alternative medicine

- examined various types and most common devices on the market:
Bicom, Super Ravo Zapper, F-scan, Metatron
- “each cell, patogene, or even nonliving matter has it’s own resonant frequency”
- frequency tables (Rife, Clark): 10 000s items, Hz – 100 kHz, with 0.01-1 Hz precision

Bicom - claims

- every substance displays specific frequency patterns (10 Hz – 150 kHz)
- during therapy specific frequency patterns from a patient or from substances that harm or stress the organism are picked up. Inside the device these frequency patterns are modulated and applied back to the patient.
- BICOM bioresonance method works with a patient's specific endogenous frequency patterns and with the specific frequency patterns of the substances that are stressing the patient.
- measured spectrum is divided into physiological and pathological part
- pathological part is inverted and send back – “eliminates” ill vibrations
- uses a combination of principles from traditional chinese medicine, homeopathy and quantum physics “to test and treat” stresses on your body



CT of the applicator

Bicom - findings

- signal from patient body measured by electrode connecting only by 1 wire
- signal sent to healing applicator is able to induce magnetic field only hidden in geomagnetic background; it is supposed to serve only as a carrier for therapeutic information
- company chiefs: "operation principle is very secret thing"
- pretending objectivity: the mostly used diagnostic tool: rod "biotensor", functioning even when unplugged from the expensive device
- instructions for use: focus on momentarily complaints of the patient and his or her history of health problems = bias
- typical patient: psychosomatic problems + parallel use of therapies (diet, etc.)
- origin in Germany, 70's, Scientology club



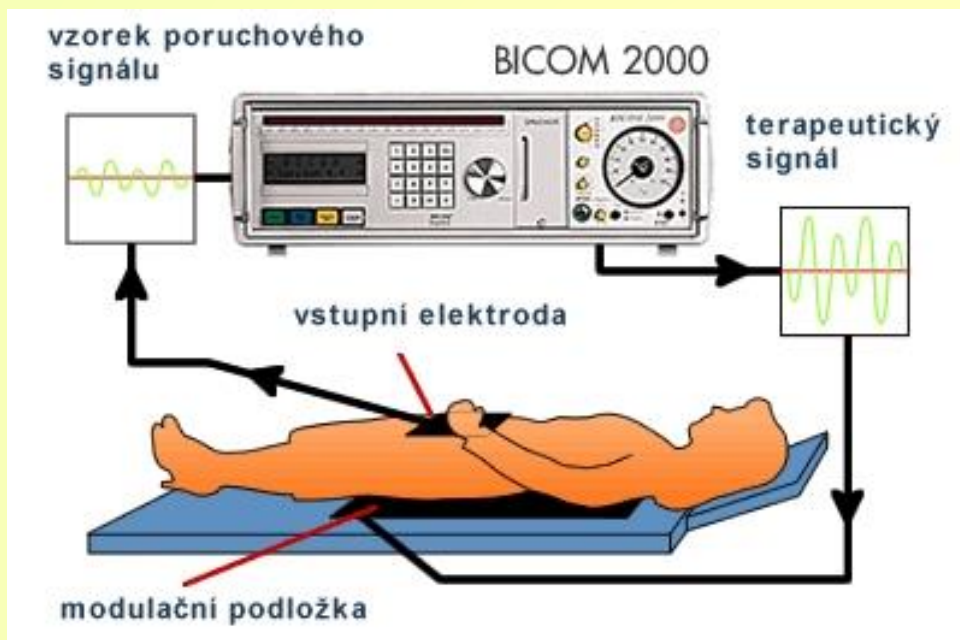
Diagnostika

- funguje (resp. nefunguje) rovnako aj bez drahého prístroja
- alternatívna medicína, liečiteľstvo, psychotronika – virgule, kyvadlá – základné pomôcky
- ideomotorický reflex – podvedomý pohyb
- naivná predstava o priamom rozkývaní vďaka zrážke EM vln:
 - ďalší krok: odstrániť zlatú elektródu – rozkýve sa v ruke rovnako
- fungovanie sa opakovane celosvetovo testovalo: neexistuje pozitívna evidencia
- v našom malom teste s 10 alergickými osobami liečiteľka s virgulou tiež neuspela
- na základe mnohých, aj osobných skúseností, za istých okolností pripúšťame možnú účinnosť resp. máme voči tomuto prístupu určitý rešpekt a nevieme si mnohé okolnosti vysvetliť
- Ide o presahy do ďalších hraničných tém (ESP,...)

