

Smart phones, smart cities, compromised planetary health

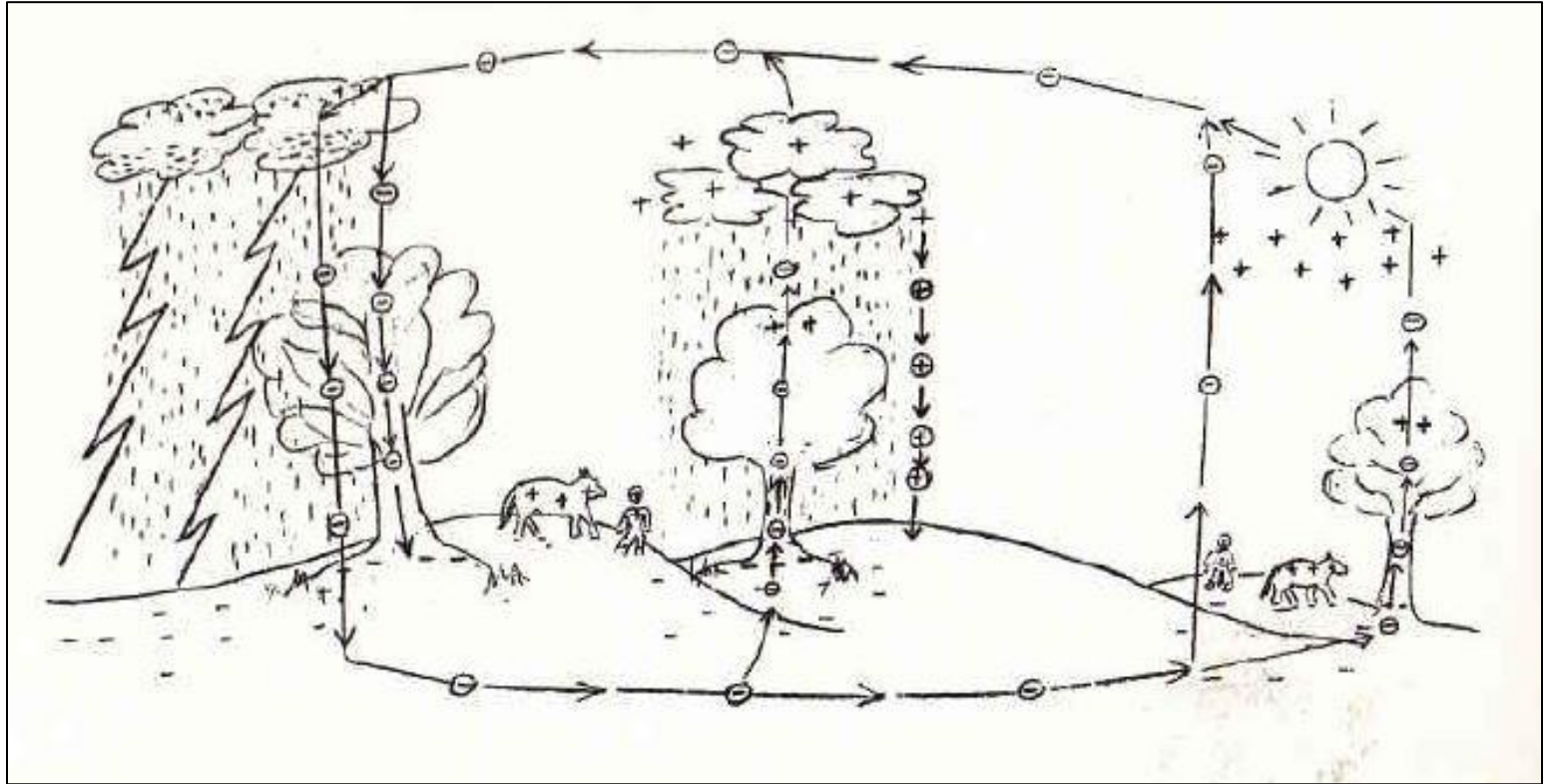
Dr Julie McCredden PhD
(Cognitive Psychology / Cognitive Science)

Thanks to ORSAA members and executive
www.orsaa.org



Oceania Radiofrequency
Scientific Advisory Association

Natural Electromagnetic Fields



Global EMF: Firstenberg, A. *The Invisible Rainbow*, 2017

EMFields all around

static electric field between ionosphere and earth
lightning striking earth 100/sec: Schumann resonance
harmonics.

Human body

EMRadiation (no EMF)

Light from sun, candles
 $\text{wavelength} \times \text{frequency} = C$

Bees and Flowers Communicate Using Electrical Fields

<https://scitechdaily.com/study-shows-that-bees-and-flowers-communicate-using-electrical-fields/>

Detection and Learning of Floral Electric Fields by Bumblebees” by Dominic Clarke, Heather Whitney, Gregory Sutton and Daniel Robert, 21 February 2013, *Science*.

[DOI: 10.1126/science.1230883](https://doi.org/10.1126/science.1230883)



Andreas Trepte, CC
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<<https://creativecommons.org/licenses/by-sa/2.5/>>, via
Wikimedia Commons

We are electrical beings

Types of neural oscillations

- unique to individuals
- Beta memory hippocampus
- Gamma cleans up plaque
- waves change biology



Deep focus

Thinking

Awake

Daydreaming

Asleep

Psyshow Psych
<https://www.youtube.com/watch?v=gvpuOBezW0w>

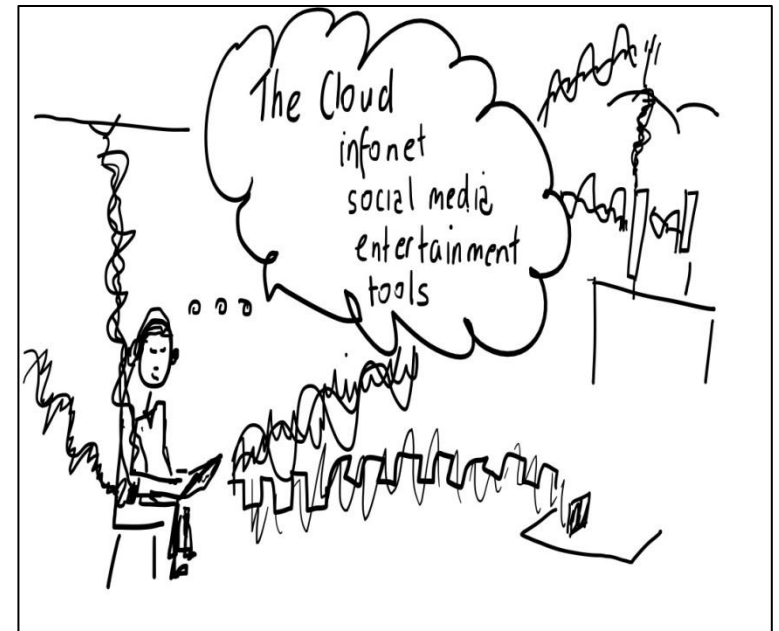


www.dreamstime.com/photos-images/free.html

<https://www.publicdomainpictures.net/en/view-image.php?image=58196&picture=heart-rate-ekg-ecg-heart-beat>

Man-made EMF/EMR

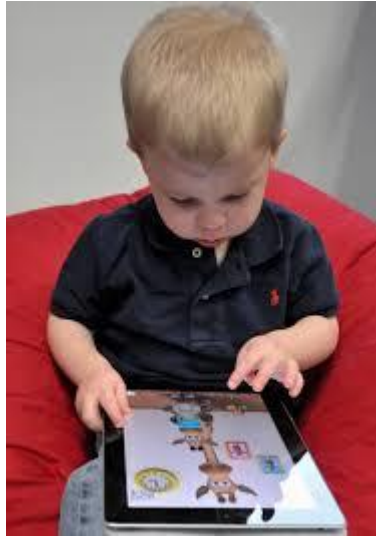
1,000,000,000,000,000,000 x natural background radiation



So what's the problem?



Photo by [Bicanski](#) on [Pixnio](#)



<https://funningham.wordpress.com/2009/03/11/cell-phones-are-they-the-end-of-the-world-as-we-know-it/>



<https://www.rawpixel.com/image/5921716/photo-image-background-public-domain-blue>

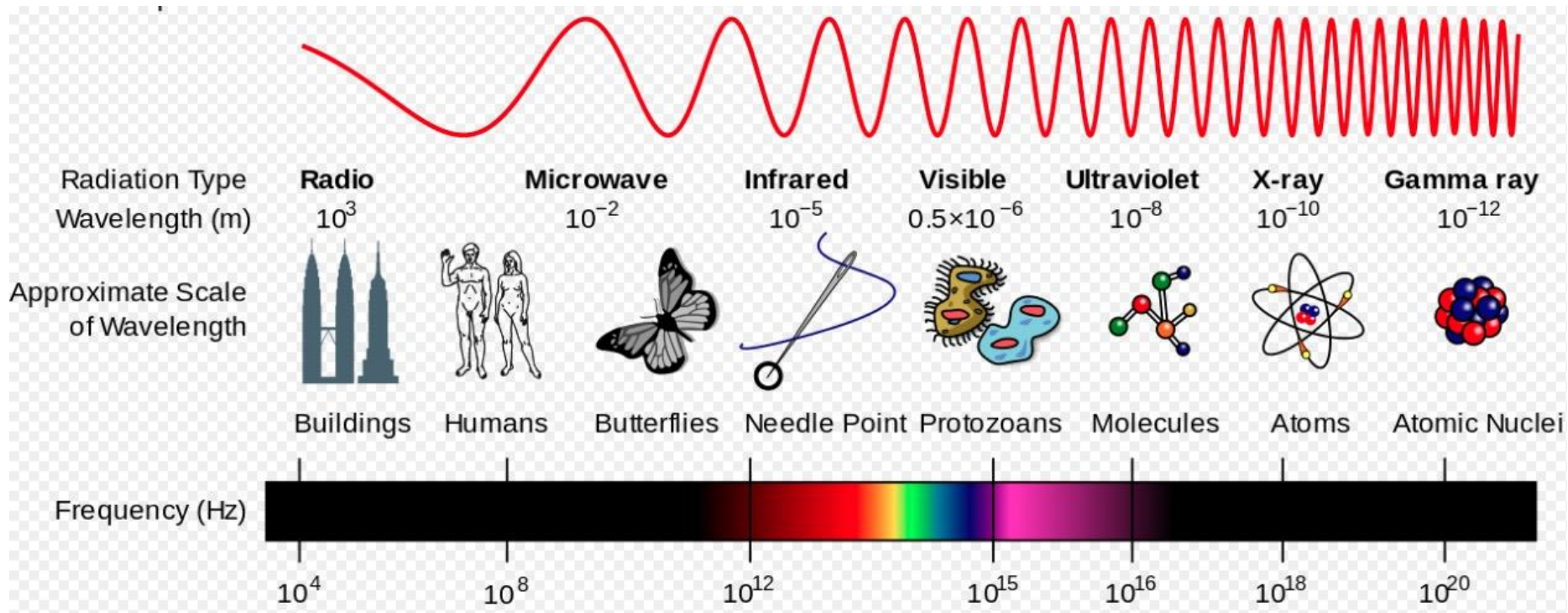


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Clip&utm_medium=referral&utm_source=pxhere

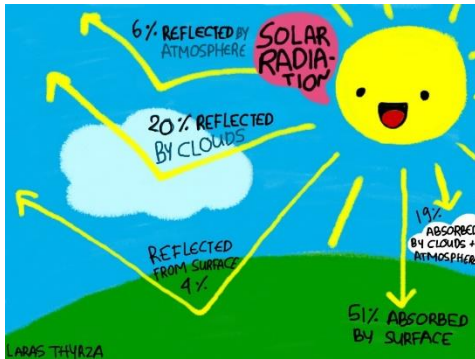
What have you not been told?

ELECTROMAGNETIC SPECTRUM

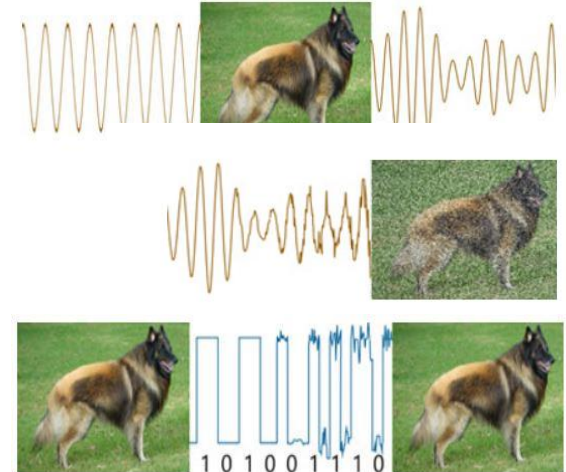
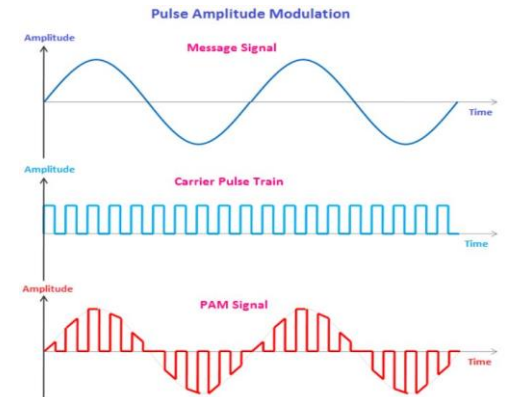


Entire RF-EMR spectrum (including AM/FM range radio waves, and microwaves) classified by the WHO's International Agency for Research on Cancer (IARC) as a Group 2B Possible Carcinogen in 2011

Natural versus man made EM waves



Suns Radiation	Wireless / Microwave Radiation
Important frequencies for humans, plants	Not found in nature
Random directions of each photon -> no EM fields	Photons moving in concert: add up to a strong force field, alternating
Continuous waves	Pulsed signals with data signal superimposed on carrier wave
Warnings given for UV effects	No warnings given for dangerous effects

