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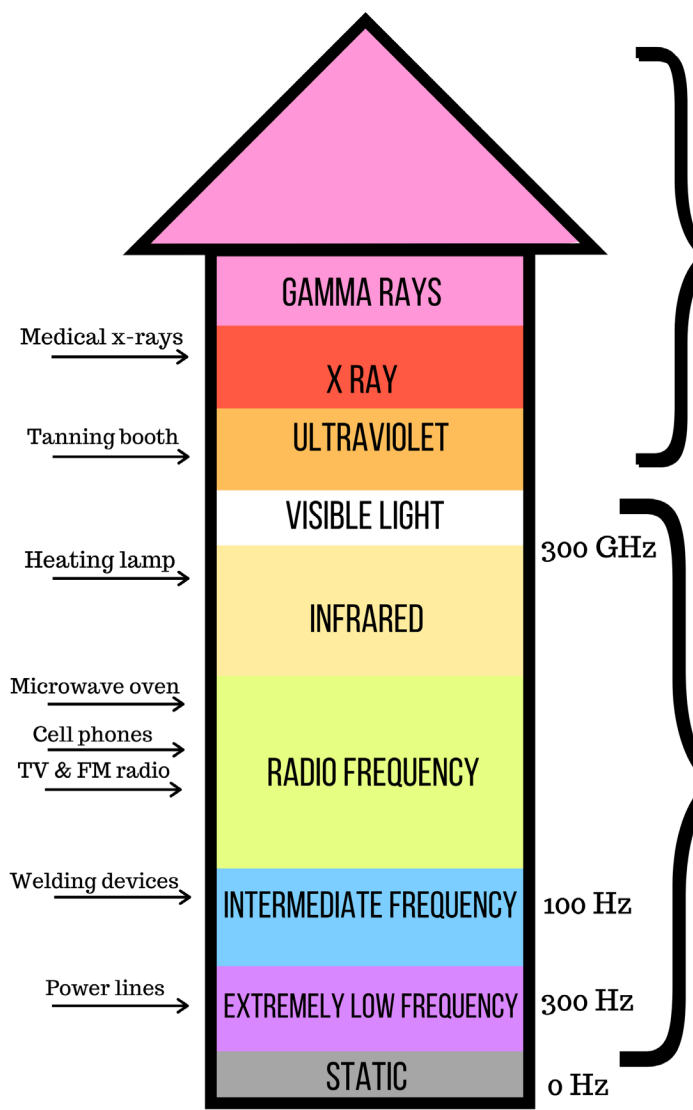
**Diplomats' Mystery Illness and Pulsed  
Radiofrequency Radiation**

# **Diplomats' Mystery Illness and Pulsed Radiofrequency Radiation**

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# Electromagnetic Radiation (EMR)



ionizing

$$E = h\nu$$



$$c = \text{wavelength} \times \text{frequency}$$

Meters/sec      Meters/cycle      Cycles/sec

non-ionizing

RF: 3 KHz – 300 GHz

MW: 300 MHz – 300 GHz

# Frey Effect

Radiation  $\neq$  Sounds



Transverse vs Longitudinal

*But “Frey Effect”*: Perception of sounds <sup>1</sup>  
Pulsed rad, 2.4 MHz to 10,000 MHz <sup>2</sup>

Thermoelastic theory <sup>3</sup>

1. Frey AH 1961. Auditory system response to radio frequency energy. *Aerosp Med* 32: 1140-2
2. Elder, J. A., & Chou, C. K. (2003). Auditory response to pulsed radiofrequency energy. *Bioelectromagnetics (Suppl. 6)*, S162–S173.
3. Lin J 2007. Hearing of microwave pulses by humans and animals: Effects, mechanisms, and thresholds. *Health Physics* 92: 621-8

# Noises

Diplomats	RF	Sound
Different	+	∅
Character	+	∅
Night	+	∅
Laser-like	+	-
Follow	+	-
Cover ears	+	-