Diagnostika

- biotenzor v kombinácii s ampulkami s „nahratými frekvenciami“
- Hypotéza: Na ampulke nie je dôležitá zakódovaná informácia v tekutine, ale informácia na vonkajšej nálepke – označení.
- diagnostik si túto informáciu pri testovaní drží v mysli
- testovateľnosť: V prípade - že by to niekomu fungovalo – výmena nálepiek
- nezrealizovaný experiment: test opakovateľnosti pri zakrytí nálepiek
- opakovateľnosť pri 1 pacientovi a viacerých terapeutoch: zlyhanie

Terapia – meranie signálu z tela



- Fungovala by rovnako aj bez drahého prístroja?
- „Individualizovaná medicína“ – patologický signál sa sníma priamo z tela
- Uvažovali sme o všetkých dostupných možnostiach merania
- žiaľ, opäť chýba merací obvod:

- pri meraní el. impedancie (odporu) sú potrebné 2 vodiče
- pri meraní potenciálov typu EEG sú potrebné až 3 vodiče
- tu je jediný
- oblečenie prerušuje akýkoľvek elektrický obvod

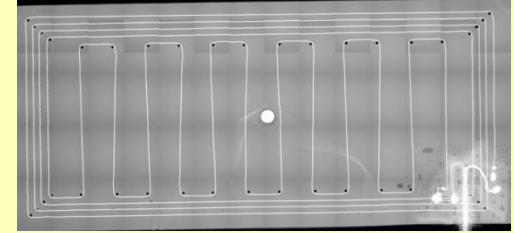
Terapia – meranie signálu z tela

- Preverovali sme možné zdroje signálu v tele, na úrovni tkanív, buniek aj subbunkových štruktúr
- Podľa rôznych fyzikálnych teórií existujú mechanizmy a hypotetické zdroje, avšak zatiaľ sú neoverené
- Skutočnej vede sa nedarí namerať charakteristické frekvencie určitých biologických štruktúr
- Neopodstatnené priradenie: choroby, patogény,... $\leftarrow \rightarrow$ charakteristické rezonančné frekvencie
- Údajne sa meria iba šum, pričom informácia o zdravotnom stave je v ňom neviditeľne schovaná – nemerateľná
- Rozpor: prístroj s ňou pracuje; na to ju však musí vedieť merať...

Terapia – spracovanie v prístroji

- Prístroj nie je prázdne vrece piesku... Disponuje bohatou zásobou módov, programov a nastavení
- Obsahuje sofistikovanú elektroniku ... na bežnej úrovni prístrojov dnešnej doby
- Tajuplná súčiastka „Separátor“, ktorá vie oddeliť zdravé fyziologické zložky (frekvencie) signálu z tela od patologických
- Prístroj by mal s oboma zložkami narábať – napr. zosilňovať, invertovať
- Zvolili sme prístup „black box“: pomocou rôznych vstupov sa sledujú výstupy, pričom základné tvrdenia o domnelom fungovaní sú vyvrátiteľné
- Naša analýza signálov prostredníctvom osciloskopu a generátora signálov ešte nie je dokončená
- Čiastkové overenia: odfiltrovanie zadaných frekvencií zo signálu funguje

Terapia – vstupujúci signál do tela



- Domnelý „liečivý“ signál sa vytvára v cievke vo vnútri magnetickej podložky
- je merateľný; slabší ako zemské magnetické pole
- ovplyvniteľný šumami okolia z technických zariadení