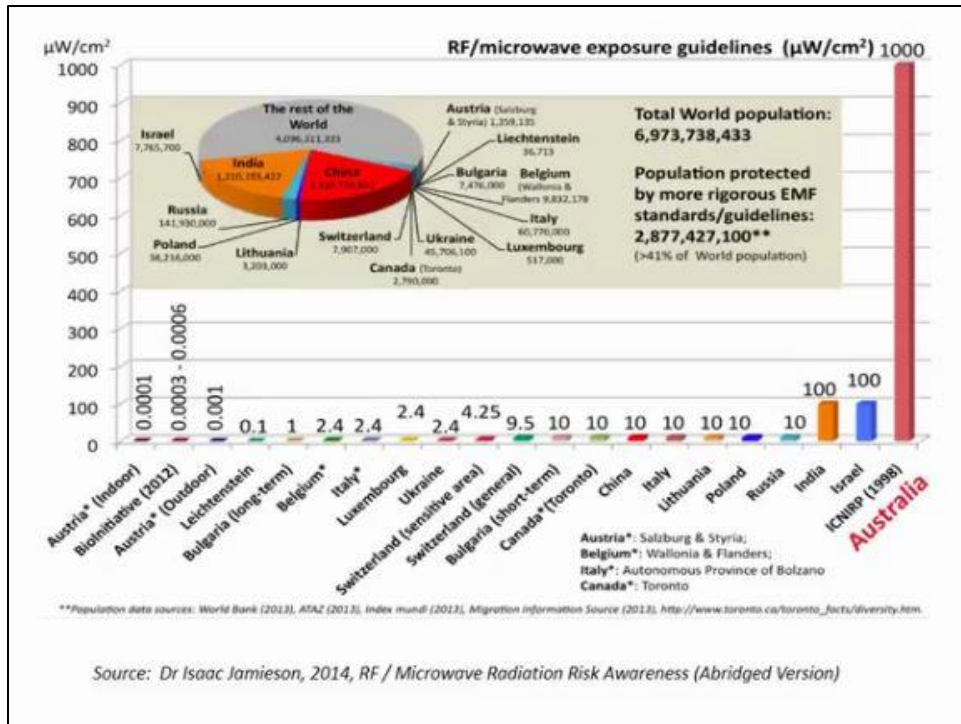


<https://superatmosphere.files.wordpress.com/2013/05/sunsun.jpg>

<https://www.physics-and-radio-electronics.com/blog/modulation-definition-need-for-modulation-types-of-modulation/>
<https://www.mathsisfun.com/physics/waves-radio-microwave.html>

Q: How much microwave exposure is allowed?

A: The “cooking standard” is used



Limit = radiation that will increase core temp 1°C

Whole body: 0.08 W/kg^a
(10 W/m^2)

Head/ torso/foetus by 2°C :
 2 W/kg^2^b (20 W/m^2)

limbs/cornea/fat/muscle/
bone by 5°C : 4 W/kg^2^b

(40 W/m^2)

^a Averaged over 30 mins; reduction factor 50

^b Averaged over 6 mins and 10cm^3 ; reduction factor 10

ICNIRP/ARPANSA: Only heating of tissue matters

Not true

Q: Are there effects below
ICNIRP?

Ans: Yes, many

Military Research, 1970s

Naval Research, 1972, 1976 : summary of 3,700 scientific studies and publications

US Defence Intelligence Agency investigation of biological effects of microwaves being experienced with in communist countries , 1976 (Declassified)

Animal experiments reported in open literature have demonstrated the use of low level microwave signals to produce death by heart seizure or by neurological pathologies resulting from breaching of the blood-brain barrier” (page viii)

Personnel exposed to microwave radiation below thermal levels experience more neurological, cardiovascular, and haemodynamic disturbances than do their unexposed counterparts. (page 6)

The most common subjective complaints were headache, fatigue, perspiring, dizziness, menstrual disorders, irritability, agitation, tension, drowsiness, sleeplessness, depression, anxiety, forgetfulness and lack of concentration.” (page 8)

! If the more advanced nations of the West are strict in the enforcement of stringent exposure standards, there could be unfavorable effects on industrial output and military functions. The Eurasian Communist countries

Summary page vii – US Army Medical Intelligence and Information Agency report, 1976 .

Bioinitiative report International independent scientists, researchers, public health officials 2007, 2012, 2022 reports

Over 3,600
scientific papers

Health effects found at
100 to 1000 x lower
than ICNIRP/ARPANSA
limits

<https://www.bioinitiative.org/>

II. SUMMARY OF KEY SCIENTIFIC EVIDENCE

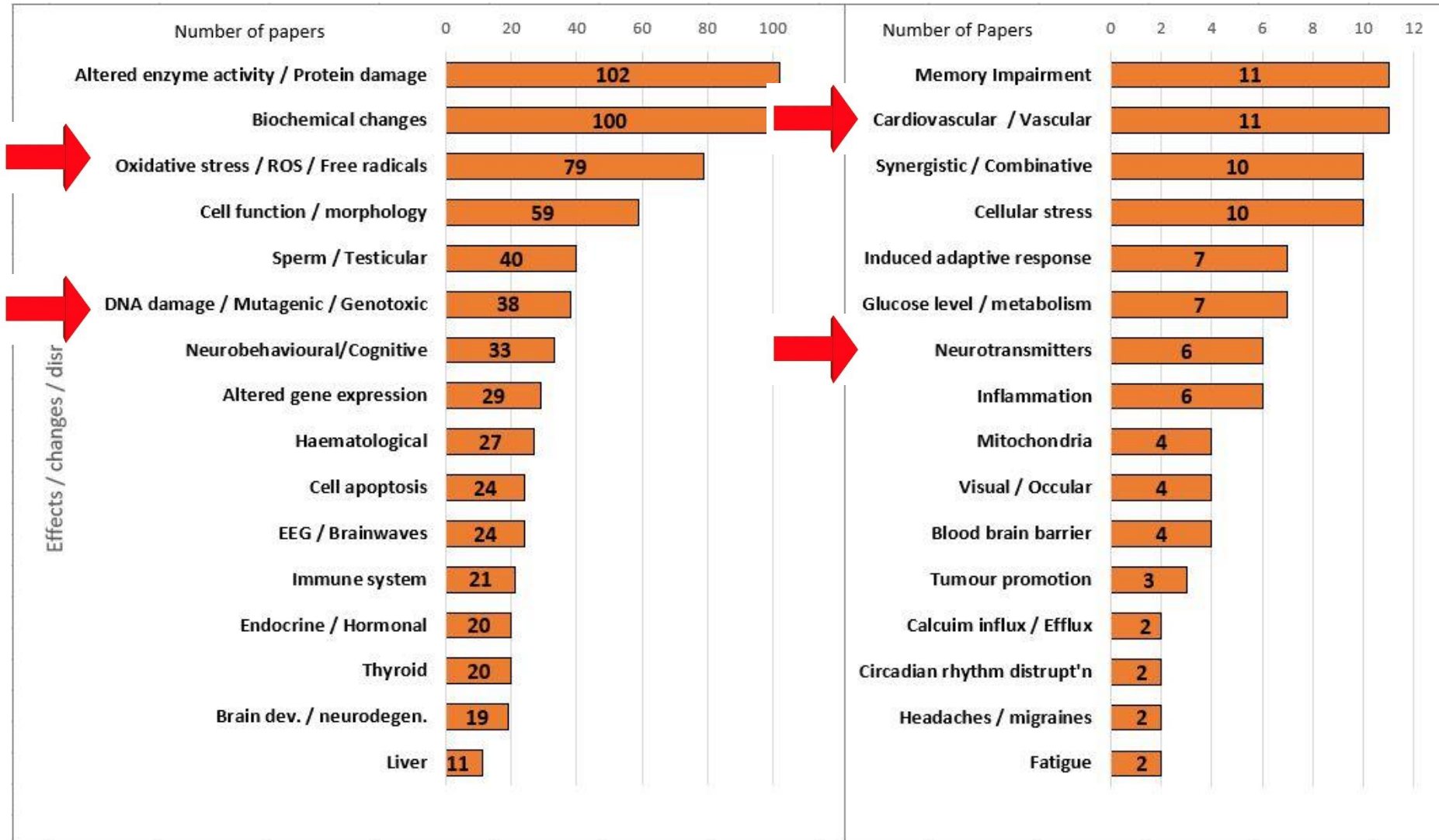
(Also see Section 5 – Section 24)

- A. Evidence for Damage to Sperm and Reproduction
- B. Evidence that Children are More Vulnerable
- C. Evidence for Fetal and Neonatal Effects
- D. Evidence for Effects on Autism (Autism Spectrum Conditions)
- E. Evidence for Electrohypersensitivity
- F. Evidence for Effects from Cell Tower-Level RFR Exposures
- G. Evidence for Effects on the Blood-brain Barrier
- H. Evidence for Effects on Brain Tumors
- I. Evidence for Effects on Genes (Genotoxicity)
- J. Evidence for Effects on the Nervous System (Neurotoxicity)
- K. Evidence for Effects on Cancer (Childhood Leukemia, Adult Cancer)
- L. Melatonin, Breast Cancer and Alzheimer's Disease
- M. Stress, Stress Proteins and DNA as a Fractal Antenna
- N. Effects of Weak-Field Interactions on Non-Linear Biological Oscillators and Synchronized Neural Activity

III. EMF EXPOSURES AND PRUDENT PUBLIC HEALTH PLANNING

Biological and health effects

from ODEB (3500+ papers: selected real world devices)



McCredden JE, Cook N, Weller S, Leach V. Wireless technology is an environmental stressor requiring new understanding and approaches in health care.

Frontiers in Public Health. 2022 Dec 20;10:4893.

Q: How can microwaves affect human biology?

Ans: In many ways

Vibrational resonance



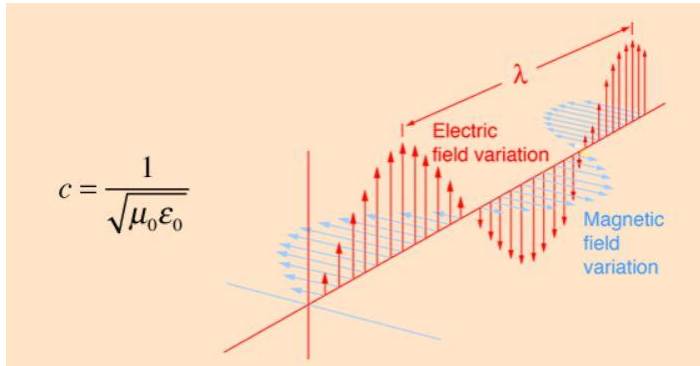
- Broughton Suspension bridge Manchester, 1831
- mechanical resonance
troops marching in step



- Tacoma bridge,
Washington, 1940
- 42 mile/hr wind

Frequency trumps intensity

Movement of charged molecules



<http://hyperphysics.phyastr.gsu.edu/hbase/electric/elefie.html#c2>

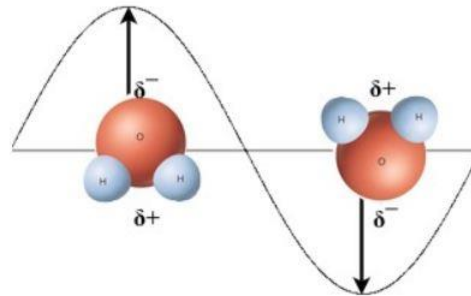
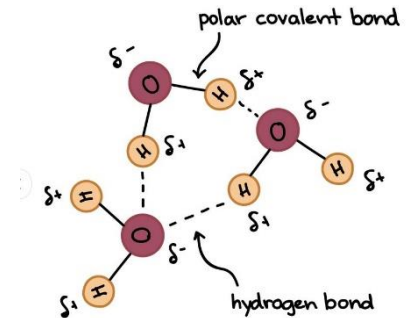
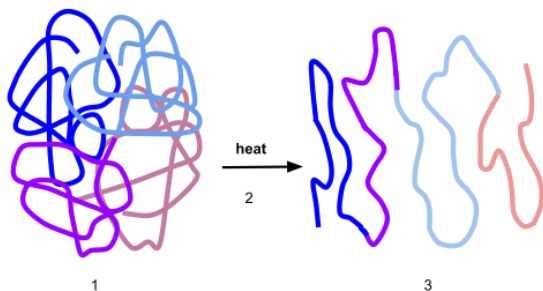


Figure 4: The rotation of water molecules under the influence of the electric component in an electromagnetic wave. (Black arrows represent electric field.)