Legend	
+	Predicted
∅	Not predicted
-	Incompatible

**Nothing else fits “noise” features  
∴ Pulsed RF/MW compelled**

# Recorded Noises

	Episodes	Recorded <sup>1</sup>
Tied to effects	yes	no
Diff sounds	yes	no
<b>All like crickets*</b>	no	yes
Night only	yes	no
Laser-like	yes	no
Followed	yes	no
Covered ears	yes	no

**\*Spectral analyses match Caribbean crickets<sup>2</sup>**

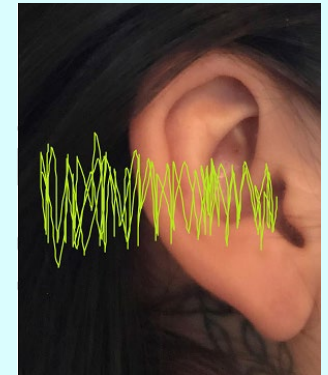
**RF can sound like crickets. So can crickets.**

1. Lederman, J 2017. Dangerous sound? What Americans heard in Cuba attacks

2. Stubbs, A 2019. Recording of “sonic attacks” on U.S. diplomats in Cuba spectrally matches the echoing call of a Caribbean cricket. <https://www.biorxiv.org/content/10.1101/510834v1>

3. Golden, S 2018. The Sound and the Fury: Inside the Mystery of the Havana Embassy. <https://www.propublica.org/article/diplomats-in-cuba>

# Symptoms



Symptom	Diplomat <sup>1</sup>	NIRT <sup>2</sup> Non-ionizing radiation toxicity
Headache	81*	81
Cognitive probs	81	81
Sleep probs	86	76
Dizziness	62	64
Tinnitus	57	63
Irritability	67	56
Anxiety	57	55

**∴ Symptoms  
compel EMR**

1. Swanson et al 2018. Neurological manifestations among US Government personnel reporting directional audible and sensory phenomena in Havana, Cuba. *Jama* 319:1125–1133.

2. Kato + Johansson 2012. Reported functional impairments of electrohypersensitive Japanese: A questionnaire survey. *Pathophysiology* 19:95-100.

# Signs

Symptom	Diplomats	NIRT
Hearing loss	√	√
Vision probs	√	√
Speech, balance probs	√	√
Nosebleed	√	√
Brain swelling	√	√
White matter damage	√	√
Imaging like TBI	√	√
(Some <i>have</i> past head injury)	√	√

**∴ Signs fit RF-MW**

Golomb 2018, Diplomats' Mystery Illness and Pulsed Radiofrequency/Microwave Radiation. Neural Computation 30(11) 1-104 2018

Heuser 2017, Functional brain MRI in patients complaining of electrohypersensitivity after long term exposure to electromagnetic fields. Rev Environ Health 32:291-9



# Precedent



"File: Moscow, US Embassy and Chalyapin house.jpg" by NVO is licensed under CC BY-SA 3.0

US diplomats, Moscow: MW'd 1953  
till 1980s-90s<sup>1,2</sup> (end date by source).

Russia claim: not surveillance but

~jamming of our surveillance, on top of embassy.<sup>3</sup>

MW-activated surveillance devices<sup>2</sup>

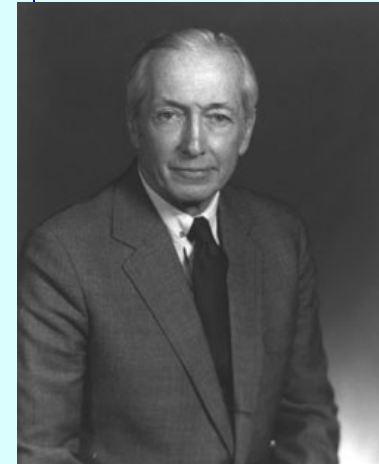
also found in Ambassador residence.<sup>4</sup>

Staff not told—till Walter Stoessel threat to resign.<sup>1,2</sup>

Ambassador Stoessel died of leukemia<sup>1,2</sup>

- tied to RF/MW<sup>5</sup>

JHU Study<sup>6</sup> ask me



1. Brown 2013. Moments in U.S. diplomatic history: Microwave Embassy Moscow. Assoc for Diplomat Studies and Training. Sept <http://adst.org/2013/09/microwaving-embassy-moscow/>;