Výrobca: informácia je v ňom schovaná a dnešnými prístrojmi nemerateľná

- Prístrojom invertované, pôvodne patologické, vlny majú nezdravý signál v tele vyrušiť

- prístroj nemôže byť schopný tak rýchleho spracovania

- nie je možné v jednom momente a na všetkých miestach tela dosiahnuť žiadanú amplitúdu a fázu signálu tak, aby sa 2 signály dokonale zrušili

- Hypotéza: Terapia by fungovala „rovnako účinne“ aj pri odpojených kábloch, avšak pri zachovaní všetkých audio-vizuálnych prejavov prístroja

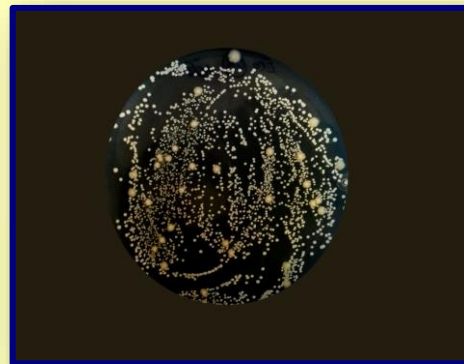
Super Ravo Zapper

Claims:

- function generator with adjustable frequency
- killing bacteria, viruses, pathogenes,...
- frequency choice according to "internet" tables
- youtube videos of blowing cells

Our findings:

- non-existence of setup parameters for experiments
- 2 types of bacteria (E. coli a B. subtilis) with application of their supposed resonant frequencies obtained from the tables
- no killing; no reduction of cultivated populations



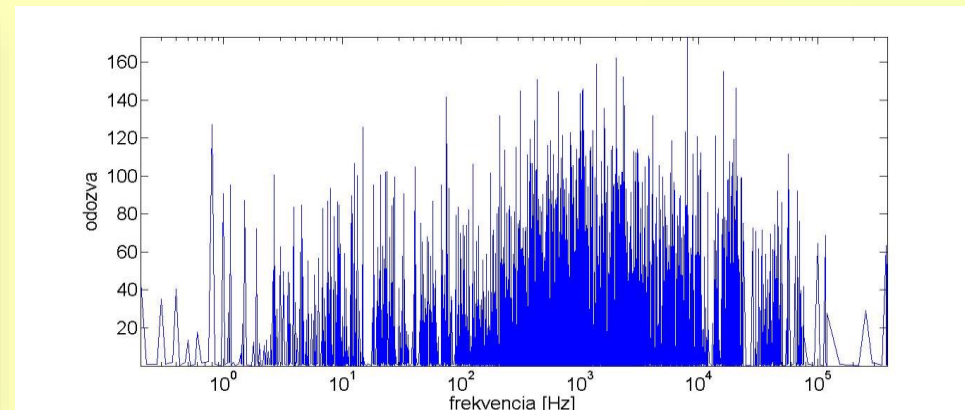
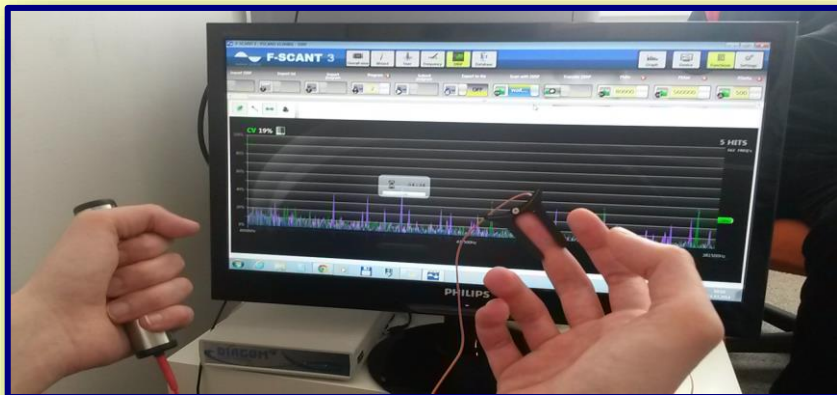
F-scan

