



## **Referentielijst 1: Internationaal, Peer-reviewed, Overzicht publicaties betreffende Biofysica van Levensprocessen**

Bischof M and Del Giudice E. 2013. Communication and emergence of collective behavior in living organisms. A quantum approach. *Molecular Biology International*.:1. doi: 10.1155/2013/987549

Cifra M, Fields JZ, Farhadi A, 2010. Electromagnetic cellular interactions. *Progress in Biophysics and Molecular Biology*; 1-24, doi:10.1016/j.pbiomolbio.2010.07.003.

Craddock, T.J.A., Friesen, D., Mane, J., Hameroff, S. and Tuszynski, J, 2014. The Feasibility of Coherent Energy Transfer in Microtubules. *Journal of the Royal Society Interface*, 11, Article ID: 2014067

Davies P C W, 2014. Does quantum mechanics play a non-trivial role in life? *BioSystems* 2014; 78: pp. 69–79.

De Loof A. 2016. The Cell's Self-Generated "Electrome": The Biophysical Essence of the Immaterial Dimension of Life? *Communicative & Integrative Biology*.;9(5): e1197446.

Fröhlich F, McCormick DA, 2013 Endogenous electric fields may guide neocortical network activity. *Neuron* 67: 129–143. doi:10.1016/j.neuron.2010.06.005.

Hameroff S and Penrose R, 2014a. Consciousness in the universe: {A} review of the 'Orch OR' theor," *Physics of Life Reviews*, vol. 11, no. 1, pp. 39-78

Hammerschlag R, Levin M, Mc Craty R, Bat B A, Ives J A, Lutgendorf S K and Oschman J L, 2015. Biofield Physiology: A Framework for an Emerging Discipline. *Global Advances in Health and Medicine*.;4:35-41. doi: 10.7453/gahmj.2015.015.suppl

Huelga, S F and Plenio M B. 2013. Vibrations, Quanta and Biology. *International Journal of Modern Physics B*.;10: 1735–1754.

Lambert N, Chen Y N , Cheng Y C , Li C M, Chen G Y, Franco N. 2013. Quantum Biology. *Nature Physics*.;9(1):10–18. doi:10.1038/nphys2474

Levin M, 2012. Molecular bioelectricity in developmental biology: new tools and recent discoveries: control of cell behavior and pattern formation by transmembrane potential gradients. *Bioessays*.; 34:205–217.

Lloyd S, 2011. Quantum coherence in biological systems. *J. Phys.: Conf. Ser.* 302, 012037 *Journal of Physics: Conference Series* 302 (2011) 012037 doi:10.1088/1742-6596/302/1/012037



Lundholm IV, Rodilla H, Wahlgren WY, Duelli A, Bourenkov G, Vukusic J, Friedman R, Stake J, Schneider T, Katona G, 2015. *Terahertz radiation induces non-thermal structural changes associated with Fröhlich condensation in a protein crystal*. Struct. Dyn. 054702; <http://dx.doi.org/10.1063/1.4931825>.

Marais A, Adam B, Ringsmuth, A K, Ferretti M, Gruber J. M, Hendriks R, Schuld M, Smith, Samuel L, Sinayskiy I, Kru T P J , Petruccione F. and van Grondell R 2018. The future of quantum biology. J. R. Soc. Interface 15: 20180640. <http://dx.doi.org/10.1098/rsif.2018.0640>

Muehsam D, Ventura C, 2014. Life Rhythm as a Symphony of Oscillatory Patterns: Electromagnetic Energy and Sound Vibration Modulates Gene Expression for Biological Signaling and Healing. Glob Adv Health Med. 3(2):40-55. doi: 10.7453/gahmj.2014.008

Nardecchia, I., Torres, J., Lechelon, M., Giliberti, V., Ortolani, M., Nouvel, P., Gori, M., Donato, I., Preto, J., Varani, L., Sturgis, J. and Pettini, M, 2017. Out-of-Equilibrium Collective Oscillation as Phonon Condensation in a Model Protein. <https://arxiv.org/pdf/1705.07975.pdf>

Pang X F, Chen S, Wang X, Zhong L. 2016. Influences of Electromagnetic Energy on Bio-Energy Transport through Protein Molecules in Living Systems and Its Experimental Evidence. Int J Mol Sci.;17(8):1130.

Preto J, 2016. Classical Investigation of Long Range Coherence in Biological Systems. Chaos.