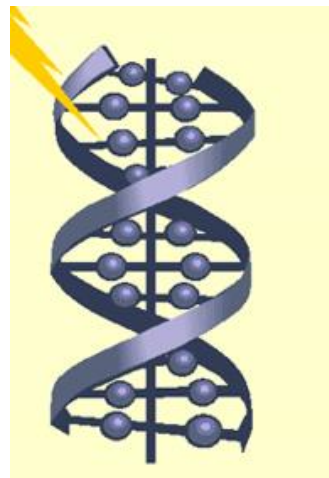
<http://tobyzerner.com/microwaves/>



<https://www.khanacademy.org/science/ap-biology/chemistry-of-life/structure-of-water-and-hydrogen-bonding/a/hydrogen-bonding-in-water>

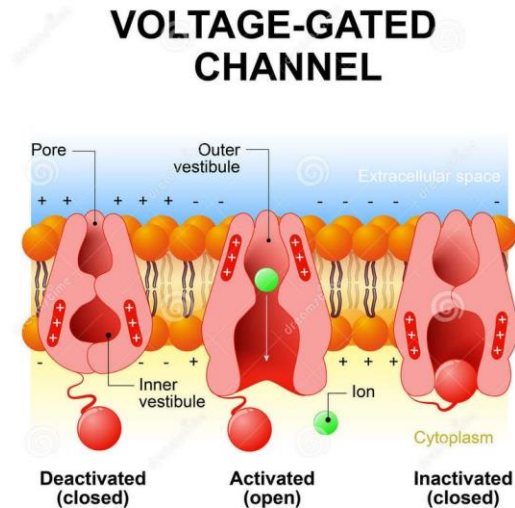
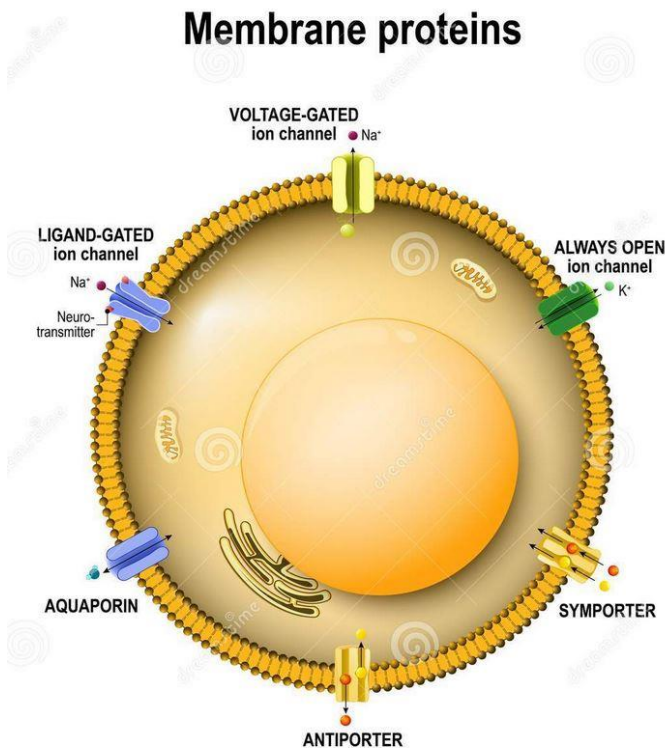


Scurran15, CC BY-SA 4.0
<<https://creativecommons.org/licenses/by-sa/4.0/>>, via
Wikimedia



- Water rearranged
- Protein unfolding
- DNA Damage
- Altered gene transcription

Cell membrane: Voltage Gated Calcium Channels tricked



<https://www.medicalsciencenavigator.com/neurons-where-does-their-electricity-come-from/>

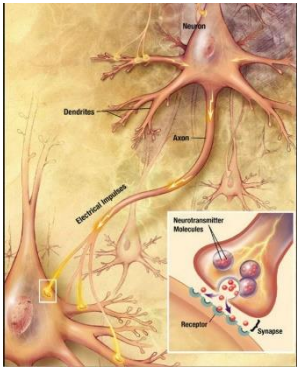
www.dreamstime.com/photos-images/free.html

Electrically sensitive ion gates triggered by voltage changes

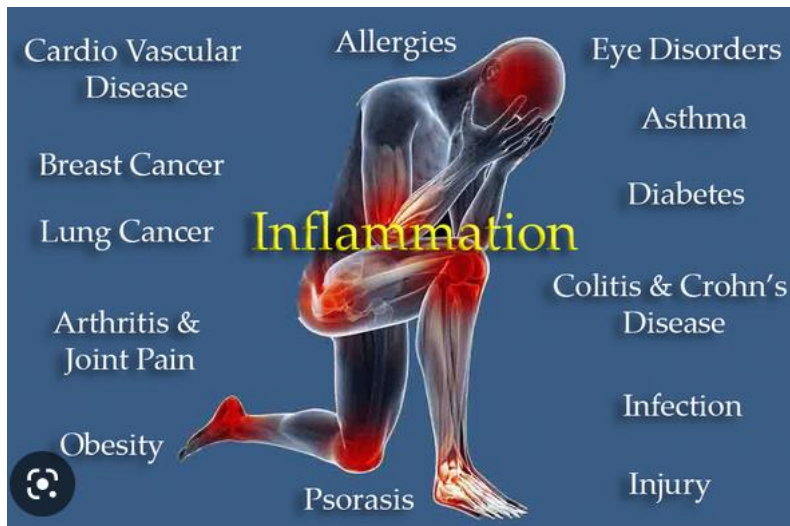
Pall, M. L. (2016). Microwave frequency electromagnetic fields (EMFs) produce widespread neuropsychiatric effects including depression. *Journal of Chemical Neuroanatomy*, 75, 43-51.

Panagopoulos, D. J. (2019). Comparing DNA damage induced by mobile telephony and other types of man-made electromagnetic fields. *Mutation Research/Reviews in Mutation Research*.

Leads to...



- Inappropriate signalling between neurons and cells
- Reactive Oxygen species
- Oxidative stress
- Inflammation



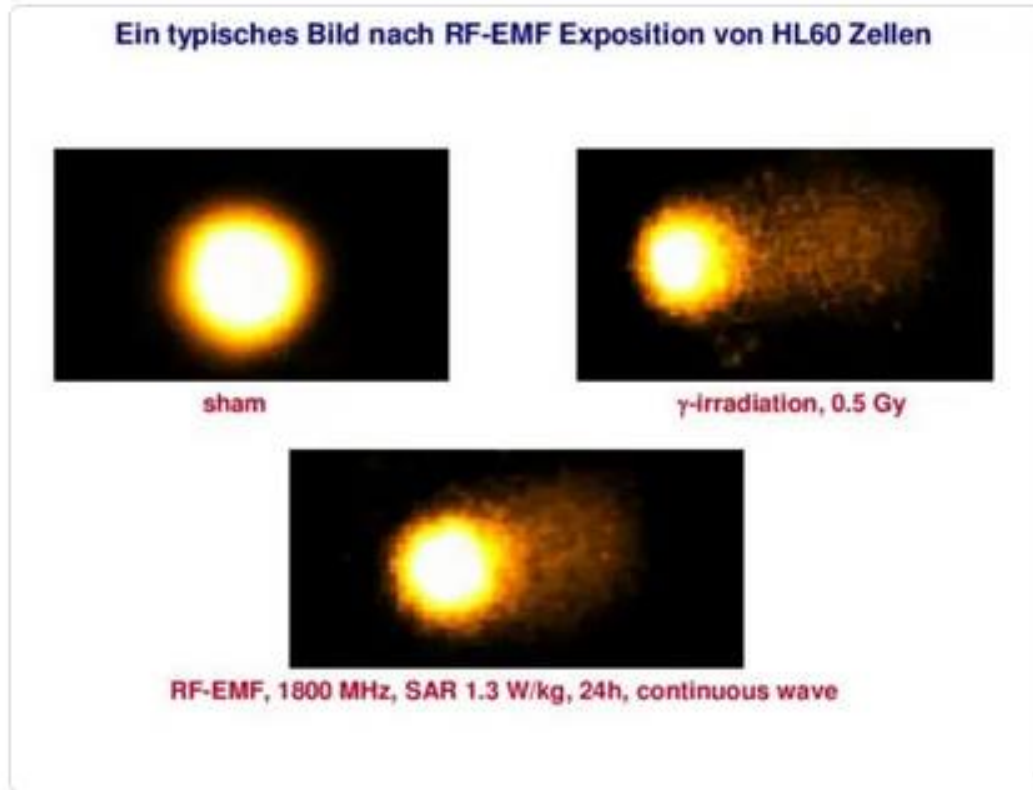
Calcium Signalling and Viruses

- Ca^{2+} is a universal second messenger in cells
 - Viruses modulate calcium signalling to replicate
 - Proof: Calcium blockers can stop replication: Dengue virus, West Nile virus, Hepatitis C virus, porcine deltacoronavirus (PDCoV)
 - **Influenza A virus (IAV) uses the voltage-dependent calcium channel to assist with viral entry**
 - Virus proteins interact with components of the Ca^{2+} signalling pathway to
 - modulate Ca^{2+} oscillation
 - enhance the passage of ions and small molecules through membranes
- **favours viral replication**

Virology. 2020 Jan 2;539:38-48. Porcine deltacoronavirus (PDCoV) increases calcium influx via VGCC to favor viral replication. Bai D, et al. authors are working in Wuhan State Key Laboratory of Agricultural Microbiology, & Key Laboratory of Preventive Veterinary Medicine in Hubei Province

DNA damage

EU Reflex study 2004, Adlkofer et al, 12 institutions, 3 million Euros



Damage to
DNA,
Proteins,
cell
membranes,
Cancer

Comet assay test on cells *in vitro* – longer tail = more DNA damage (fragments)

Effects similar to X Rays (60CT scans), Much oxygen and hydroxy radicals

Affects at SAR 1.3W/kg (mobile phone), stronger than 1.6, non-linear

Results smeared by industry-linked researcher Lerchl. Cleared in 2010.

RA vindicated in court, 2015

[Lecture by Prof. Dr. Franz Adlkofer, scientific director of the VERUM foundation](#)

Cancer: Recent animal studies

NTP: US National Toxicology Program

\$30million, many years

Near field cell phone radiation

→ two types of cancers in male rats
(malignant gliomas in the brain and schwannomas of the heart)

also found in humans:

Malignant gliomas (also found in epidemiological studies with cell phone users)

Schwannomas: cells involved in acoustic neuromas: human hearing and balance nerves

See:

<https://www.youtube.com/watch?v=nJfK3gbk mMk&t=3s>

Ramazzini Institute, Italy

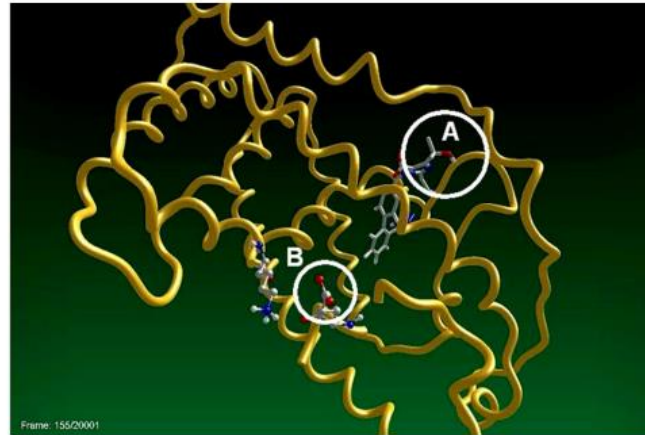
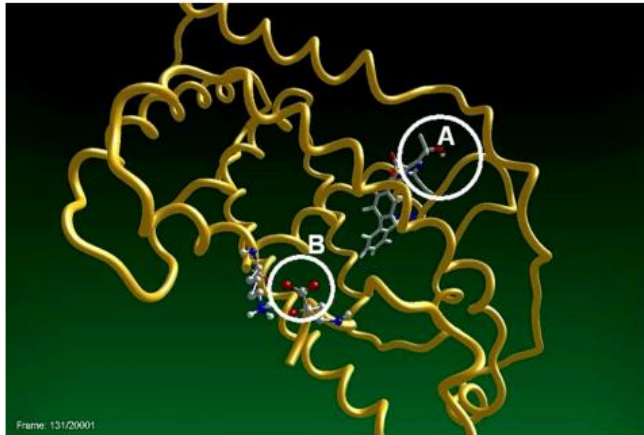
Far field: same rare nerve tumours found in male rats



NTP, USA

Ramazzini, Italy

Vitamin D Receptor disrupted by RF



biological molecules are constantly moving and interacting with timescales measured in picoseconds VDR uses hydrogen-bond exchange to activate

Vitamin D receptor, resonates at microwave frequencies

Interference from 3/5/6 GHz, modems, 4GLTE

Blocks immune system activation

Blocks Olmesartan and the native ligand, 1,25-dihydroxyvitamin-D at very low intensities

Microbiome composition disrupted --> inflammatory disease



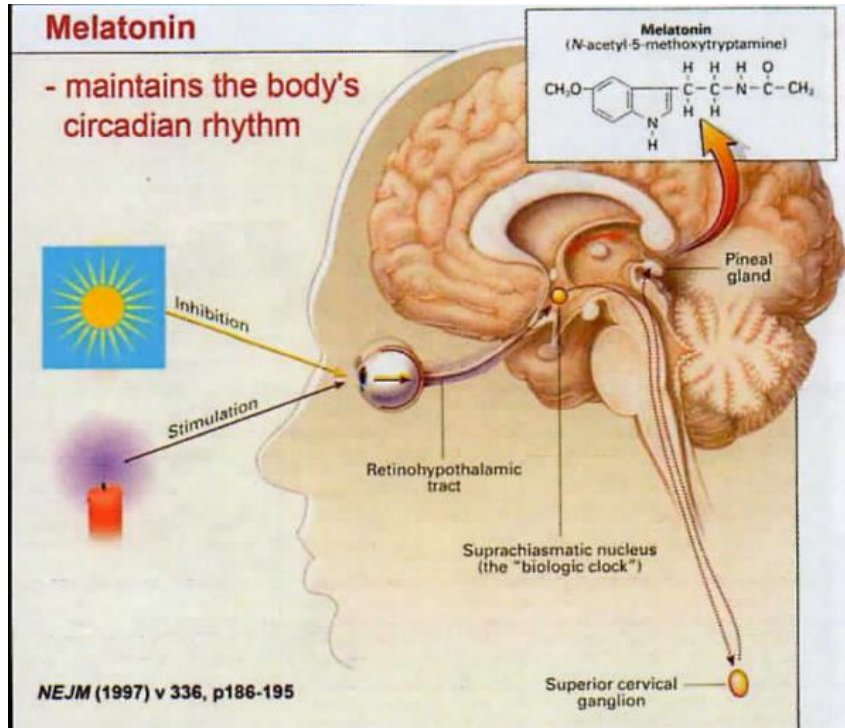
effective control of environmental Electrosmog immunomodulation may soon become necessary for successful therapy of autoimmune disease

Trevor Marshall MD Environmental Radiation modulates symptoms in Human Immune Disease

https://mpkb.org/home/publications/marshall_mpi_2015

Environment and Autoimmunity (2017) 65:129–135

Melatonin suppressed by EMF/RF



Melatonin:

Protects brain and heart by scavenging free radicals, decreasing serum lipids and blood glucose

Activates immune system (TH1, T-cells, IL-1, IL-6, TNF)

