

**5G: Compelling Evidence of Great Harm Caused  
by EMF Exposures & the Mechanism  
that Causes Such Harm Why the Safety  
Guidelines Do Not Predict Biological Effects and  
Therefore Do Not Predict Safety  
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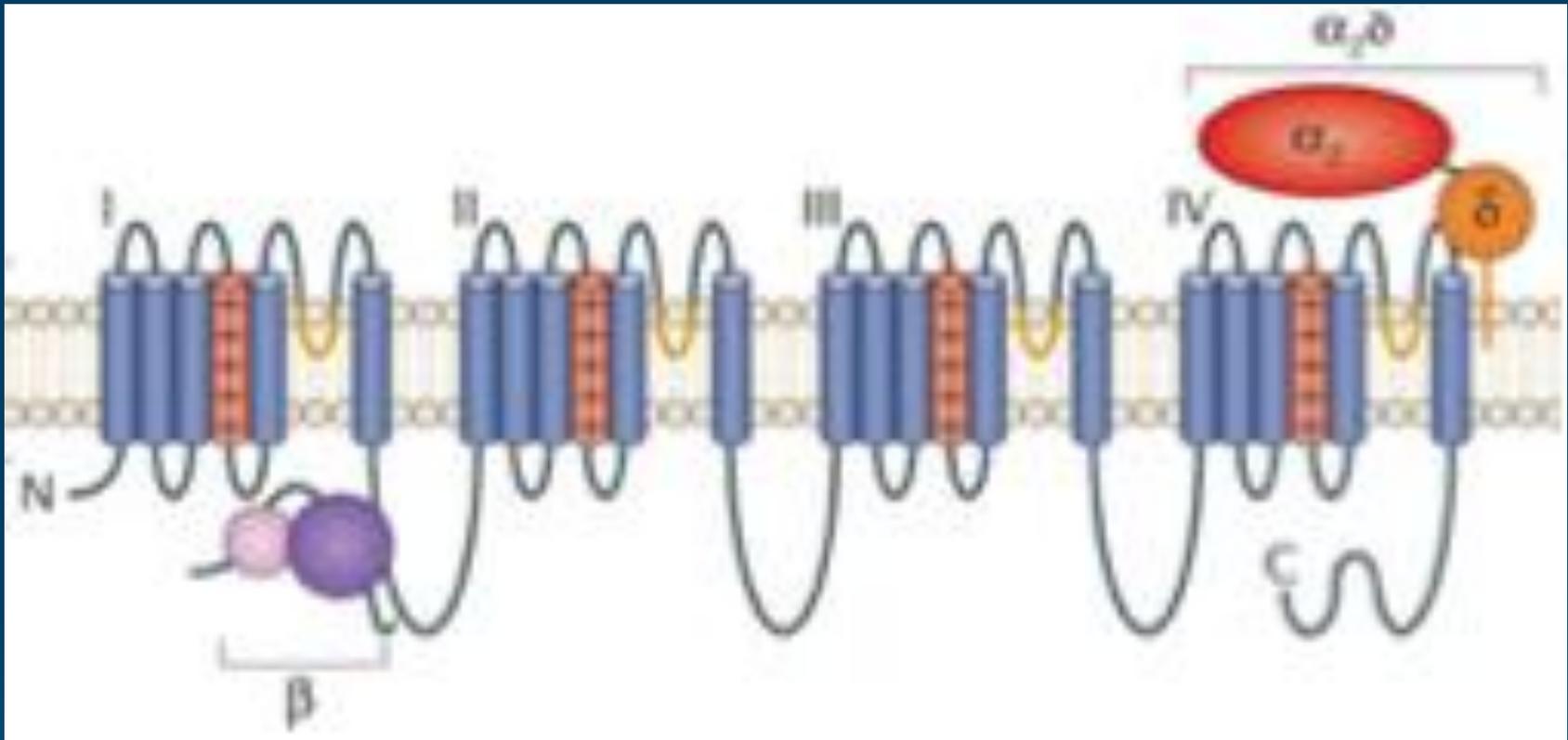
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You have been given 8 different types of repeated studies each of which show that the safety guidelines do not predict biological effects and do not, therefore, predict safety. 4 of these are especially relevant to 5G, because of the use of higher frequencies, including millimeter wave frequencies and the extraordinarily high level of pulsations. The first of these four that I am going to discuss is the voltage-gated calcium channel (VGCC) mechanism, in the plasma membrane and then we will discuss three others that relate to pulsation effects. Both the 5G frequency and its pulsation predict that VGCC activation will be vastly higher from 5G exposure than from anything else we have been exposed to.

The VGCC mechanism was first demonstrated by findings that showed that EMF effects of EMFs ranging from millimeter waves (to be used with 5G) to microwaves, radiofrequency waves, intermediate frequencies, extremely low frequency (power wiring) through static electrical fields and static magnetic fields act by activating these VGCCs. In each case, these effects can be blocked by calcium channel blockers, drugs specific for blocking the VGCCs.