Rouleau N, Dotta B T, 2014. Electromagnetic fields as structure-function zeitgebers in biological systems: environmental orchestrations of morphogenesis and consciousness. Frontiers in Integrative Neuroscience.;8:84.

Sahu S, Ghosh S, Fujita D, Bandyopadhyay A, 2015. [Live visualizations of single isolated tubulin protein self-assembly via tunneling current: effect of electromagnetic pumping during spontaneous growth of microtubule](#). Scientific Reports. 4 [1] (2015) [10.1038/srep07303](https://doi.org/10.1038/srep07303)

Šorli AS 2019. Mass–Energy Equivalence Extension onto a Superfluid Quantum Vacuum. Nature Scientific Reports volume 9, Article number: 11737 (2019).

## **Reference list 2: Examples of publications that show healthy and/or unhealthy conditions related to exposure to EMF frequencies**

### **A) Examples of EMF frequencies promoting Healthy conditions**

Satyajit Sahu, Subrata Ghosh, Daisuke Fujita & Anirban Bandyopadhyay. Live visualizations of single isolated tubulin protein self-assembly via tunneling current: effect of electromagnetic pumping during spontaneous growth of microtubule. SCIENTIFIC REPORTS | 4 : 7303 | DOI: 10.1038/srep07303.



Fatma Vatansever and Michael R. Hamblin. Far infrared radiation (FIR): its biological effects and medical applications. *Photonics Lasers Med.* 2012 November 1; 4: 255–266. doi:10.1515/plm-2012-0034.

Weijun Xuan, Fatma Vatansever, Liyi Huang, Qiuhe Wu, Yi Xuan, Tianhong Dai, Takahiro Ando, Tao Xu, Ying-Ying Huang, Michael R. Hamblin. Transcranial Low-Level Laser Therapy Improves Neurological Performance in Traumatic Brain Injury in Mice: Effect of Treatment Repetition Regimen. *PLOS ONE* | [www.plosone.org](http://www.plosone.org) 1 January 2013 | Volume 8 | Issue 1 | e53454.

Asheesh Gupta & Tianhong Dai & Michael R. Hamblin. Effect of red and near-infrared wavelengths on low-level laser (light) therapy-induced healing of partial-thickness dermal abrasion in mice. *Lasers Med Sci* (2014) 29:257–265, DOI 10.1007/s10103-013-1319-0.

Pinar Avci, MD, Asheesh Gupta, PhD, Magesh Sadasivam, MTech, Daniela Vecchio, PhD, Zeev Pam, MD, Nadav Pam, MD, and Michael R Hamblin. Low-level laser (light) therapy (LLLT) in skin: stimulating, healing, restoring. *Semin Cutan Med Surg.* 2013 March ; 32(1): 41–52.

HERNÁNDEZ-BULE, PAÍNO CL, TRILLO MA, ÚBEDA A. ELECTRIC STIMULATION AT 448 KHZ PROMOTES PROLIFERATION OF HUMAN MESENCHYMAL STEM CELLS. *CELL PHYSIOL BIOCHEM* 2014;34:1741-1755.

Cornelia Wenger, Ricardo Salvador, Peter J Basser and Pedro C Miranda. The electric field distribution in the brain during TFields therapy and its dependence on tissue dielectric properties and anatomy: a computational study. *Phys. Med. Biol.* 60 (2015) 7339–7357 doi:10.1088/0031-9155/60/18/7339.

Chih-Ching Lin, Xiao-Ming Liu, Kelly Peyton, Hong Wang, Wu-Chang Yang, Shing-Jong Lin, William Durante. Far Infrared Therapy Inhibits Vascular Endothelial Inflammation via the Induction of Heme Oxygenase-1. *Arterioscler Thromb Vasc Biol* is available at <http://atvb.ahajournals.org> DOI: 10.1161/ATVBAHA.107.160085.

Shengyong Yin, Xinhua Chen, Chen Hua, Xueming Zhang, Zhenhua Hua, Jun Yu, Xiaowen Feng, Kai Jiang, Shuming Ye, Kezhen Shen, Haiyang Xie, Lin Zhou, Robert James Swanson, Shusen Zheng. Nanosecond pulsed electric field (nsPEF) treatment for hepatocellular carcinoma: A novel locoregional ablation decreasing lung metastasis. *Cancer Letters* 346 (2014) 285–291.

Xinhua Chena, R. James Swanson, Juergen F. Kolb, Richard Nuccitelli, and Karl H.Schoenbach. Histopathology of normal skin and melanomas after nanosecond pulsed electric field treatment. Published in final edited form as: *Melanoma Res.* 2009 December; 19(6): 361–371. doi:10.1097/CMR.0b013e32832f1558.