2. Schumaker 2013; Moments in U.S. diplomatic history: Microwave Embassy Moscow - Another perspective..adst.org/2013/09/microwaving-embassy-moscow-another-perspective/#.WeOG0Dtrxfq

3. Gwertzman 1976. Moscow rays linked to U.S. bugging. NY Times Feb 26.

4. Thompson S 2018, personal communication 2018;; and Thompson J+Thompson S 2018. The Kremlinologist: Llewellyn Thompson, America's Man in Cold War Moscow. Johns Hopkins Press, Baltimore.

5. Peleg et al 2018: Radio frequency radiation-related cancer: assessing causation in the occupational/military setting. Environ Res 163: 123-133

6. Lilienfeld 1978. Foreign Service Health Status Study. Final report contract no 6025-619037 (NTS publication PB-288163) Office of Medical Services. Department of State.

# High RF Documented

- Guangzhou diplomat – US Dept of Labor workers' compensation application (unclassified)
- Commercial-off-the-shelf (“COTS”) Trifield 100XE Meter
- Measured RF:  $> 1\text{mW}/\text{cm}^2$ . (Diplomat family member)

Exceeds safety limits worldwide



# “Source?”

## Surveillance <sup>1</sup>:

TTW “Through the wall” surveillance

“WiHear” type auditory surveillance

## Weaponry:

Electronic weapons <sup>2</sup>

## Communications devices:

Such as affect civilians. Unlikely.



1. Wang G et al 2015. We can hear you with wifi. IEEE Transactions on Mobile Computing. DOI 10.1109/TMC.2016.2517630,  
I. Heath, B 2015. New police radars can 'see' inside homes. <https://www.usatoday.com/story/news/2015/01/19/police-radar-see-through-walls/22007615/>  
II. Subhan, A 2012. Through-the-Wall Sensors for Law Enforcement. [http://www.academia.edu/4517064/00\\_Wall\\_Sensor\\_Report\\_508](http://www.academia.edu/4517064/00_Wall_Sensor_Report_508)  
III. Wi-Vi: See Through Walls with Wi-Fi Signals. <http://people.csail.mit.edu/fadel/wivi/>  
IV. STM Debuts the Through-Wall Radar Technology. <http://www.defenceturkey.com/en/content/stm-debuts-the-through-wall-radar-technology-2272#.XIG0gCJKiHs>
2. Brunderman J.A. High power radio frequency weapons: a potential counter to U.S. stealth and cruise missile technology> Center for Strategy and Technology, Air War College.