There are 5 different additional types of evidence that each provide further support for the VGCC mechanism of action for non-thermal EMF effects. However we only have time to talk about two of these.

The VGCCs and some other voltage-gated ion channels have a structure which causes them to be opened in response to electrical changes, a structure called the voltage sensor. We know that 8 different ion channels with such a voltage sensor are each activated by EMF exposures.



Taken from Prof. Annette Dolphin, Nature Reviews Neuroscience

Coulomb's law  
Gaussian units:

$$F = q q' / \epsilon_r r^2$$

$\epsilon_r$  = dielectric constant

In comparing the forces on the voltage sensor with the forces on singly charged groups in the aqueous parts of the cell:  
The force on the voltage sensor is approximately:

$20 \times 120 \times 3000 = 7.2$  million times stronger

This is an estimate, not a precise calculation.  
Because EMF heating is produced mainly by forces on singly charged groups in the aqueous phases of the cell, this argues that the safety guidelines/standards allow us to be exposed to EMFs that are approximately 7.2 million times too high!

*One important additional finding: Tekieh et al 2016 showed that in isolated plasma membranes (no cells!), 3 different microwave frequency EMFs could activate the VGCCs!*



5G entails extraordinary levels of pulsation in order to carry extraordinary amounts of information per second. Therefore the following three findings are highly relevant to the issue of the extraordinarily high level effects that 5G will produce due to pulsation:

1. Pulsed EMFs produce, in most cases much higher effects than do non-pulsed EMFs of the same average intensity. Work via VGCCs!

2. Nanosecond pulses produce large effects not predicted by safety guidelines. Work via VGCCs!

3. Paired nanosecond pulses occurring within a few microseconds of each produce supra-additive effects if they are of the same polarity (these are highly relevant to 5G). But the second pulse actually lowers the effects effect of the first pulse if it is of opposite polarity.

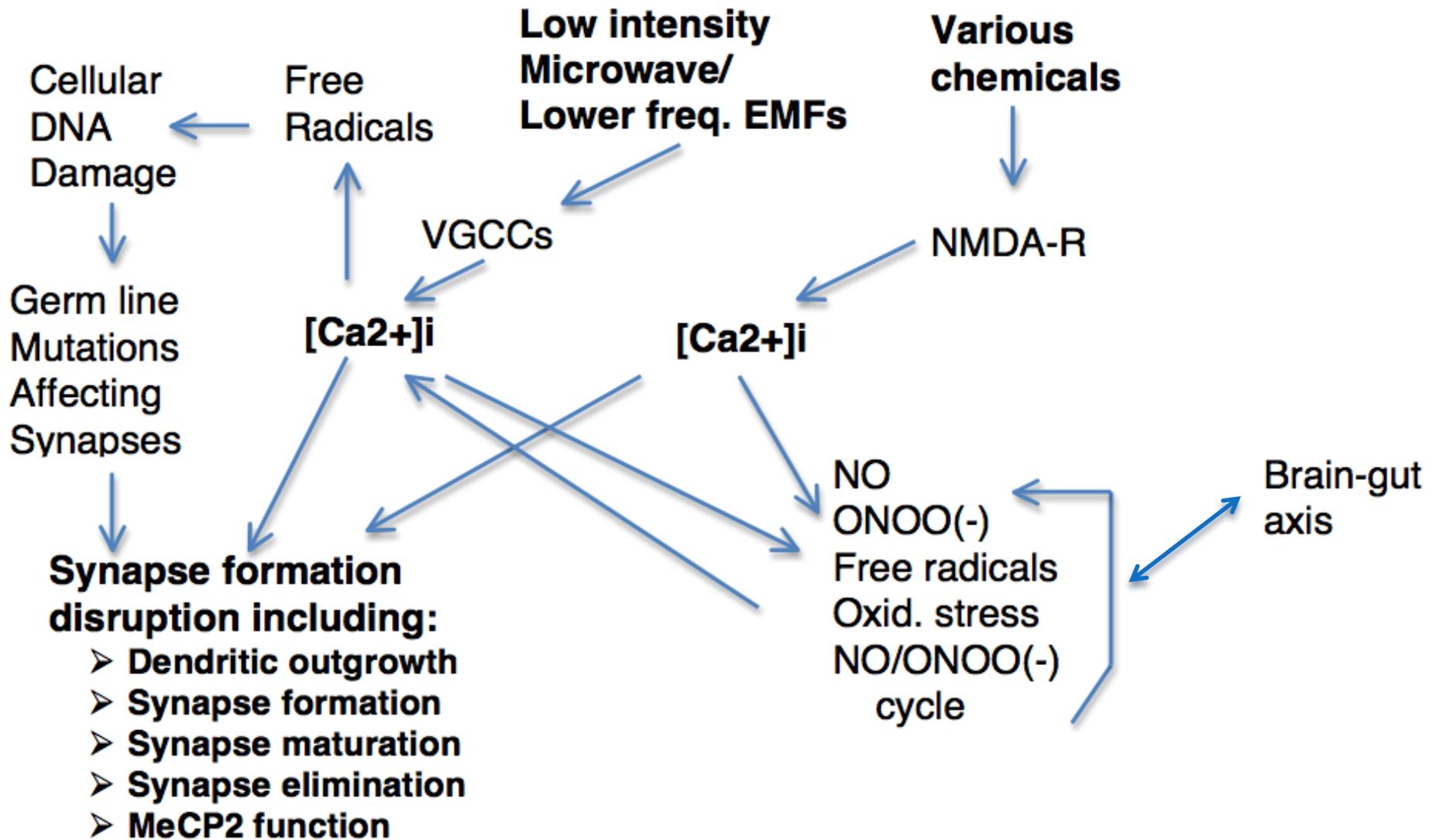
The extraordinary numbers of 5G antennae to be used in close proximity to our homes, schools, hospitals and businesses means that the it will be close to impossible to avoid high level extraordinarily pulsed exposures. Finally, as shown in the document provided to you, 5G millimeter wave effects penetrate at least 20 times more deeply than the industry claims is possible.