Margaret A. Naeser, Ph.D., L.Ac., and Michael R. Hamblin. Potential for Transcranial Laser or LED Therapy to Treat Stroke, Traumatic Brain Injury, and Neurodegenerative Disease. *Photomedicine and Laser Surgery* Volume 29, Number 7, 2011, DOI: 10.1089/pho.2011.9908.

Jui-Chih Chang, Shey-Lin Wu, Fredrik Hoel, Yu-Shan Cheng, Ko-Hung Liu, Mingli Hsieh, August Hoel, Karl Johan Tronstad, Kuo-Chia Yan, Ching-Liang Hsieh, Wei-Yong Lin, Shou-Jen Kuo, Shih-Li Su<sup>10,11</sup> & Chin-San Liu. Far-infrared radiation protects viability in a cell model of Spinocerebellar Ataxia by preventing polyQ protein accumulation and improving mitochondrial function. *Scientific Reports* | 6:30436 | DOI: 10.1038/srep30436.

Paolo Cassano, Samuel R. Petrie, Michael R. Hamblin, Theodore A. Henderson, and Dan V. Iosifescu. Review of transcranial photobiomodulation for major depressive disorder: targeting brain metabolism, inflammation, oxidative stress, and neurogenesis. *Neurophotonics* 3(3), 031404 (Jul–Sep 2016).

Águida Cristina Gomes Henriques & Fernanda Ginani & Ruth Medeiros Oliveira & Tatjana Souza Lima Keesen & Carlos Augusto Galvão Barboza & Hugo Alexandre Oliveira Rocha & Jurema Freire Lisboa de Castro & Ricardo Della Coletta & Roseana de Almeida Freitas. Low-level laser therapy promotes proliferation and invasion of oral squamous cell carcinoma cells. *Lasers Med Sci* (2014) 29:1385–1395, DOI 10.1007/s10103-014-1535-2.

Beata Kocan, Aleksandra Maziarz, Jacek Tabarkiewicz, Takahiro Ochiya, and Agnieszka Banaś-Ząbczyk. Trophic Activity and Phenotype of Adipose Tissue-Derived Mesenchymal Stem Cells as a Background of Their Regenerative Potential. *Hindawi Stem Cells International* Volume 2017, Article ID 1653254, 13 pages, <https://doi.org/10.1155/2017/1653254>.

Ross CL (2016) Mechanisms of Extra Low Frequency Electromagnetic Field (ELF-EMF) on Human Bone Marrow Stem/Stromal Cell (hBMMSC) Differentiation. *JSM Biotechnol Bioeng* 3(2): 1055.  
Kuroki, S., Tsenkova, R., Moyankova, D. et al. Water molecular structure underpins extreme desiccation tolerance of the resurrection plant *Haberlea rhodopensis*. *Sci Rep* 9, 3049 (2019). <https://doi.org/10.1038/s41598-019-39443-4>.

Fatemeh Yavari, Michael A. Nitsche and Hamed Ekhtiari. Transcranial Electric Stimulation for Precision Medicine: A Spatiomechanistic Framework. *HYPOTHESIS AND THEORY* published: 13 April 2017, doi: 10.3389/fnhum.2017.00159.

Seung Yoon Lee, Ki-Ho Park, Jung-Woo Choi, Jung-Kyun Kwon, Doo Rak Lee, Mi Sun Shin, Jee Sung Lee, Chung Eui You, Mi Youn Park. A prospective, randomized, placebo-controlled, double-blinded, and split-face clinical study on LED phototherapy for skin rejuvenation: Clinical, profilometric, histologic, ultrastructural, and biochemical evaluations and comparison of three different treatment settings. *Journal of Photochemistry and Photobiology B: Biology* 88 (2007) 51–67.



## B) Examples of EMF frequencies producing Unhealthy conditions

Avital Korenstein-Ilan, Alexander Barbul, Pini Hasin, Alon Eliran, Avraham Goverb and Rafi Korenstein. Terahertz Radiation Increases Genomic Instability in Human Lymphocytes. RADIATION RESEARCH 170, 224–234 (2008), by Radiation Research Society.

National Toxicology Program Peer Review of the Draft NTP Technical Reports on Cell Phone Radiofrequency Radiation, March 26–28, 2018, National Institute of Environmental Health Sciences, Research Triangle Park, NC.