# “Source?”

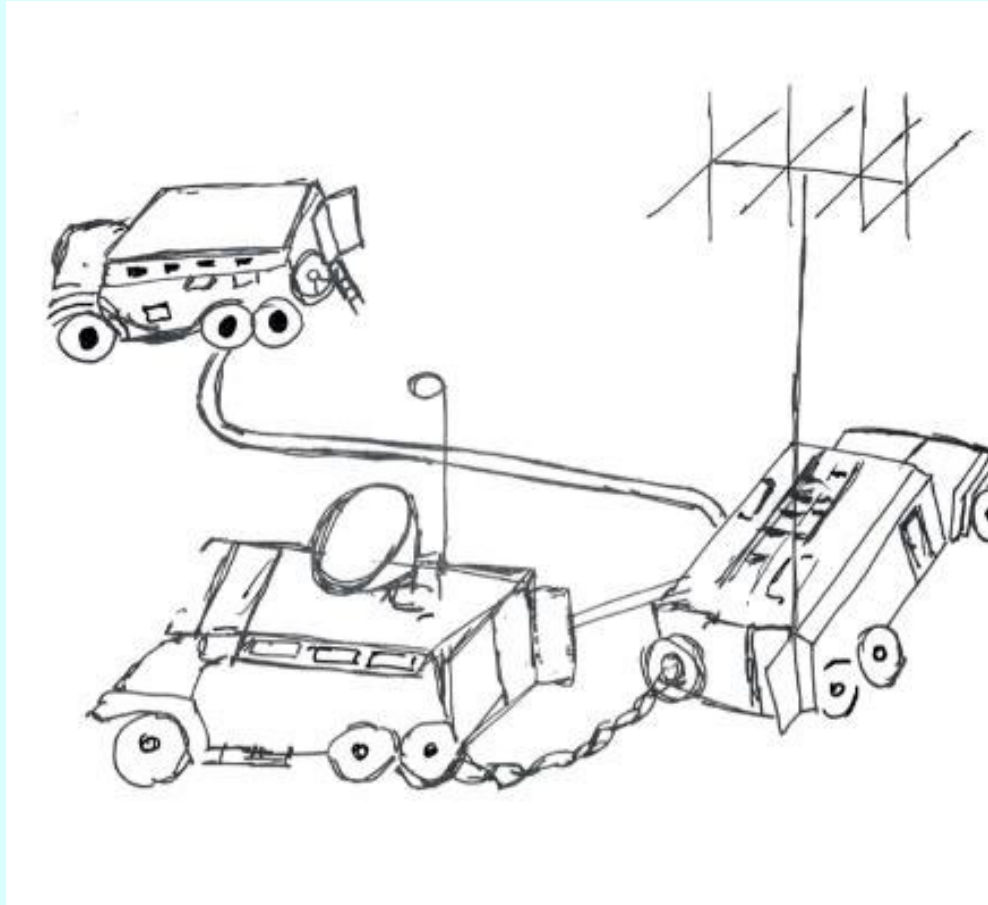


Figure 2: Diagram of Former Soviet Union's Antiaircraft Microwave Weapon System.

# Oxidative Stress

## Abundant, replicated, triangulated

- Yakymenko <sup>1</sup>
- DeLuca <sup>2</sup>
- Belpomme <sup>3</sup>
- Antioxidants protect (whole spectrum)
  - Ionizing/non
  - Thermal/not

1. Yakymenko 2015. Oxidative mechanisms of biological activity of low-intensity radiofrequency radiation. *Electromagn Biol Med* 35 186-202

2. De Luca 2014. Metabolic and genetic screening of electromagnetic hypersensitive subjects as a feasible tool for diagnostics and intervention. *Mediators Inflamm* DOI 924184.

3. Belpomme 2015. Reliable disease biomarkers, characterizing & identifying electrohypersensitivity and multiple chemical sensitivity as two etiopathogenic aspects of a unique pathological disorder. *Rev Environ Health* 30 251-71

4. Barnes, F. and B. Greenebaum (2018). "Role of radical pairs and feedback in weak radio frequency field effects on biological systems." *Environ Res* 163: 165-170.

# Melatonin and RF injury

## Melatonin protects against RF injury

**Melatonin** ...block radiofrequency electromagnetic radiation-induced DNA strand breaks in rat brain cells. Lai 1997. Bioelectromagnetics 18: 446-54

**Melatonin** reduces oxidative stress induced by chronic exposure of **microwave** radiation from mobile phones in rat brain. Sokolovic 2008. J Rad Res 49: 579-86

**Melatonin** modulates 900 Mhz **microwave**-induced lipid peroxidation changes in rat brain. Koylu 2006. Toxicol Ind Health 22 211-6

Protective effects of **melatonin** & caffeic acid phenethyl ester against retinal oxidative stress in long-term use of **mobile phone** Ozguner 2006. Mol Cell Biochem.282:83-8