Prevents DNA damage and cancer

Protects against Oxidative-stress
mitochondrial dysfunction

neurodegenerative diseases (AD, PD, HuntD, ALS)

EMF MF (from computer screens, power boxes):

Blocks melatonin growth factor, decreased melatonin production

suppresses melatonin receptor MF1 *in vitro* (Girget al 2010)

EMR reverses the effects of melatonin: *Carcinogenesis*, 2001, 22(7), 1043-48

Melatonin protects against EMF stress, *J Mol. Cel. Med*, 18, 1060, 2014

Melatonin in health and disease by Ray Kearney, MD, Uni of Sydney

Don't keep mobile phones near bed



I Care

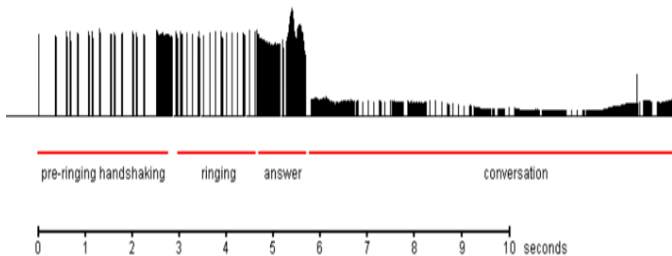
Sleep-Tracking App

Bad Idea

- Workers: Greater EMF exposure → poorer sleep greater stress, anxiety, depression (Hosseini et al, 2019)
- Increased Slow Wave Activity during exposure to pulse-modulated RF-EMF at end of the sleep period → reduction in performance improvement after sleep (Lustenberger et al 2013)
- Medical Students, 2 hours/day → sleep deprivation and day sleepiness (Yogesh et al 2014)
- Insomnia headaches and tinnitus after installation of smart meters in Victoria (Lamech, 2014)

Signals are pulsed and modulated

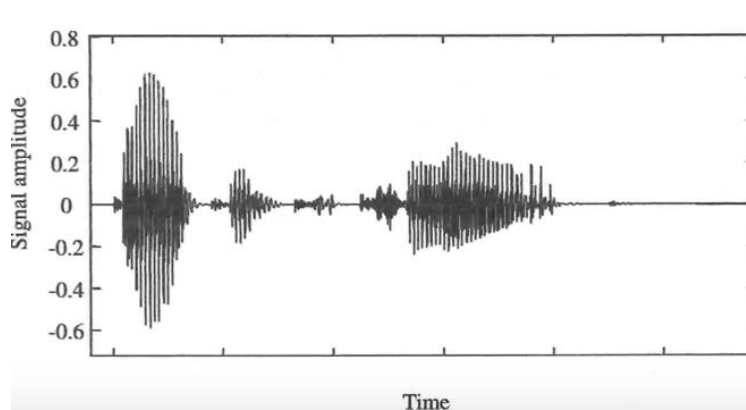
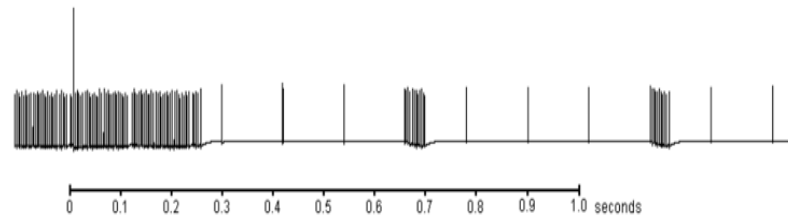
Transmitter power reduced after call is set up



Signal pulses at 4.62 ms \rightarrow 217Hz (gamma)

Every 26th frame omitted \rightarrow 8.3Hz (alpha)

Energy saving listening \rightarrow 2Hz (delta)



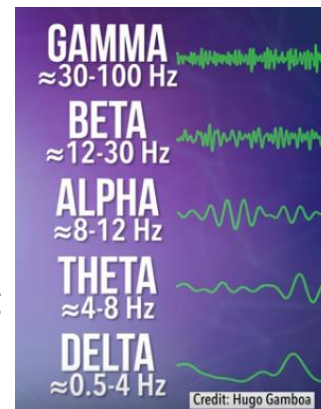
Deep focus

Thinking

Awake

Daydreaming

Asleep



Heart affected by pulsed RF

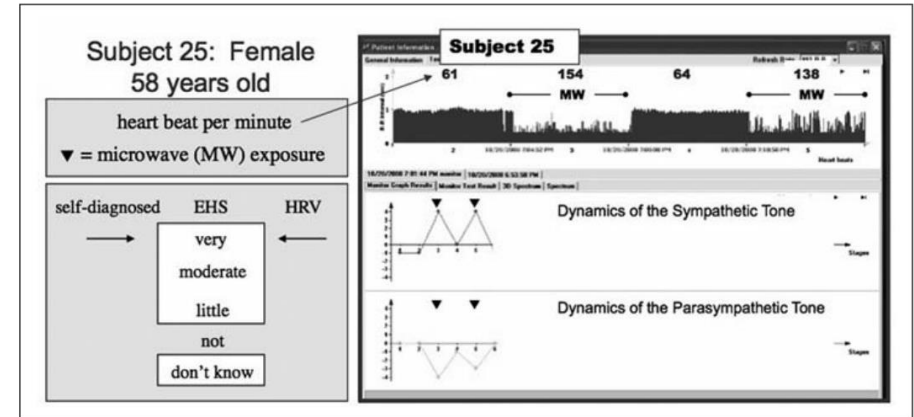
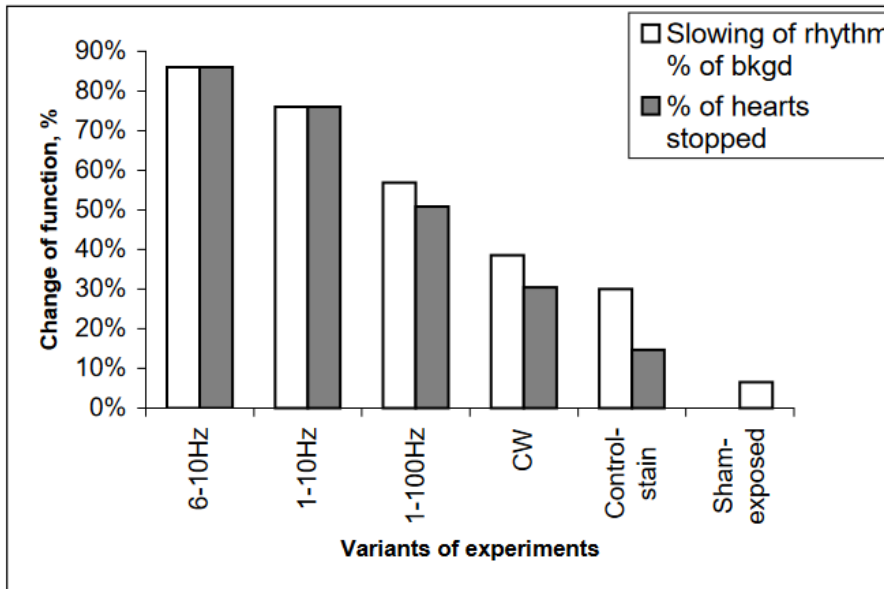


Fig. 11. Continuous monitoring of HRV during provocation part of this study for one subject who reacted to the MW radiation from a digital cordless 2.4 GHz phone.

9-30 mins with cordless phone base station, 2.4GHz, 100Hz pulse (Wifi)
real or sham exposure, blinded
10 affected: Heart rate increased, tachycardia
Most intense for younger people
Autonomic NS is affected by RF

Magda Havas, Provocation Study using Heart Rate Variability shows Radiation from Cordless Phones effects

Autonomic Nervous System Eur. J. Oncol. Library, vol. 5

Frogs hearts irradiated with RF close to maximum absorption (9.3GHz)
Max effects
after 5 mins exposure
when modulation frequency same as heart rate

[Afrikanova & Grigoriev, 1996](https://pubmed.ncbi.nlm.nih.gov/9019279/)
<https://pubmed.ncbi.nlm.nih.gov/9019279/>

Graphic from Maslov and Grigoriev, 2003, p.67

Smartwatches and fitbits

Could trigger heart attacks eg
via interference with
implantable cardiac electronic
devices

<https://www.eurekalert.org/news-releases/980152>

Burn the skin via non stop
bluetooth pulsing

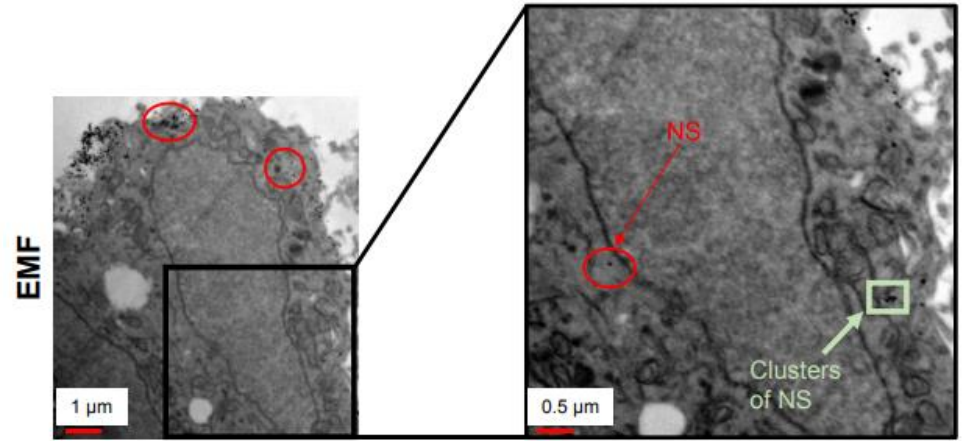
<https://youtu.be/YVpdyreCxyw>



Helps drugs to enter the cell

Small kidney tumour cells, 18GHz
(5G), 1.7W/kg (< ICNIRP)

- Transient Increase in Cell Membrane Permeability
- evidenced by rapid **internalization of silica nanospheres**

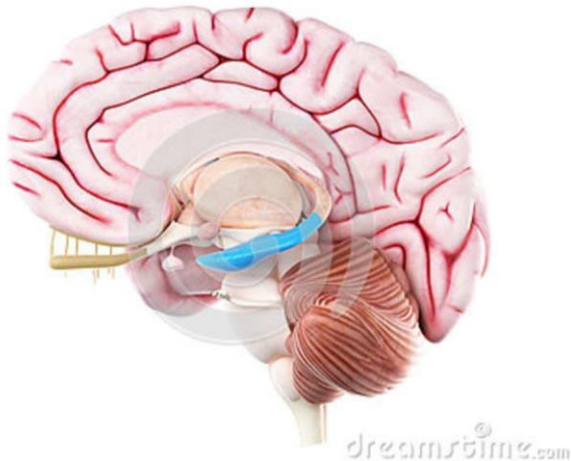


a possible use of EMFs to facilitate efficient transport of biomolecules, dyes and tracers, and genetic material across cell membrane in drug delivery and gene therapy, where permanent permeabilisation or cell death is undesirable

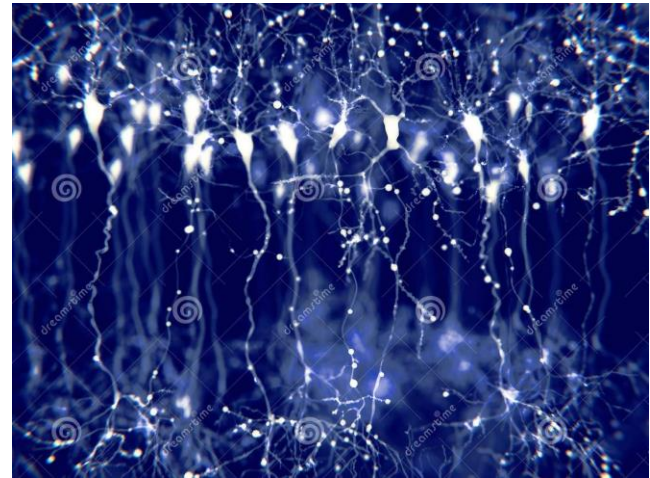
Exposure to 18 GHz EMF triggers uptake of large nanosphere clusters by pheochromocytoma cells
Perera et al, *International Journal of Nanomedicine*, 2018

<https://www.dovepress.com/exposure-to-high-frequency-electromagnetic-field-triggers-rapid-uptake-peer-reviewed-article-IJN>

Hippocampus: Memory and Emotions



Declarative memory
Spatial memory
Short-term -> long-term memory
Limbic system: emotion processing.



www.dreamstime.com/photos-images/free.html

Changes/damage:
Alzheimer's, depression,
bipolar disorder, inability
to create memories

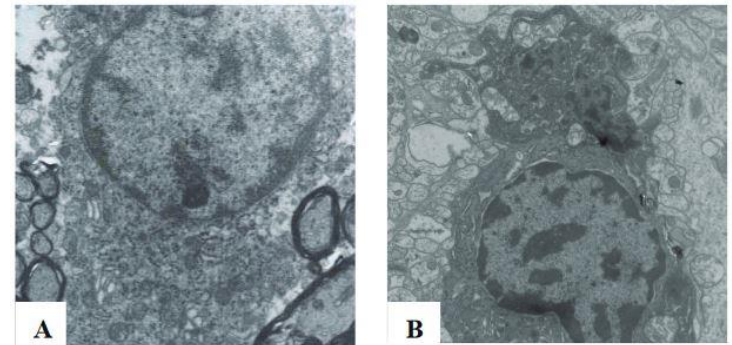
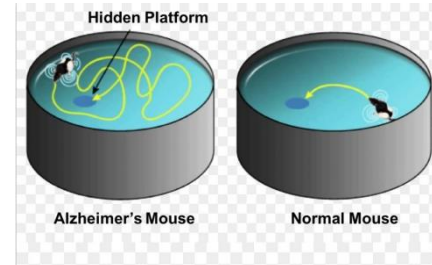
Hippocampus Damage

Trained in water maze

Exposure to MW 6 mins/day 1 day to 6 months

Longer or higher exposures:

- unable to find the submerged platform
- hippocampus cells
 - damaged
 - reduced in number and irregularly arranged
 - synaptic vessels congested, haemorrhaged
 - mitochondria swollen and disordered



marked *alterations in the structure and function* of the hippocampus in rats

altered levels of neurotransmitters in the hippocampus, which may relate to accumulation of metabolic products or damage to the internal environment

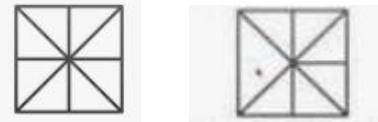
disrupted learning and memory ability. These cognitive deficits were likely a result of, at least in part, the marked injury and structural changes observed in the hippocampus with exposure.