Each of these findings strongly argue that 5G radiation will produce vastly greater health impacts than do previously existing devices which already produce very large effects.

## Example 1: Very Early Onset Alzheimer's & other dementias:

We have had a major decrease in age of onset of Alzheimer's, with people age 30 coming down with Alzheimer's. "Digital dementias" in young people exposed to Wi-Fi and other EMFs. Excessive intracellular calcium has essential roles in causing Alzheimer's and other neurodegenerative diseases. EMFs acting through VGCC activation produces large increases in the amyloid beta ( $A\beta$ ) protein in the brain – has key role in Alzheimer's. Two studies in rats, showed that a series of microwave pulses given to young rats, followed by cessation of pulses, produced 100% Alzheimer's-like effects in middle aged rats – memory and behavioral changes and also high levels of  $A\beta$  protein and oxidative stress in the brains.

If extremely highly pulsed 5G radiation produces similar effects in humans, 5G will inevitably produce universal or almost universal very early onset Alzheimer's dementias.



**EMFs and Autism: How 5G may cause near universal autism.**

## Cellular DNA damage, 3 types (24 reviews)

Single & double DNA breaks, oxidized bases (8-HOdG); cause both cancer and germ-line mutations

These three types of DNA damage are all produced by the free radical attack on the DNA. Each of the types of mutations commonly involved in de novo mutations in autism, chromosomal rearrangements, copy number mutations and point mutations are produced by these three types of DNA damage. It appears from the autism de novo mutation studies, that we already have much higher levels of mutation because of EMF exposures and because 5G radiation will be so much more damaging than our already existing EMFs, that a much higher mutation frequency produced by 5G is likely to again be sufficient to cause extinction.

## Lowered fertility (25 different reviews).

Changes in structure of testis, ovaries; lowered sperm count, quality; lowered number of follicles (eggs), increased spontaneous abortion, lowered levels of each of the 3 sex hormones, lowered libido

The reproductive effects also appear to be highly advanced in our technologically advanced societies. Sperm counts in all such societies have dropped to below 50% of normal (Levine et al, 2017 study). Reproduction in those societies have dropped well below replacement levels, with one exception, averaging about 73% of replacement levels in 2016. Magras and Xenos showed that EMF levels well below “safety guideline” allowable, caused reproduction to apparently irreversibly crash to zero within 90 days to 150 days.

We are now seeing the first signs of such crashes in three densely populated, high technology east Asian countries. Singapore had a 31% drop in reproduction between 2016 and 2017. Macao had a 26% drop in reproduction between 2016 and 2017. South Korea had an 11% drop in reproduction between 2016 and 2017; and had another 9% drop in the first half of 2018.

It is highly probable that 5G radiation will push many countries over the reproductive cliff much more rapidly, possibly as much as 10 times more rapidly.

## Neurological/Neuropsychiatric effects (29 reviews)

Insomnia, fatigue, depression, headache, lack of concentration/cognitive dysfunction, anxiety/stress agitation, memory dysfunction, etc. Major changes in brain structure seen in animals.

These effects are already far along in our societies. I estimated about a year ago, based on how fast these cumulative effects develop with time (human occupational exposures; animal exposures leading to severe disruption of brain structure) that our collective brain function would probably crash in 5 to 7 years, based on the exposures we already have. Now the estimate would be 4 to 6 years. Further massive increase in exposure from 5G, further expansion of 4G, putting radar units in cars may mean that our collective brain function could crash in months, rather than years.

If we have such a crash in our collective brain function, because everything is based on our collective brain function, we will go into utter chaos. In which case we are doomed.