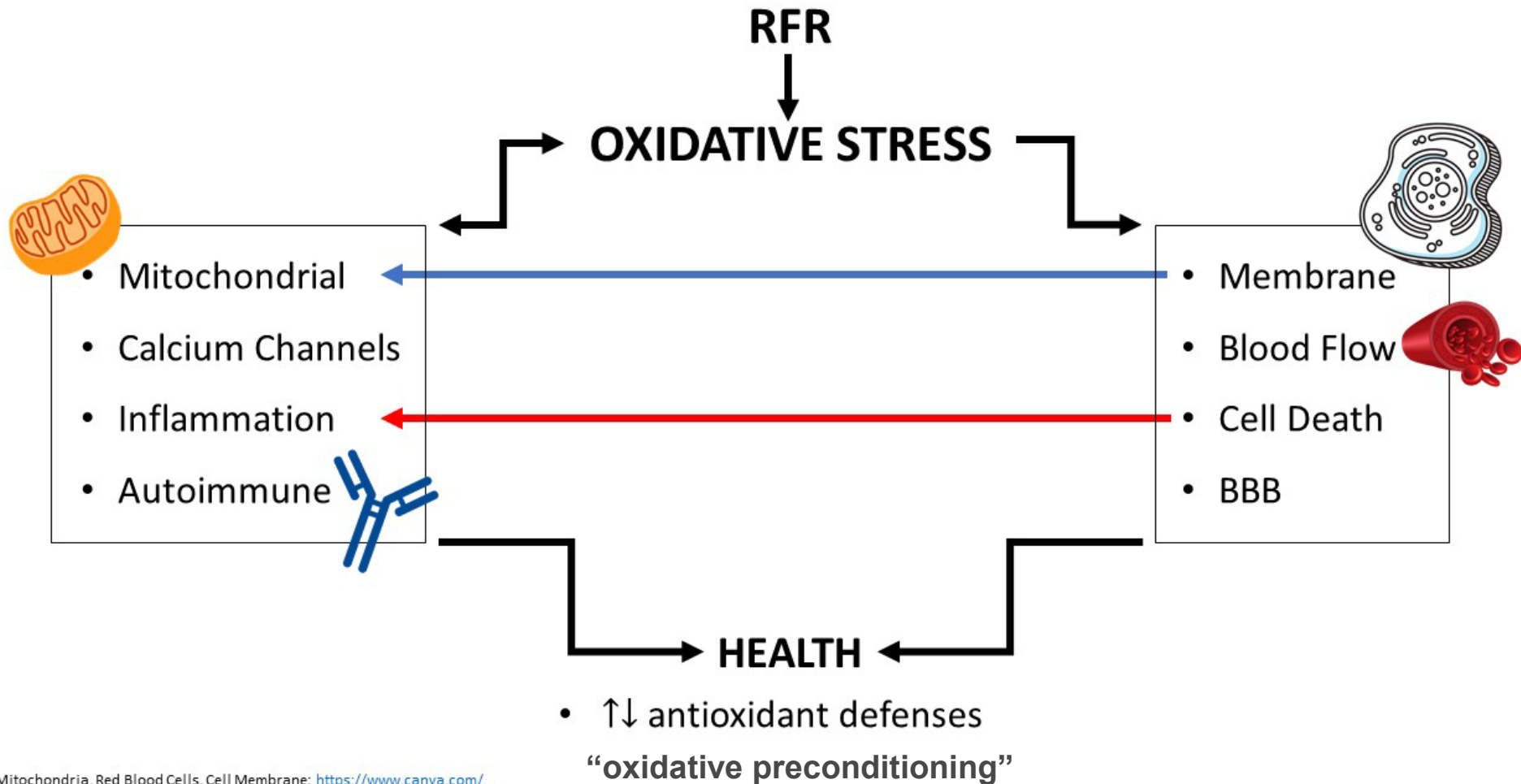
## **NIR (including RF) can depress melatonin**

Effects of 1800-MHz radiofrequency fields on circadian rhythm of plasma melatonin and testosterone in male rats. Qin 2012. J Toxicol Env Health A. 75:1120-8  
{↓ melato}

Exposure of rat brain to 915 MHz GSM **microwaves** induces changes in gene expression but not double stranded DNA breaks or effects on chromatin conformation. Belyaev 2006 Bioelectromagnetics 27, 295-306. ↓ **gene expressn 0.48 (p=0.0025) for rate limiting enz in melatonin produxn.**



# Downstream Mechanisms



# Mitochondrial Injury

Russian study declassified by CIA in 2012: <sup>1</sup>

## Biological effects of millimeter radiowaves (MMW)

Wistar rats. 15 min a day x 60 days.