Zhao L, Peng RY, Wang SM, Wang LF, Gao YB, Dong J, et al. Relationship between cognition function and hippocampus structure after long-term microwave exposure. Biomed Environ Sci. 2012;25:182–8.

Adolescents

- Switzerland, grade 7-9
- 3 day portable exposure measurements + GPS
- decreased figural memory scores with increase in estimated cumulative RF-EMF
- potential adverse effect of RF-EMF brain dose on cognitive functions that involve brain regions mostly exposed during mobile phone use

- Figural memory

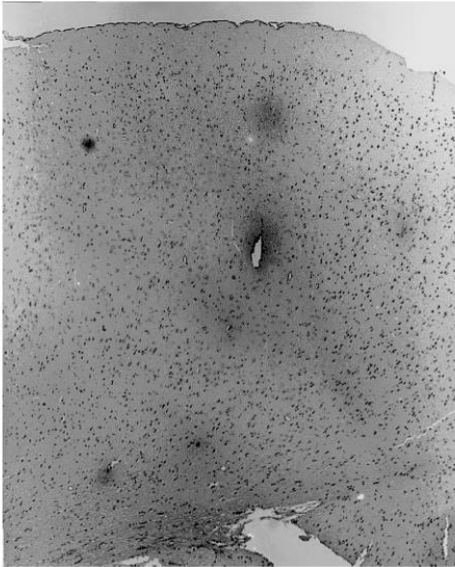


- Chose partner out of 5
- temporal (verbal and object information processing)
- parietal (spatial information processing)
- hippocampal areas (memory storage and retrieval)

A Prospective Cohort Study of Adolescents' Memory Performance and Individual Brain Dose of Microwave Radiation from Wireless Communication

Foerster, M., Thielens, A., Joseph, W., Eeftens, M., & Rösli, M. (2018). A prospective cohort study of adolescents' memory performance and individual brain dose of microwave radiation from wireless communication. *Environmental health perspectives*, 126(7), 077007.

Blood-brain barrier leakage



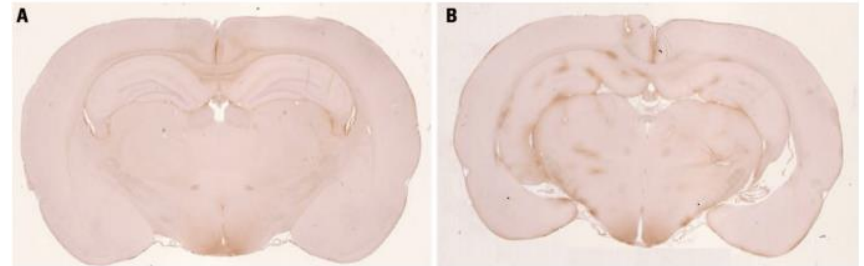
Pathological leakage around small vessels
(frontal lobe)

Salford et al, 1997, 2003

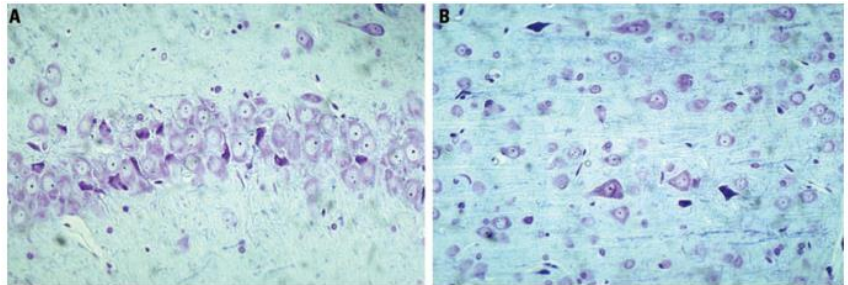
12-26 week old rats ~ teenagers; very weak exposures

Damage to nerves may be mediated by heavy metals and toxins in brain

Damage after 2 hours and then again at 8 weeks



A Normal vs B exposed with albumin leakage from many vessels



A: pyramidal cells, hippocampus; B cortex Normal
nerve cells interspersed with black and shrunken nerve
cells/dark neurons

*after some decades of (often) daily use, a whole generation of users
may suffer negative effects, perhaps as early as in middle age*

Mitochondria in the brain

(Military review 2015)

As the fourth largest source of pollution after air, water and noise, MicroWave radiation induces many biological effects...

The brain is the most sensitive target organ for MW radiation, where mitochondrial injury occurs earlier and more severely than in other organs

Hao et al. (2015) Effects of microwave radiation on brain energy metabolism and related mechanisms *Military Medical Research* 2

Neurotransmitter changes

Gamma-aminobutyric acid (GABA)

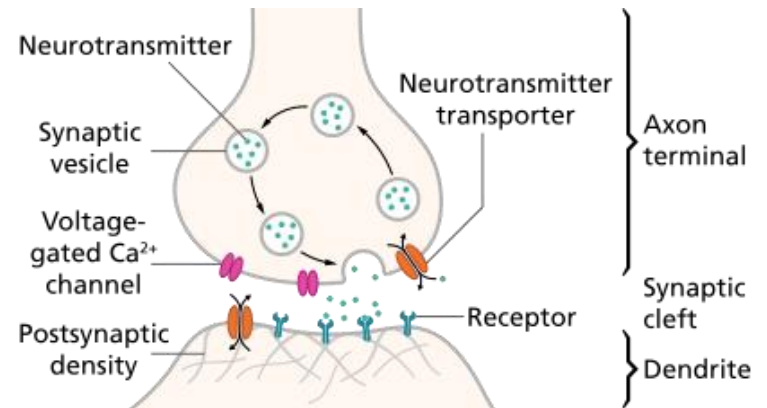
imbalances: anxiety, inner tension and excitability, **tinnitus** (ringing in the ears), blurred vision, chest discomfort, **irritability, oversensitivity**

Dopamine imbalances: **depression**, fatigue, learning disorders, irritability and outbursts

Serotonin imbalances:

migraines/headache, rapid heart rate/irregular heart-beat, tremor, Insomnia, fatigue, **depression**, reduced emotional control

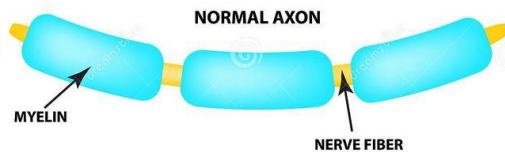
Acetylcholine imbalances: learning disabilities, **memory lapses**, diminished comprehension, slowed mental responsiveness, Attention Deficit Disorder



https://commons.wikimedia.org/wiki/File:SynapseSchematic_en.svg Thomas Splettstoesser (www.scistyle.com)

Damage to Myelin sheathing

DEMYELINATION



DISINTEGRATION OF MYELIN



DISRUPTION OF AXON FUNCTION



Myelin sheath

- important for electrical insulation
- 0-2 development of 1st layer
- 2+ continual development into adolescence and adulthood

Myelin degeneration and EMR

- 3GHz in guinea pigs and rabbits
- 2.4GHz rats 6 weeks after low dose

Baranski S. Histological and histochemical effects of microwave irradiation on the central nervous system of rabbits and guinea pigs. *AmJ Physiol Med* 1972;51:182–90.

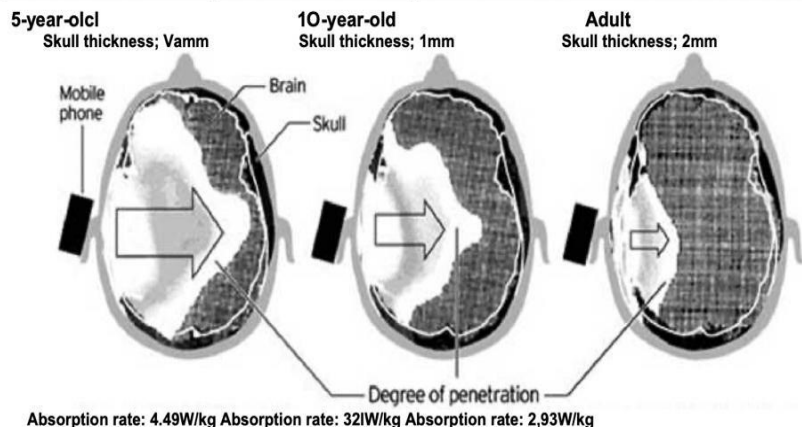
Switzer WG, Mitchell DS. Long-term effects of 2.45 GHz radiation on the ultrastructure of the cerebral cortex and hematologic profiles of rats. *Radio Sci* 1977;12:287–93.

Morgan, L. L., Kesari, S., & Davis, D. L. (2014). Why children absorb more microwave radiation than adults: The consequences. *Journal of Microscopy and Ultrastructure*, 2(4), 197-204.

Johansson, O., & Redmayne, M. (2016). Exacerbation of demyelinating syndrome after exposure to wireless modem with public hotspot. *Electromagnetic biology and medicine*, 35(4), 393-397.

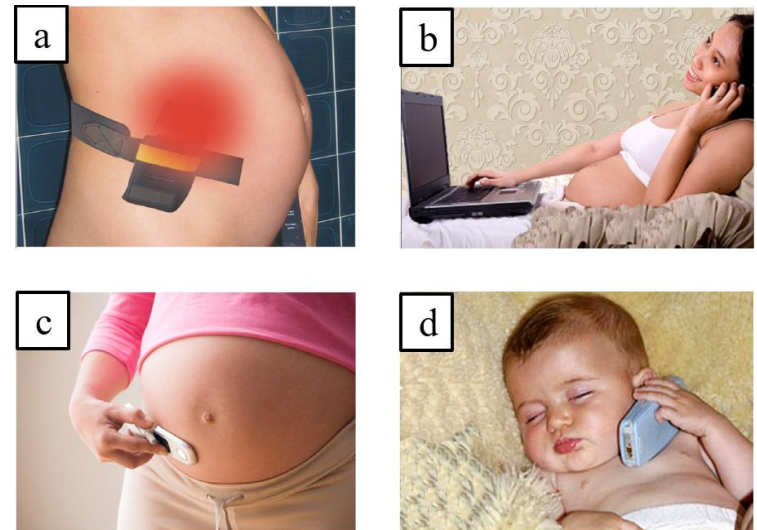
Children's brains are more vulnerable

How mobile phone radiation penetrates the brain



Distribution of absorbed dose in the brain in children aged 5 and 10 years and in adult mobile phone users (Gandhi et al., 1996)

Currently admissible



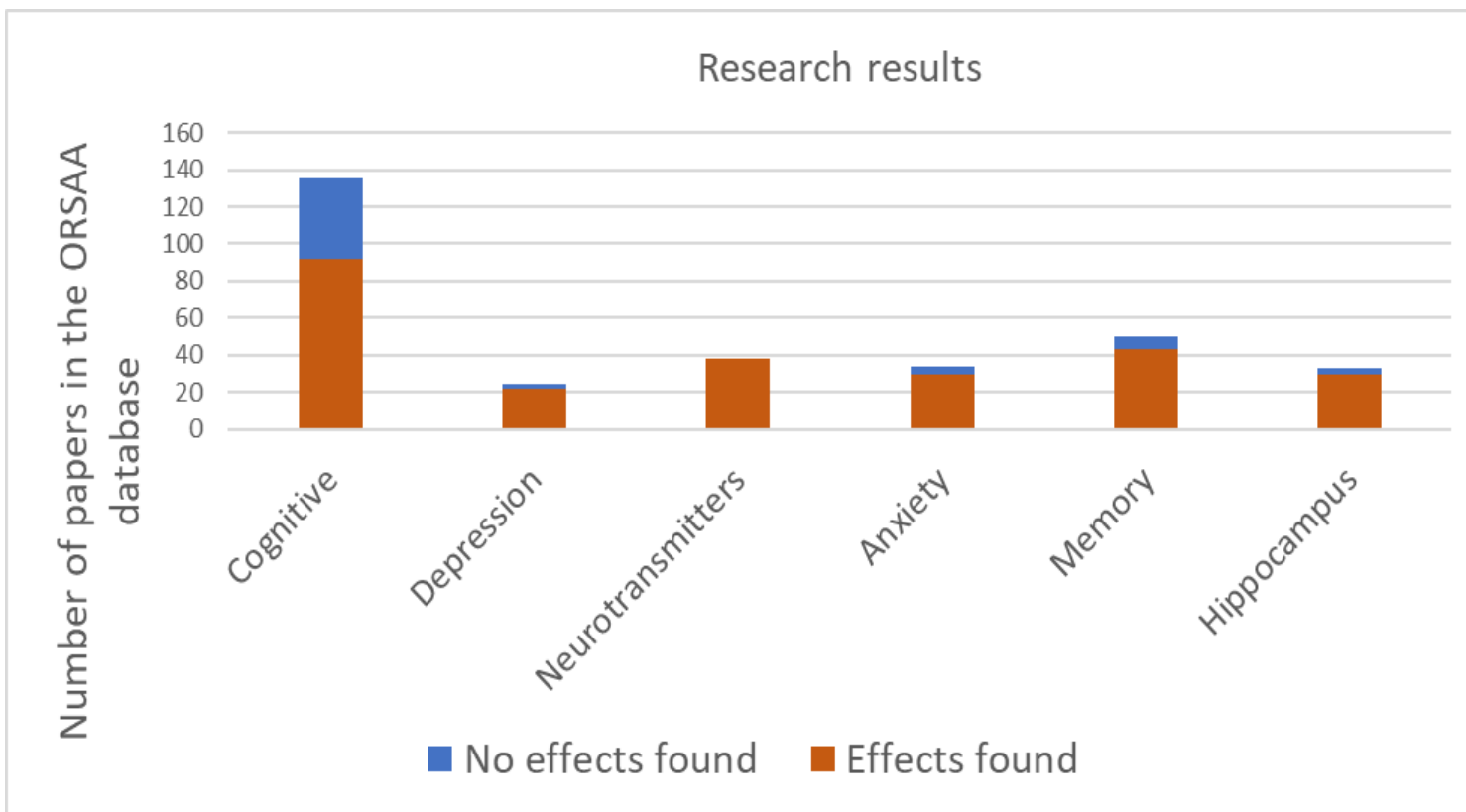
Brain effects

(ORSAA Database ODEB)