Claims:

- uses resonating frequencies to investigate the state of the human body
- detects the frequency (Hz - MHz) at which infections, viruses and other forms of illness resonate, then 'zaps' the target at an exact frequency
- enabling the user to target and treat cells without damaging any surrounding tissue

Findings:

- simulation: random choice of frequencies and it's amplitudes over the whole interval. Average distance between 2 peaks ~ "allowed" peak fluctuation
- estimate of time needed for discovering 10 000s frequencies: thousands of years



Metatron

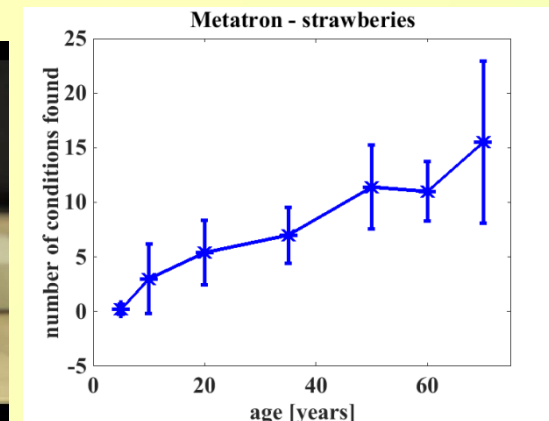
Claims:

- “Non-linear analysis systems tracing any conditions in the body through changes in the wave characteristics of tissues. The diagnosis equipment is based on the spectral analysis of the vortex magnetic field of any biological object.”
- “Makes an evaluation of the organ condition directly due to the resonance amplification of the radiation signal of the organ under investigation using a non-invasive trigger sensor. Every organ and every cell has its own distinctive oscillations which are stored in the computer memory”
- “Able to record the frequency patterns of any remedy (Hz-MHz)”
- “Therapy: system searches for a remedy that has the closest spectral characteristics of the pathological process”



Metatron - findings

- ordinary audio head set
- Info from patent: "based on brain EEG bioelectrical activity" - impossible
- impossible spatial resolution
- intelligent recognition of patient: simple pressure sensor
- reproducibility: adjusting to age, gender, previous data from the same patient
- male with female reproduction system problems
- stewed strawberries "3-70 years old": human diagnoses; increasing number of pathologies with age
- patient and strawberries under the same name: almost the same results
- → expert knowledge is imitated by the software



Bioresonance devices – our evidence

- surprising inconsistencies from the very beginning of investigation
- we have considered all possible measurement principles: impedance spectroscopy, biopotentials (~EEG), contactless RF antenna
- looking for a source of bio EM signal from the body in respect to the measurement technology: implausible
- excuses ending up with unmeasurable claims: impossible to disprove
- These areas deserve special investigation: psychosomatics, enhanced placebo, suggestions and beliefs

How to distinguish evidence based from alternative?

- extraordinary claims require extraordinary evidence
- Hitchens's razor: "What can be asserted without evidence can be dismissed without evidence."
- Occam's razor: explain the phenomena by the simplest hypothesis possible
- present world: business dominates – many start-ups accelerates their products without proper evidence; with simplification, extrapolation
- Credibility criteria:
 - reproducible results
 - backing by specialists with sufficient reputation and expertise
 - peer review studies
 - disclosed technicalities: measurement principles, graphs, signals

Predstieraná/kamuflovaná odbornosť

- zástupné zdroje: noviny,
- špičkové oblasti – ruský raketový výskum, NASA
- budenie dojmu „špičkových“ odborníkov
- vzdialené ruské „vedecké“ pracoviská s „množstvom vedcov“
- používanie technického žargónu

- Logické chyby argumentácie:

argument sily, chybná časová následnosť, spoločný efekt, väčší počet príčin, nekonzistencia, dovolávanie sa autority, zdanie klame: seriózne prostredie, unáhlené zovšeobecnenie, nereprezentatívna vzorka, klamná analógia, klam daný vylúčením, tautológia