Skin, nerves, blood affected. BUT ALSO:

Bone marrow affected

Increased blood vessel permeability.

Mitochondrial problems *throughout*:

Brain, heart, liver, kidney, spleen affected

↑ duration of exposure → problems

Progressive injury: also reported in humans <sup>2</sup>



1. Zalyubovskaya NP 1977. Biological effects of millimeter radiowaves. *Kiev Vracherbnoye Delo* {translated from Russian}. 3: 116-9. Declassified by the CIA in 2012

2. Sadchikova, M. N. and K. V. Glotova 1973. The clinic, pathogenesis, treatment, and outcome of radiowave sickness. {Translated from Russian: Moscow 0 BIOLOGICHESKOM DEYSTVII ELEKTROMAGNITNYKH POLEY RADIOCHASTOT in Russian, No 4, 1973 pp 43-48} Translated 1974. Biological Effects of Radiofrequency Electromagnetic Fields. Z. V. Gordon. Arlington, VA, U.S. Joint Publication Research Service: 54-62.



# RF Toxicity is Not New

1931 Navy <sup>1</sup>

1972 Navy <sup>2</sup>

1974 Gordon<sup>3</sup>

1976 DIA <sup>4</sup>

1981 NASA<sup>5</sup>

1988 Air Force\* <sup>6</sup>

*\*“Experimental evidence has shown that exposure to low intensity radiation can have a profound effect on biological processes”*

1. Bell WH 1931. Effects of super-high frequency radio current on health of men exposed under service conditions. US Navy Medical Bulletin 29: 525-551.
2. Glaser 1972. Bibliography of reported biological phenomena ('effects') and clinical manifestations attributed to microwave and radiofrequency radiation. Naval Medical Research Inst, National Naval Medical Center. Bethesda MD. Second Printing, with Revisions, Corrections, and Additions: 20 April .
3. Gordon VZ 1974. Biological effects of radiofrequency electromagnetic fields. Translation from the Russian, Biologich-eskom Deystvii. Elektromagnitnykh Poley Radiochastot 4 1973, Moscow, US Joint Publications Research Service
4. Adams RL, William RA 1976. Biological effects of electromagnetic radiation. Radiowaves and microwaves – Eurasian Communist Countries. Defense Intelligence Agency. Report # DST-1810S-074-76. March. 34 pp.
5. Raines 1981. Electromagnetic field interactions with the human body: observed effects and theories. NASA CR 166661.
6. Bolen SM. 1988. Radiofrequency/microwave radiation biological effects and safety standards: a review. Air Force Materiel Command. Report #: RL-TR-94-53. Rome Laboratories, June, 1994.

# Controversy

- **Conflict of Interest - Golomb<sup>1</sup>, Huss<sup>2</sup>**

**“Far from conflict of interest being unimportant in the objective and pure world of science where method and the quality of data is everything, it is the main factor determining the result of studies”<sup>4</sup>**

- **Regulatory/Advisory<sup>5,6,7</sup>: “at odds with the stance of the WHO and numerous other public health bodies worldwide”<sup>8</sup>**

- **Provocation - Can’t tell when exposed. So what?**

- **Ignore evidence: Variable mechs + time course. Body not a meter**

- **Sunburn analogy: Can’t feel when exposed; justly infer it is sun.**

- **Inconsistency: - Host-Effect Mod. -Exposure:**

**“While experimental studies employing simulated EMF-emissions present a strong inconsistency among their results with less than 50% of them reporting effects, studies employing real mobile phone exposures demonstrate an almost 100% consistency in showing adverse effects.”<sup>9</sup>**

1. Golomb 2008. Conflict of interest in medicine. *Beyond Belief*, sponsored by The Science Network, tsntv.org, Salk Inst, La Jolla, CA Oct 5. <http://www.youtube.com/watch?v=nFtt-W3LROY>

2. Huss 2007. Source of Funding and Results of Studies of Health Effects of Mobile PLai 2013. Does mobile phone use affect your health? Symposium on Effects of Electromagnetic Fields on Public Health & Environment. Keynote. Yildiz Teknik Universitesi, Istanbul

3. Regulates. Harvard University, Edmond J. Safra Center for Ethics

4. Smith R 2006. Conflicts of interest:: How money clouds objectivity. *J R Soc Med* 99(6) 292-7

5. Alster, N 2015. Captured Agency: How the Federal Communications Commission is Dominated by the Industries it Presumably [www.harvard.ethics.edu\(https://creativecommons.org/licenses/by/4.0/\)](http://www.harvard.ethics.edu(https://creativecommons.org/licenses/by/4.0/)).