<https://www.dreamstime.com>

All papers



Children and adolescents

81 papers

- Effects 22
- No Effects 9
- Uncertain Effects 15

Children and youth: Sleep and well-being effects

Effects Summary	Study	Place	N	Ages
Headache/Migraine MP use was associated with a significantly increased adjusted odds ratio (AOR) for headaches and migraine	Chiu et al 2014 Telephone interview	Taiwan	2042	11-15
Fatigue association between fatigue and MP usage	Zheng et al 2015 questionnaire	China	781	School age
Sleep and well-being Wireless MP and CP use: increased risk of headaches, feeling down/depressed, waking in the night, sleepiness at school, tinnitus (wired headsets)	Redmayne et al 2013	New Zealand	373	High school students
Sleep disturbances MP use after lights out: short sleep duration, subjective poor sleep quality, excessive daytime sleepiness, and insomnia	Munezawa et al 2011	Japan	94,777	High school students

Children and youth: Mood, mental health and behavioural effects

Effects Summary	Study	Place	N	Ages
Mental Health Issues An association between exposure and conduct problems for adolescents and children	Thomas et al 2010 personal dosimeter and Strengths and Difficulties Questionnaire (SDQ): emotional symptoms, conduct problems, hyperactivity-inattention, peer problems, prosocial behaviour	Bavaria	1 498 1 524	Children adolescents
Behavioural Issues Exposure to cell phones when both prenatal and postnatal was associated with more behavioural difficulties.	Divan et al 2008, 2010 questionnaire re MP use strengths and difficulties questionnaire (SDQ): hyperactivity-inattention, emotional symptoms, peer problems, conduct problems, and prosocial behaviour.	Denmark (from Danish National Birth Cohort)	28 745	Mothers
ADHD (mice) young exposed mice hyperactive, memory impairments and decreased anxiety neuropathology (dose-responsive impaired glutamatergic synaptic transmission onto layer V pyramidal neurons of the prefrontal cortex) behaviours similar to ADHD in children	Aldad, Gan, Gao, & Taylor, 2012	Yale	82 79	Exposed <i>in utero</i> control
Verbal and Behavioural Issues young boys who live near RF transmitters showed reduced verbal expression/comprehension and had higher scores for total problems, obsessive-compulsive and post-traumatic stress disorders than controls	Calvente et al., 2016	Spain	123 boys	9-11yrs

Children and youth: Cognitive function effects

Effects Summary	Study	Place	N	Ages
Reaction time, attention, focused attention, memory * RT longer for 9-12 yrs Memory capacity smaller boys and girls Motor reaction time greater for girls RT greater for girls	Kolodynski et al 1996 Exposure to pulsed radar vs non exposed vs control	Skrunda, Latvia	996	9-18
Perception (audio and visual), Neuromuscular and Cognitive functions 1. Increase in reaction time to sound and light 2. more errors in phonemic perception and recognition; 3. deterioration in arbitrary attention and semantic memory; 4. increased fatigue and decreased working capacity of muscle 5. safe mode of use devices statistically significantly improve ALL psychophysiological indicators	Grigoriev et al 2019 longitudinal use of MT over time 6 to 17 years	Moskow region	161 users 370 controls	6-17
Memory cumulative duration and of wireless phone use and RF-EMF dose negatively associated with memory (stronger for figural than verbal memory)	Schoeni 2015 questionnaire (recall last 6 months) + Swiss mobile phone operators recorded use	Central Switzerland rural and urban	439	grade 7-9
Memory Decreased figural memory scores in association with an increase in RF-EMF brain dose scores for both CP and MP use	Foerster 2017	Switzerland	669	grade 7-9
EEG and memory task modulation of brain oscillatory responses in children in the approximately 4 - 8 Hz and approximately 15 Hz EEG frequencies during cognitive processing of auditory memory and memory search task	Krause et al 2009 Exposure or not to GPS pulsed 217Hz effects on 1 – 20 Hz event related brain oscillatory EEG	Finland	15	10-14

Assessment (PISA)

Computers have a greater presence in Australian schools than in most other OECD countries. In 2012, schools in Australia had about one computer available for every 15-year-old student, and 93.7% of Australian students reported using computers at school.

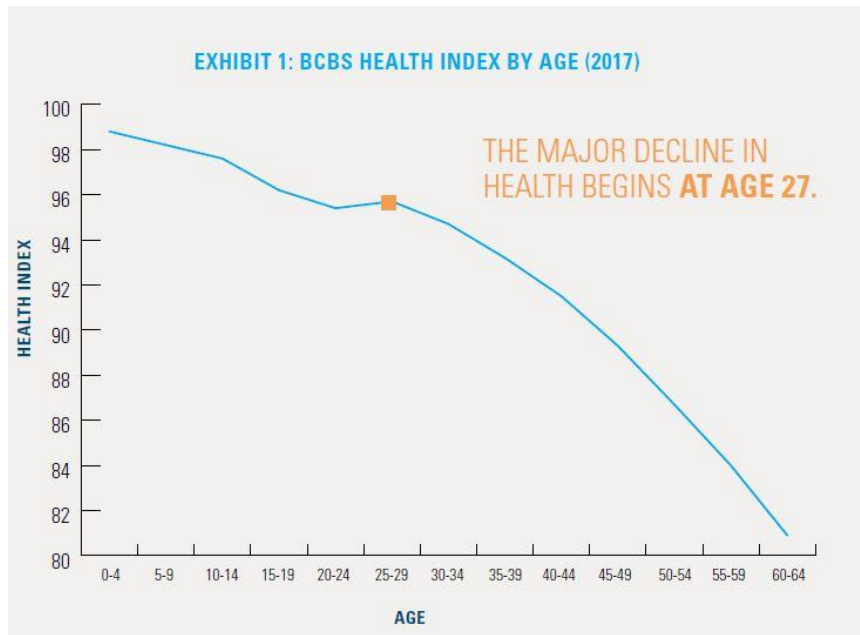
Key international findings

*Over the past 10 years, there has been no appreciable improvement in student achievement in reading, mathematics or science, on average, in countries that have invested heavily in information and communication technologies for education. In 2012, in the vast majority of countries, students who used computers moderately at school had somewhat better learning outcomes than students who used computers rarely; but **students who used computers very frequently at school did a lot worse**, even after accounting for the students' socio-economic status.*

Our children

Millennial's health decline 2013-17 Blue Cross Blue Shield Health of America report, 2019

- 20-30% increases in
- Major depression, Type II diabetes, behavioural health problems
- 20% more for women



2020 (post CVD) additional:
12% increase in major depression,
7% increase in alcohol use disorder
5% increase in tobacco and substance use.

Bees and Cellphones



Sharma VP, Kumar NR, 2010

decline in colony strength and in the egg laying rate of the queen

Foragers effected → no honey or pollen in the colony by the end

Kumar NR, Sangwan S, Badotra P. 2011

reduced motor activity of the worker bees
en masse migration and movement toward "talk mode" cell phone

Favre D. 2011

Induce the worker piping signal (swarming process / disturbed bee colony)

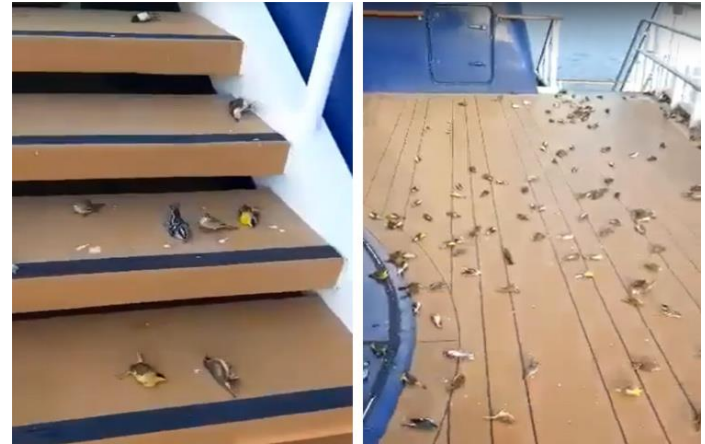
Birds

Prior research

- Engels, Nature, 2014: Anthropogenic electromagnetic noise **disrupts magnetic compass orientation** in a migratory bird (robin)
- Niall J. English, a Gleb Y. Solomentsev, and Paul O'Brien 2009: **denaturation of hen egg proteins** from microwave exposures

2019-2020 (Anecdotal evidence)

- Mass bird death on a cruise ship
- Spain and Wales: birds found dead on tarmac of highway
- German blue tit deaths: More than 11,000 cases of dead and sick birds reported in past fortnight (**breathing problems**, no longer taking food and making no attempt to escape when approached by people)
- Mystery on Anglesey ~ 300 dead birds fall out of the sky
- Texas, US, mass bird panic
- India Over 100,000 Flamingos Reportedly Descend on Mumbai



The exodus of species from the Mt. Nardi area of the Nightcap National Park World Heritage Area (2000-2015)

Mark Broomhall



Gondwanaland

A decline in insect diversity and population starting with digital technologies in 2002

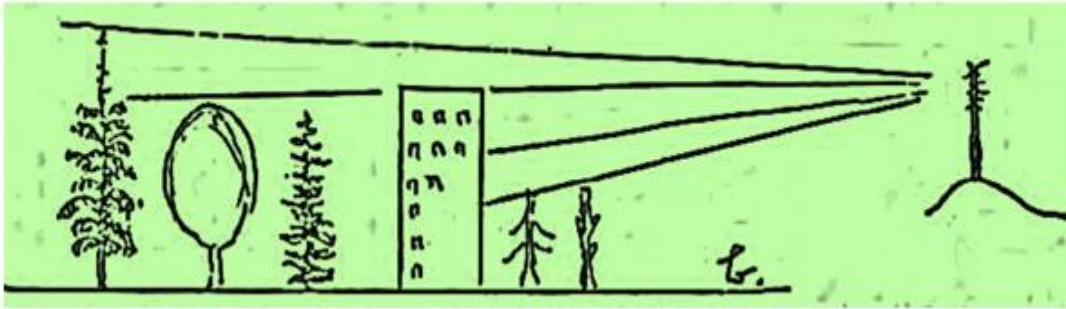
70 to 90 % of the wildlife has become rare or has disappeared from the Nightcap National Park within a 2-3 km radius of the Mt. Nardi tower complex:

- 3 bat species once common have become rare or gone
- 11 threatened and endangered bird species are gone
- 11 migratory bird species are gone
- 86 bird species are demonstrating unnatural behaviours
- 66 once common bird species are now rare or gone
- many of the missing species now appear below the 450 m level, out of immediate range of the tower. They have chosen a less diverse habitat and in effect, have been driven from previously safe World Heritage Park

- In the year 2009, enhanced 3G technology was installed and a further 150 pay television channels were added to the tower. Following these additions, I witnessed the exodus of 27 bird species from Mt. Nardi while simultaneously, insect volumes and species variety dropped dramatically
- Immediately after [4g], I witnessed the rapid exodus of a further 49 bird species. From this time, all locally known bat species became scarce, 4 common species of cicada almost disappeared, as well as the once enormous, varied population of moths & butterfly species. Frogs and tadpole populations were drastically reduced; the massive volumes and diverse species of ant populations became uncommon to rare
- It is evident that pulsed microwaves are particularly toxic

Trees

Altered growth, thinner cell walls and adverse biochemical changes



Cornelia Waldmann-Selsam
et al 2016

Radiofrequency radiation
injures trees around mobile
phone base stations
(Germany) : dead / brown leaves
and branches, top of tree dies,
leaves drop prematurely,
Irregular growth, do not grow
to full height,
damage only to one side
where beam passes through



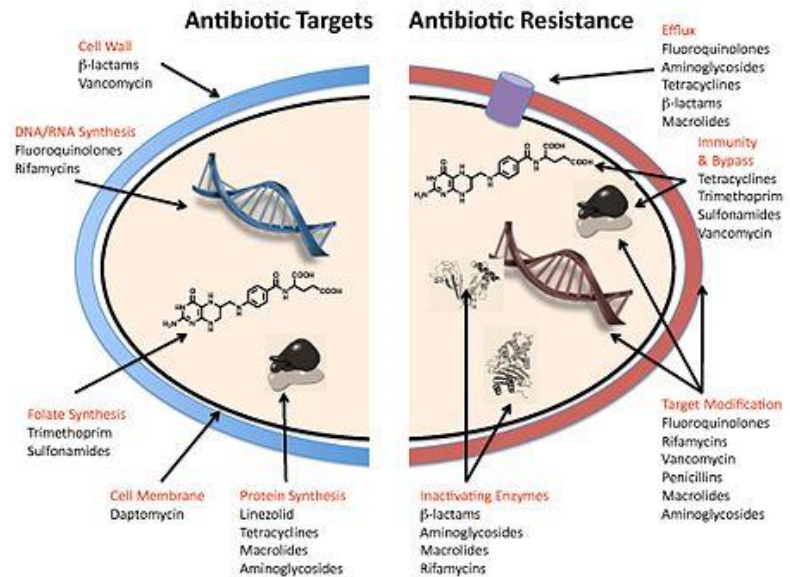
Woogaroo 2007 to 2013
changes in canopy
from high voltage powerlines