Cheng-Hsien Chen, Tso-Hsiao Chen, Mei-Yi Wu, Tz-Chong Chou, Jia-Rung Chen, Meng-Jun Wei, San-Liang Lee, Li-Yu Hong, Cai-Mei Zheng, I-Jen Chiu, Yuh-Feng Lin, Ching-Min Hsu & Yung-Ho Hsu. Far-infrared protects vascular endothelial cells from advanced glycation end products-induced injury via PLZF-mediated autophagy in diabetic mice. Scientific Reports | 7:40442 | DOI: 10.1038/srep40442.

R. Tsenkova, S. Atanassova, S. Kawano and K. Toyoda. Somatic cell count determination in cow's milk by near-infrared spectroscopy: a new diagnostic tool. 2001 American Society of Animal Science. J. Anim. Sci. 2001. 79:2550–2557.

R. Tsenkova, S. Atanassova, K. Itoh, Y. Ozaki and K. Toyoda. Near infrared spectroscopy for biomonitoring: cow milk composition measurement in a spectral region from 1,100 to 2,400 nanometers. J Anim Sci 2000. 78:515-522.

Kodzue Kinoshita, Mari Miyazaki, Hiroyuki Morita<sup>1</sup>, Maria Vassileva, Chunxiang Tang, Desheng Li, Osamu Ishikawa, Hiroshi Kusunoki & Roumiana Tsenkova. Spectral pattern of urinary water as a biomarker of estrus in the giant panda. SCIENTIFIC REPORTS | 2 : 856 | DOI: 10.1038/srep00856.

Maya Mashevich, Dan Folkman, Amit Kesar, Alexander Barbul, Rafi Korenstein, Eli Jerby, and Lydia Avivi. Exposure of Human Peripheral Blood Lymphocytes to Electromagnetic Fields Associated With Cellular Phones Leads to Chromosomal Instability. Bioelectromagnetics 24:82^90 (2003).

Yonis Soubere Mahamoud, Meziane Aite, Catherine Martin, Maxim Zhadobov, Ronan Sauleau, Yves Le Dréan, Denis Habauzit. Additive Effects of Millimeter Waves and 2-Deoxyglucose Co-Exposure on the Human Keratinocyte Transcriptome. PLOS ONE | DOI:10.1371/journal.pone.0160810 August 16, 2016.

Kai Wang, Jun-Mei Lu, Zhen-He Xing, Qian-Ru Zhao, Lin-Qi Hu, Lei Xue, Jie Zhang & Yan-Ai Mei. Effect of 1.8 GHz radiofrequency electromagnetic radiation on novel object associative recognition memory in mice. ScieNtIfic Reports | 7:44521 | DOI: 10.1038/srep44521 5.

S. Kumar, Reena, S. Chaudhary, Sweety, Deep Chand Jain, Vibrational Studies of Different Human Body Disorders Using FTIR Spectroscopy, Open Journal of Applied Sciences, 2014.



Kuroki, S., Tsenkova, R., Moyankova, D. et al. Water molecular structure underpins extreme desiccation tolerance of the resurrection plant *Haberlea rhodopensis*. *Sci Rep* 9, 3049 (2019). <https://doi.org/10.1038/s41598-019-39443-4>.

DHIRAJ MASKEY, HYUNG GUN KIM, MYUNG-WHAN SUH, GU SEOB ROH and MYEUNG JU KIM. Alteration of glycine receptor immunoreactivity in the auditory brainstem of mice following three months of exposure to radiofrequency radiation at SAR 4.0 W/kg. *INTERNATIONAL JOURNAL OF MOLECULAR MEDICINE* 34: 409-419, 2014.

Eva Marková, Lena Hillert, Lars Malmgren, Bertil R. R. Persson, and Igor Y. Belyaev. Microwaves from GSM Mobile Telephones Affect 53BP1 and  $\gamma$ -H2AX Foci in Human Lymphocytes from Hypersensitive and Healthy Persons. *VOLUME 113 | NUMBER 9 | September 2005 • Environmental Health Perspectives*.

Igor Belyaev, *Biophysical Mechanisms for Nonthermal Microwave Effects, Electromagnetic Fields in Biology and Medicine* 2015.

Hae-June Lee, Yeung Bae Jin, Jae-Seon Lee, SooYong Choi, Tae-Hong Kim, Jeong-Ki Pack, HyungDoChoi, NamKim, and Yun-Sil Lee. Lymphoma Development of Simultaneously Combined Exposure to Two Radiofrequency Signals in AKR/JMice. *Bioelectromagnetics* 32:485-492 (2011).