Záver

- idea rezonancie nie je hlúposť; celý koncept je veľmi logický a zaujímavý, len keby neplával na vode
- havarovali všetky argumenty, ktoré boli formulované do podoby konkrétnych testovateľných fyzikálnych tvrdení
- pod tlakom vedeckého overovania sa argumenty zástancov presúvajú do nemerateľných sfér a tvrdení
- ako čo najefektívnejšie viesť diskusiu a primerane spochybňovať?
- pouličná gnozeológia
- Systém šírenia dezinformácií: kto je vinný a kto iba naivne verí?
- Brnenské aktivity proti dezinformáciám : <http://zvolsi.info>
- Odkaz na TV dokument na www.cahust.org

Critical assessment of tumor specific EM frequencies

- approach by group of Boris Pasche (TheraBionic)
- Barbault et al. Amplitude-modulated electromagnetic fields for the treatment of cancer: Discovery of tumor-specific frequencies and assessment of a novel therapeutic approach (2009).
- resemblance to alternative medicine: business precedes justified science
- historical perspective - EM frequency therapy developed for treatment of insomnia: no successful spread of application, published results: statistical significance can be argued due to possible bias (non equal average values in test and control group)

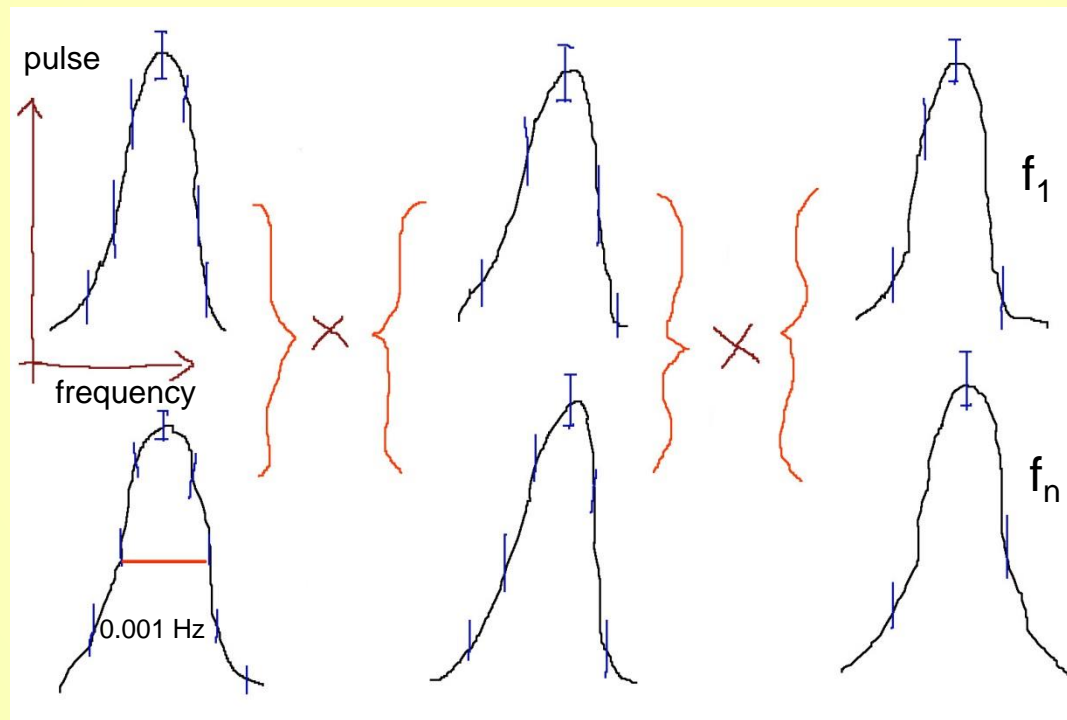
Critical assessment of tumor specific EM frequencies

- 1524 frequencies, 0.1 - 114 kHz, precision: 423.321 Hz, 60317.352 Hz: incredible quality factor $f/\Delta f \sim 10^{6-8}$!
- long list of frequencies: resembles alternative medicine bioresonances