Antibiotic resistance

Bacteria exposed to mobile phone and WiFi radiation become resistant to antibiotics

Taheri et al, 2017

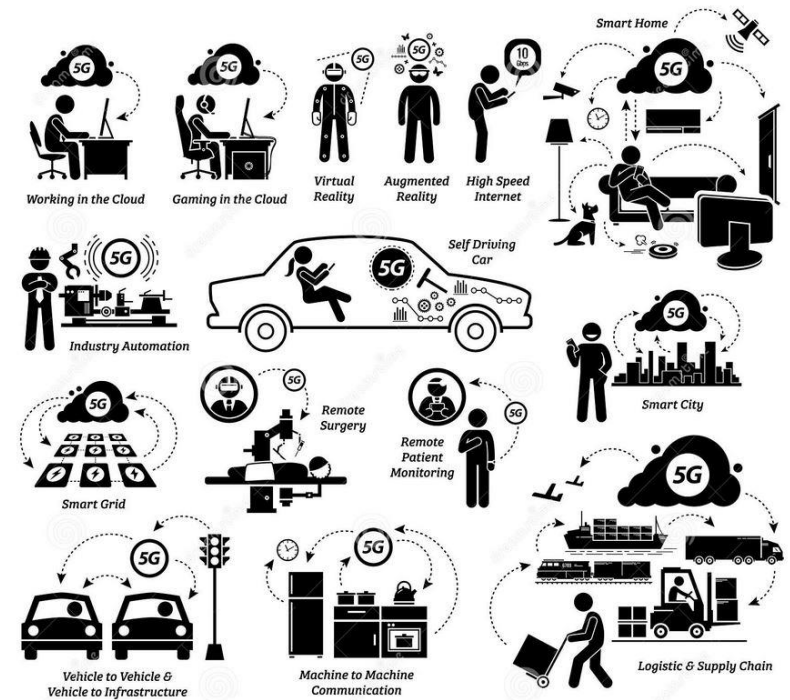
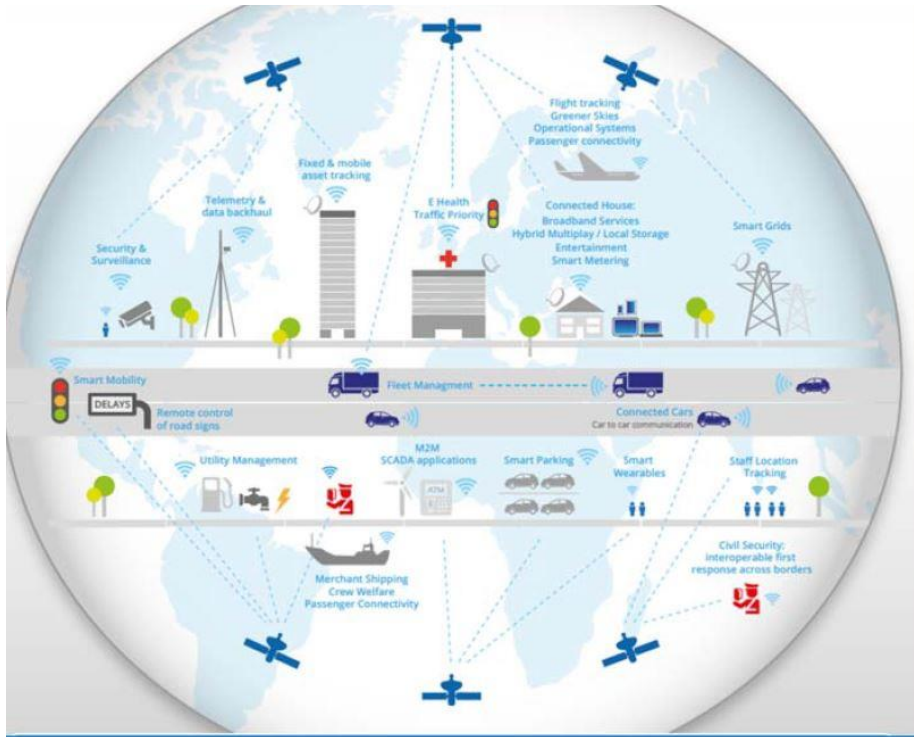
<https://www.ncbi.nlm.nih.gov/pubmed/28203122>



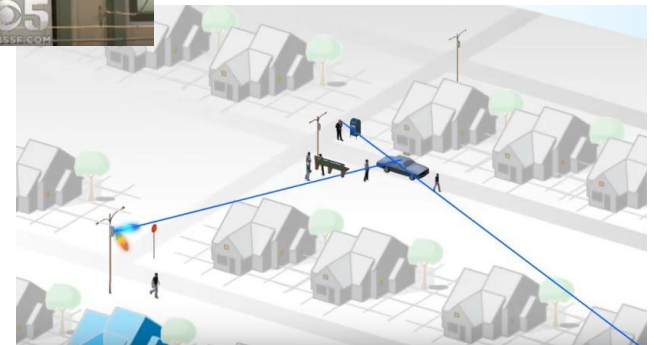
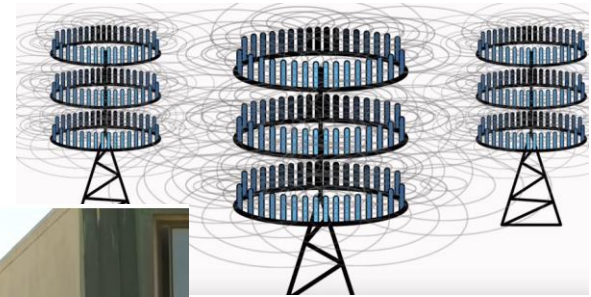
Gerard D Wright, CC BY 2.0

<<https://creativecommons.org/licenses/by/2.0>>, via Wikimedia Commons

Now add 5G



What does 5G (mmWaves) need?

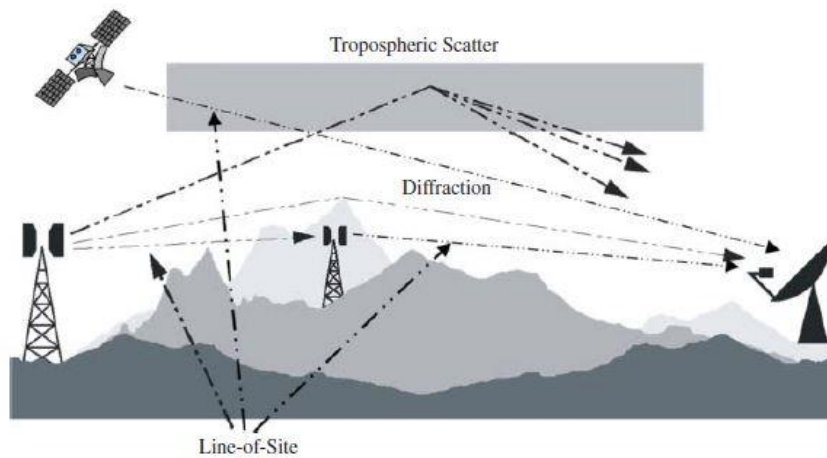


**BUT: the 5G small cells are delivering 2G, 3G and 4G frequencies
600MHz – 5000MHz
Too close to homes, parks, shops and schools**

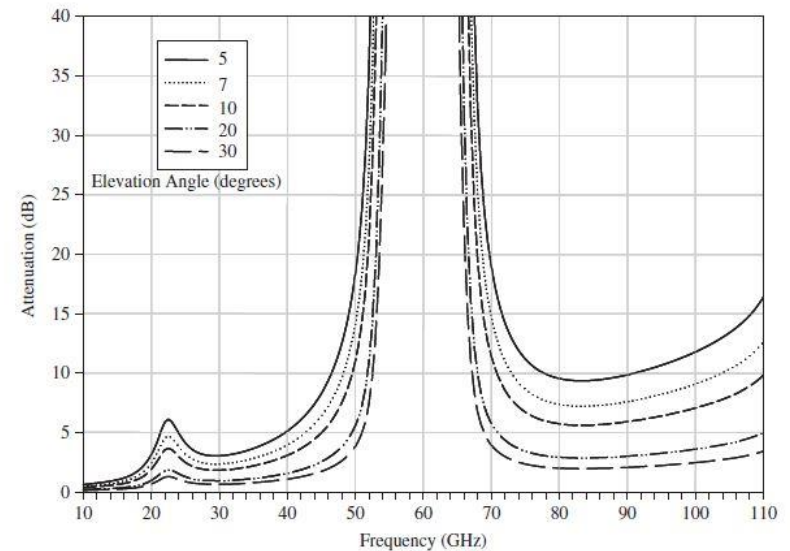
Oxygen and water vapor absorption

Quantum level changes in rotational energy of molecule

Satellite communications



Oxygen: 60GHz magnetic dipole changes
Water: 22.3GHz, 33GHz, 323 GHz: electric dipole transitions between rotational states



Keeping yourself and your children safe

Home

Use wired connections for phone and internet.

Do not let children use wireless devices.

Use hands free if HAVE to use mobile phone.

Earphones must be airphones.

Throw out baby monitors, cordless phones, fit bits and smart watches.

Create a wired baby monitor

<https://www.emfanalysis.com/safe-baby-monitor/>

If there is a tower beaming into your home, try to shield, or move.

Clean up smart meters, solar, dirty electricity, and magnetic fields.

Contact a building biologist.

Purchase your own hand held meters.

Turn all screens off at 10pm.

Do not have electronic items in bedrooms (use a battery powered clock not a phone)

Do not sleep near active wires or phone chargers in your bedroom, or with an electric blanket plugged in (even if off).

Turn off power in bedrooms at night with a demand switch.

Stop streaming video as much as possible.

Out and About

Mobile phone and laptop / tablets

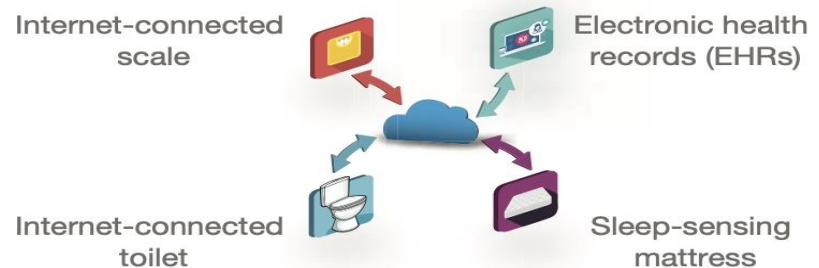
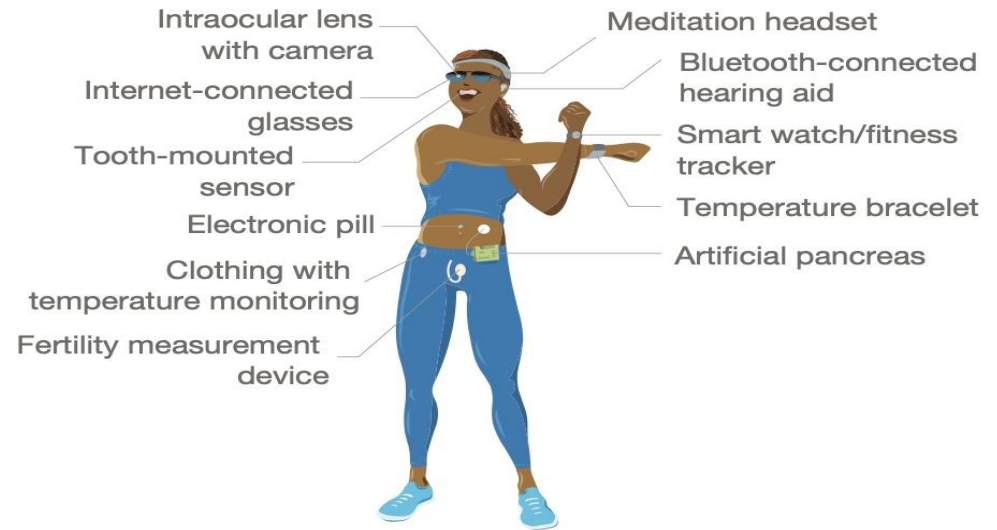
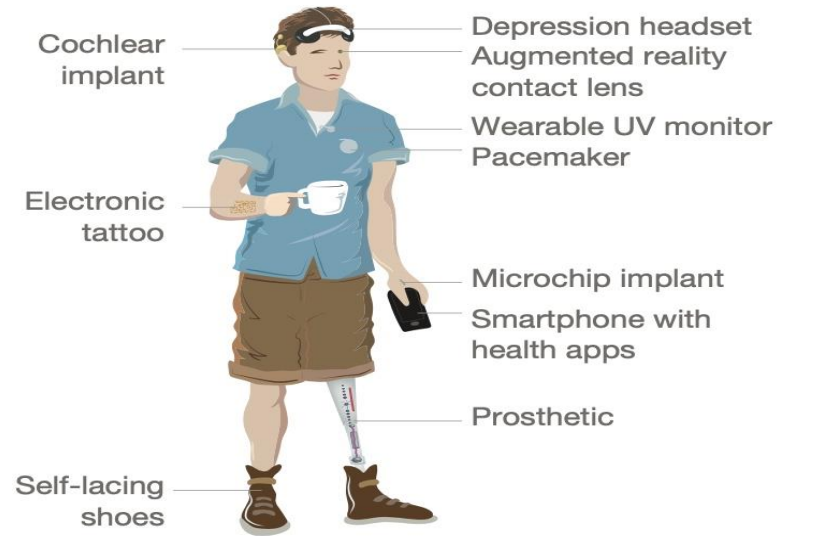
- **Airplane mode ON**

- **Location services OFF**

- Check messages and send then disable again
- Don't make calls/stream in car bus or train (Faraday cage) / low signal areas
- Don't carry your phone in your pocket, bra or handbag
- Look up. Breathe. Play music, sing, dance, read, go for walks, plant herbs and trees, and play games with children.
- Eat a healthy multicoloured antioxidant rich diet
- Get good sleep (10pm lights out)
- **See tipsheet for more information**