6. Hardell, L. 2017. World Health Organization, radiofrequency radiation and health - a hard nut to crack (Review). *International Journal of Oncology* June 21.

7. Wang, J 2018 WHO purportedly increasing carcinogenic classification of wireless radiation this year. April 5.

8. Grimes 2019. Don’t fall prey to scaremongering about 5G. *Sci Am* online Oct 28.

9. Panagopoulos 2015. Real versus simulated mobile phone exposures in experimental studies. *Biomed Res Int* 6070553.

# Controversy II: Claims ≡ PR

Deny Delay Dismiss:

“RF...is ...non-ionizing radiation ...it’s not the kind of radiation that could damage DNA & cause cancer.”<sup>1</sup> “for RFR, there is no known plausible biophysical mechanism of action for harm”<sup>3</sup> “the weight of the evidence shows no risk”<sup>3</sup>

Discredit<sup>5</sup>:

“Conspiratorial thinking ...”<sup>3</sup> “a fringe view”<sup>3</sup>

“classic pseudoscience”<sup>4</sup> “low quality studies”<sup>3</sup>

“attempting to circumvent scientific consensus with scaremongering”<sup>3</sup>

Without irony: “science is not conducted by petition or arguments to authority”<sup>3</sup>  
3rd party technique<sup>6</sup> - ACSH, Science Literacy Project<sup>7</sup>

1. Pretz 2019 Will 5G be bad for our health? *IEEE Spectrum*. Nov 12 1b. Lai 1996. Single-and double-strand DNA breaks in rat brain cells after acute exposure to radiofrequency electromagnetic radiation. *Int J Rad Biol* 69: 513-521
2. Sullivan 2015. A tech column on wearable gadgets draws fire as ‘pseudoscience’. *NYTimes* 3-19.
3. Grimes 2019. Don’t fall prey to scaremongering about 5G. *Sci Am* online Oct 28.
4. Plait 2015 Fear mongering n the NYT: Does wearable tech cause cancer? *Slate*, Mar 19.
5. Johnson 2015. Wireless empire strikes back. *Emfanalysis.com* Mar 21.
6. Burton, B. and A. Rowell (2003). "Unhealthy spin." *BMJ* 326(7400): 1205-1207.
7. <https://usrtk.org/pesticides/geoffrey-kabats-ties-to-tobacco-and-chemical-industry-groups/>

# Psychogenic <sup>1</sup>

1. Origins in Freud <sup>2</sup>
2. Explains everything = explains nothing
3. Std of evidence disparity <sup>1</sup>
4. Circular reasoning <sup>1</sup>  
Not falsifiable/resists contrary evidence
5. More in depth eval often finds a cause <sup>3</sup>
6. Historically, proves wrong <sup>1,4,5</sup>

1. Golomb, B. A. 2015. Psychogenic Illness. This Idea Must Die: Scientific Theories That are Blocking Progress. John Brockman. New York, Harper Perennial: 511-514. <http://edge.org/response-detail/25334>

2. Crews, F. 2017. Freud. The Making of an Illusion. New York, Henry Holt and Company.

3. Kanjwal, K 2009. Psychogenic syncope? A cautionary note. *Pacing Clin Electrophysiol*. 32: 862-5

4. Cahalan, S. 2013. Brain on Fire: My Month of Madness. New York, Simon & Schuster.

5. Joukamaa, M. 1987. "Psychological factors in low back pain." *Ann Clin Res* 19(2): 129-134.

# Psychogenic II

## 7. Misuse of evidence

**Anxiety = Outcome**

**Expectation versus conditioning<sup>1</sup>**

**“Nocebo”**: but Hrobjartsson <sup>2</sup> Golomb <sup>3,4</sup>

## 8. Damaging <sup>5</sup>

**Prejudices care, prevents search, Hantavirus case <sup>6</sup>**

*“Drs...kept telling my mother than her migraines, headaches, walking into walls & finally going blind was...in her head...She died after surgery to remove grapefruit sized brain tumor.”*