4718.331 Hz	8642.181 Hz
4749.302 Hz	8655.818 Hz
4765.331 Hz	8758.341 Hz
4917.202 Hz	8779.323 Hz
5011.325 Hz	8792.231 Hz
5149.331 Hz	8819.127 Hz
5228.172 Hz	8831.132 Hz
5237.132 Hz	9028.031 Hz
5313.353 Hz	9173.264 Hz
5745.218 Hz	9184.338 Hz
5757.897 Hz	9186.919 Hz
5762.386 Hz	9393.946 Hz
5812.322 Hz	9482.409 Hz
5869.321 Hz	9737.211 Hz
5882.292 Hz	9746.232 Hz
5921.249 Hz	9922.231 Hz
5991.932 Hz	10032.684 Hz
6069.458 Hz	10446.028 Hz
6071.319 Hz	10478.221 Hz
6083.214 Hz	10545.313 Hz
6161.782 Hz	10639.345 Hz

Critical assessment of tumor specific EM frequencies

- frequency determination: the greatest increase in radial pulse strength and/or pulse rate were selected as tumor-specific frequencies



single patient

single patient reproducibility
intrapersonal variability

multiple patients
interpersonal variability

Critical assessment of tumor specific EM frequencies

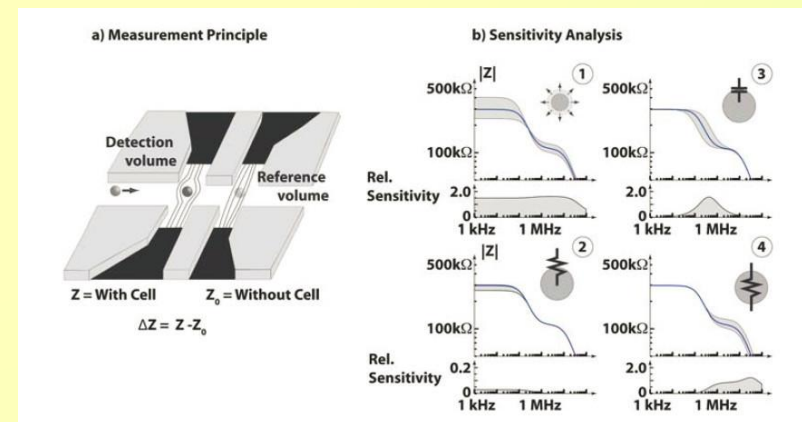
- used physiological parameters are not stable, depending on many physiological and psychological variables
- justification with physical model by non-independent expert (Blackman):
Ca ion mechanism: resembles reasoning of alternative medicine with irrelevant and unsupported physical claims
- over 50% of papers in psychology and biomedical sciences are biased
- known examples of treatment approaches that collapse only in the last stage of clinical trials

	evidence based	publications	patents	basic principles	proprietary/secret information
alternative medicine	missing	missing	yes	unknown	yes
TheraBionic	missing key evidence	missing key evidence	yes	unknown	yes

Our contribution in search for specific frequencies

- development of complex experimental platform for automatic monitoring of biological response to weak LF EMF
- enable efficient scanning through EMF parameters – frequency and amplitude - while searching for specific responses of the investigated biosystem
- methods based on the electrical impedance spectroscopy:
 - growth rate of cell cultures (*S. cerevisiae*) in an aqueous medium
 - single cell electrical properties in EIS chips – measurable changes in cell size, membrane R, C; intracellular R.

Valero: A unified approach to dielectric single cell analysis:
Impedance and dielectrophoretic force spectroscopy, 2010



Conclusions

- theoretical reasons for resonances: YES
- experimentally (confirmed) evidence: NO

- seemingly strong clinical effects in alternative medicine might be often explained by:
 - bias due to fakes, artefacts, or misinterpretation
 - mistakes of argumentation, logical fallacies, and cognitive bias
 - enhanced placebo effect

- search for resonances is going on