GIZMOS WILL NOT PROTECT YOU

Brave New World - Internet of Bodies



Lee M, Boudreaux B, Chaturvedi R, Romanosky S and Downing B (2021) Internet of Bodies. Free Book

Where are we heading, and why?



https://www.youtube.com/watch?v=_il7PrOUmrA

<https://www.piqsels.com/en/public-domain-photo-swzox>

Planet earth



www.shutterstock.com · 1377579011

The Crossroads

The enlightenment



The Crossroads

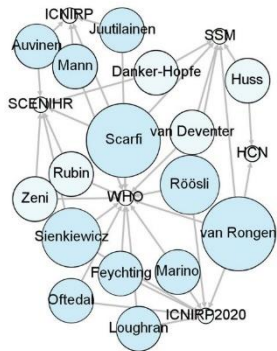
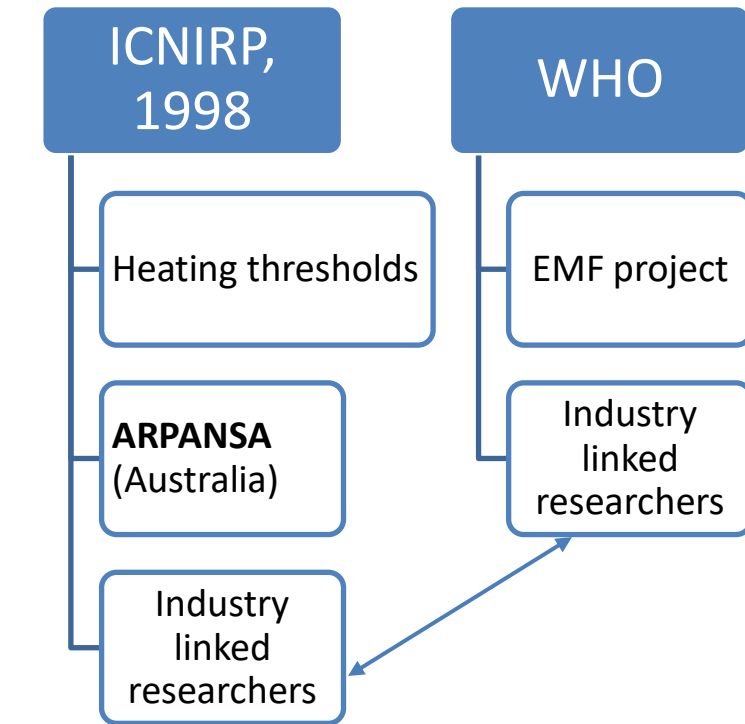
The darkening



Why haven't I been told?

The cauldron of suppression of scientific truth

D Maisch Spin in the Antipodes in Corporate Ties that Bind, pg 230



CSIRO

- 1994 Found harm, report suppressed
- 2003 shutdown
- 2004 Ex Tobacco advocate as manager of communications

2003, RMIT, ACRBR, \$2.3 M

- KJ (Motorola)-> ARPANSA NHMRC, VA and RM (Telstra)

Swinburne Uni, 2011, Teslra

- Chancellor ex Telstra Manager

UofW, 2012 ACEBR, 2.3M

- RC (Psych), Telstra

ICNIRP 2020 itself, and in practice all its referenced supporting literature stem from a network of co-authors with just 17 researchers at its core, most of them affiliated with ICNIRP and/or the IEEE Nordhagen and Flydall, 2022:

Industry vs independent research

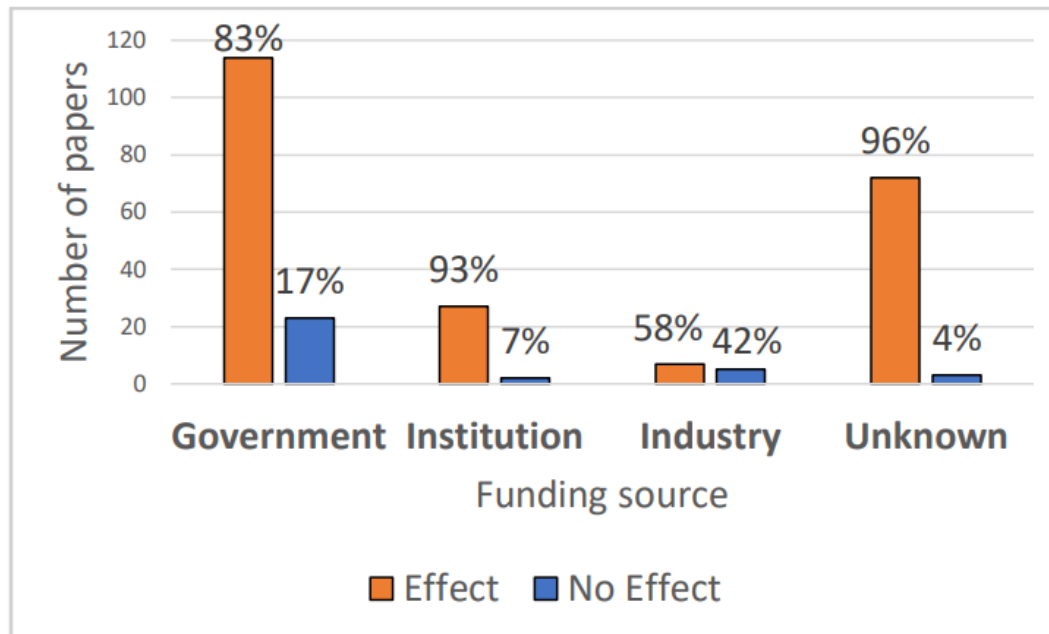


Figure 2: the relative proportion of Effects and No effects outcomes from studies according to the funding source.

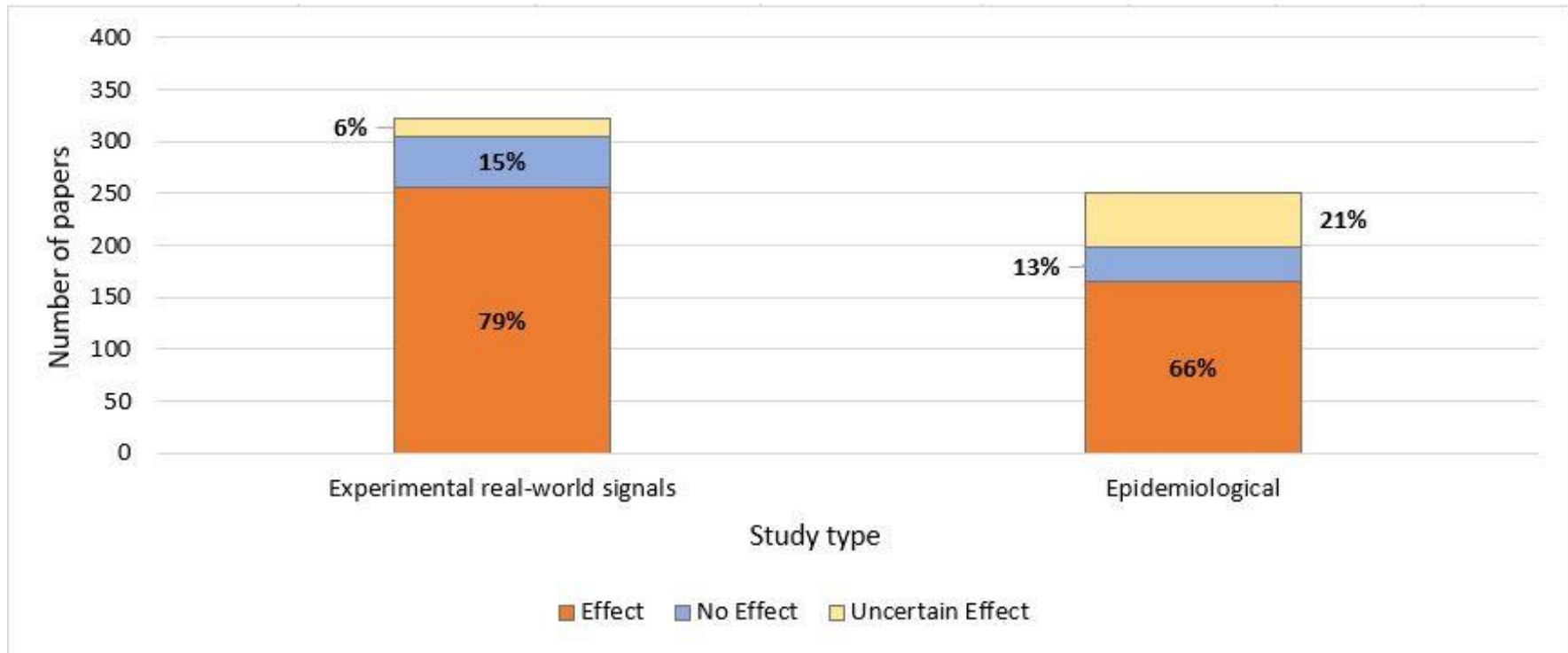
McCredden JE, Weller S, Leach V. The assumption of safety is being used to justify the rollout of 5G technologies. *Frontiers in Public Health*. 2023;11.

[https://www.researchgate.net/profile/Steve-](https://www.researchgate.net/profile/Steve-Weller/publication/367434193_The_assumption_of_safety_is_being_used_to_justify_the_rollout_of_5G_technologies/links/63e5daf0c002331f72689f66/The-assumption-of-safety-is-being-used-to-justify-the-rollout-of-5G-technologies.pdf)

[Weller/publication/367434193_The_assumption_of_safety_is_being_used_to_justify_the_rollout_of_5G_technologies/links/63e5daf0c002331f72689f66/The-assumption-of-safety-is-being-used-to-justify-the-rollout-of-5G-technologies.pdf](https://www.researchgate.net/profile/Steve-Weller/publication/367434193_The_assumption_of_safety_is_being_used_to_justify_the_rollout_of_5G_technologies/links/63e5daf0c002331f72689f66/The-assumption-of-safety-is-being-used-to-justify-the-rollout-of-5G-technologies.pdf)

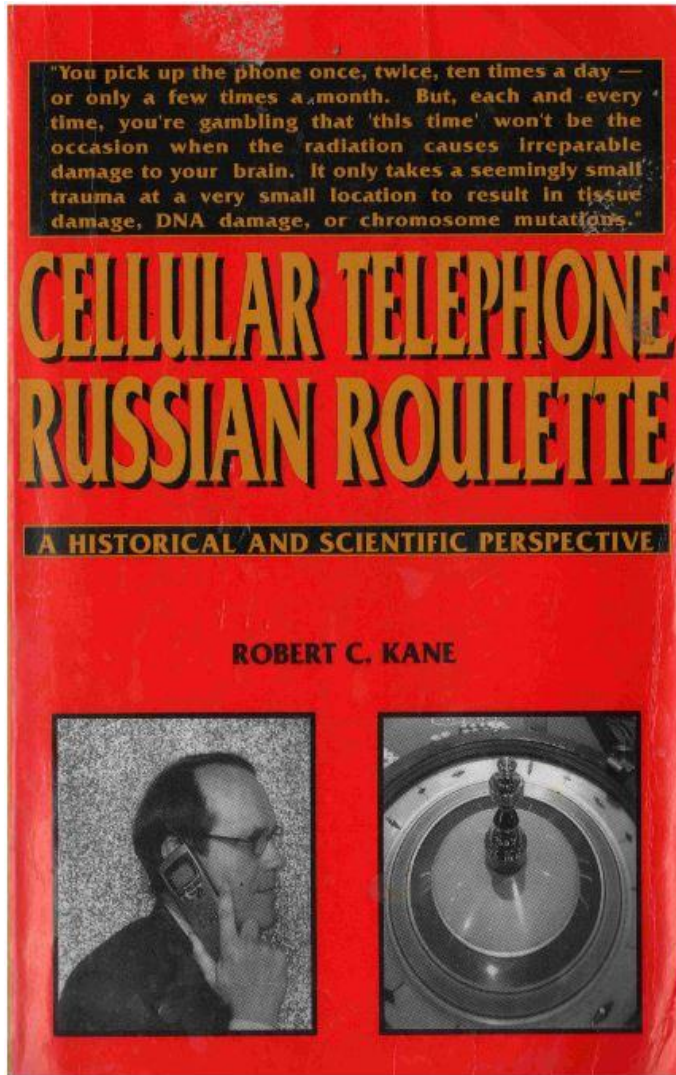
Biological and health effects

from ODEB (3500+ papers: selected real world devices)



McCredden JE, Cook N, Weller S, Leach V. Wireless technology is an environmental stressor requiring new understanding and approaches in health care. *Frontiers in Public Health*. 2022 Dec 20;10:4893.

Deadly coverup



Never in human history has there been such a practice as we now encounter with the marketing and distributing of products hostile to the human biological system by an industry with foreknowledge of those effects Kane, 2001

Kane: scientist, product design engineer, cell phone communications industry insider;

died of a brain cancer, 2002

Further information

- The Physicians' Health Initiative for Radiation and Environment <https://phiremedical.org/>
- Physicians for Safe Technology <https://mdsafetech.org/>
- Environmental health trust <https://ehtrust.org/>
- ORSAA www.orsaa.org
- Jeromy Johnson ex Silicon valley engineer Wireless wake-up call <https://www.youtube.com/watch?v=FONEaPTu9oI>
- Susan Clark 1995 Harvard expert on inhalation toxicology and RF bioeffects <https://www.mixcloud.com/lostartsradio/the-truth-behind-the-5g-rollout-with-susan-clarke/>
- Papers summarising the scientific evidence:

Problems in evaluating the health impacts of radio frequency radiation

<https://www.sciencedirect.com/science/article/abs/pii/S0013935122023659>

Wireless technology is an environmental stressor requiring new understanding and approaches in health care

<https://www.frontiersin.org/articles/10.3389/fpubh.2022.986315/full>



Oceania Radiofrequency
Scientific Advisory Association

Thank you