1. Morrow, G 1984. Clinical characteristics associated with the development of anticipatory nausea and vomiting in cancer patients undergoing chemotherapy treatment. J Clin Oncol. 2:1170-6. <https://www.ncbi.nlm.nih.gov/pubmed/6491699>

2. Hrobjartsson, A. and P. C. Gotzsche 2002. "[What is the effect of placebo interventions? A systematic review of randomized clinical trials with placebo treated and untreated patients]." Ugeskr Laeger 164(3): 329-333.

3. Golomb, B. 2011. "Are placebos inert or powerful? Vice versa." Clinical Investigation 11: 1471-1473.

4. Golomb, B 2012. The Dece(i)bo Effect. This Will Make You Smarter: New Scientific Concepts to Improve your Thinking. J. Brockman. New York, Harper Perennial: 381-385. [http://www.edge.org/q2011/q11\\_index.html](http://www.edge.org/q2011/q11_index.html).

5. Golomb, B. 2015. Psychogenic Illness. This Idea Must Die: Scientific Theories That are Blocking Progress. John Brockman. New York, Harper Perennial: 511-514. <http://edge.org/response-detail/25334>

6. Vallone, S. 2018 Doctors Think Mom May Be ‘Faking’ Sickness. Turns Out She Has a Rare Illness Transmitted By Mice Feces." Dearly.com: [Dearly.com/2018/2002/67978-mom-thinks-flu-doctors-think-shes-faking-month-later-shes-ventilator](https://www.dearly.com/2018/2002/67978-mom-thinks-flu-doctors-think-shes-faking-month-later-shes-ventilator).

# Not Nocebo

	No	Yes
<b>At onset 1<sup>st</sup> sx now attributed to EMR, were you aware others had similar problems with EMR?</b>	<b>72%</b>	<b>28%</b>

## Some had heard - Comments

"I knew someone who claimed to be sensitive to EMR but I thought she was nuts."

"but I had always thought they were just being overly concerned - until I experienced it for myself"

"but I did not believe that it was real, thought it was psychosomatic"

# Alternative Hypotheses

Specific fit	RF/MW	Sonic	Psycho- genic	Stress	Chem	Virus
Noise	+	-	-	-	-	-
Symptom	+	-	-	-	-	-
Sign	+	-	-	-	-	-
Precedent	+	-	-	-	-	-
Measured	+	-	-	-	-	-
Biol Mech	+	-	-	-	-	-

**Extensive specificity and triangulation**

**∴ Pulsed RF/MW is the cause**



# Takeaway messages

## Symptoms:

- Most common problems sleep, cog, HA
- Others: tinnitus, hearing loss, nosebleed, dizziness, nausea, anxiety...

## Imaging:

- Like TBI

## Timecourse:

- Withdraw RF → vbl recovery; cont RF → vbl progression

## Noises:

- “Frey Effect” (microwave auditory effect)
- Needs low ambient noise. Differs by head dimensions. Seem to follow if move. Spatially localized. Cover ears → No ↓ intensity

## Source (diplomats):

- Surveillance or weapons?



# Takeaway messages cont.

## Source (civilians):

- Smart meters, Wi-Fi, cell towers, radar...

## Precedent:

- US embassy in Moscow, 1953 to 1980s+

## Mechanism:

- OS + downstream
- Additional mechs (downstream from OS) include:
  - Inflammation, auto antibodies, membrane effects, apoptosis, mitochondrial effects, v-gated ion channels, BBB

## Best supported hypothesis: Pulsed RFR

- Abundant longstanding evidence of harm
- COI affects perceptions

## Debate:

- Manufactured (vested interests)