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Massive Predicted Effects of 5G in the Context of Safety Guideline Failures:
Very High Level VGCC Sensitivity to Low Intensity EMFs and Especially to Pulsations Feb. 25, 2020

The voltage-gated calcium channel (VGCC) protein molecule contains a four domain structure with each domain carrying an alpha helix, each designated an S4 helix, containing 5 positive charges. Those four charged alpha helixes act together as what is called the ***voltage sensor***, the structure that responds to electrical changes across the plasma membrane to open the channel. It has been shown that not only 4 distinct types of VGCCs, but also a voltage gated sodium channel, potassium channel and chloride channel are all activated by low intensity EMFs of various frequencies, suggesting that the EMFs act on the voltage sensor. In plants, EMFs apparently act via activation of some other channels, known as TPC channels, which also contain a similar voltage sensor. The structure and location of the voltage sensor and two laws of physics, Coulomb's law and Ohm's law, predict that the EMF forces on the voltage sensor are stunningly strong, approximately 7.2 million times stronger than the forces on singly electrically charged groups in the aqueous parts of our cells and bodies. This explains why the voltage sensor is the main direct target of the EMFs. The voltage-gated sodium, potassium and chloride channels apparently play only minor roles in producing EMF effects, so that to a first approximation, effects can be explained as being predominantly from VGCC activation and consequent increases in intracellular calcium [Ca2+]i. This falsifies the industry claim that there are only thermal effects can occur. The VGCC mechanism has been widely accepted in the scientific community as shown be the 247 citations of my first 2013 EMF paper (Google Scholar) and by my 58 different invited professional talks on this topic.

Large numbers of non-thermal pathophysiological EMF effects can be explained through the action of VGCC activation as produced by two different pathways of action shown in Fig. 1 below: the calcium signaling pathway and the peroxynitrite/free radical/oxidative stress/inflammation pathway. These include are 9 types of effects produced from microwave frequency non-thermal effects as shown in from 9 to 38 different reviews: Lowered male and female fertility; increased neurological/neuropsychiatric effects; 3 types of effects on cellular DNA; endocrine (hormonal) effects; increased apoptosis (programmed cell death); cardiac effects on the electrical control of the heart; oxidative stress/free radical damage; excessive [Ca2+]i; cancer.

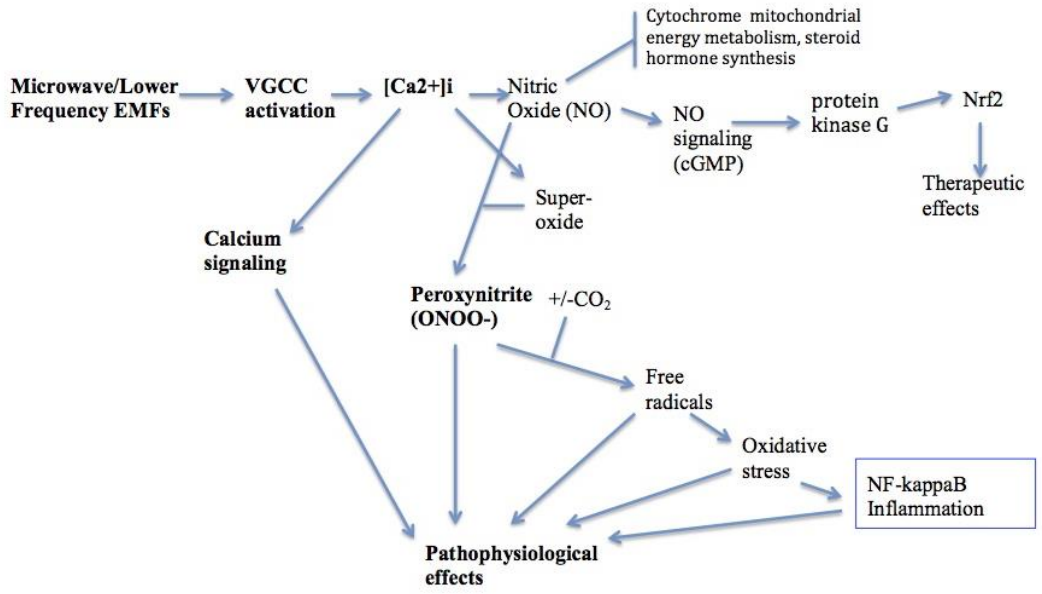

Figure 1. Various pathways of action by which EMF VGCC activation can produce effects produced by EMF exposure

ICNIRP, EU, UK and other "safety guidelines" are all based on average intensities over a 6 minute period, with allowable exposures set by SAR, a measure of heating. Predictions of these safety guidelines have been tested by 8 different highly repeated types of studies and each of these 8 shows that the safety guideline fail and fail massively. Modulating pulsations, nanosecond pulses and paired nanosecond pulses of identical polarity each produce large effects that the safety guidelines claim cannot be produced. These pulsation effects are of high relevance to 5G because 5G is designed to be very highly pulsed in order to carry vast amounts of information per second, because it is the pulsations that carry the information. Other types of evidence showing that the safety guidelines do not predict biological effects include the calcium channel blocker studies which show that low intensity EMF exposures produce effects through VGCC activation rather than by heating, the many reviews showing non-thermal health impacts discussed above and the findings that there are exposure windows that produce maximum effects but lower and higher intensity exposures produce much lower effects. The failure of the "safety guidelines" to predict biological effects and therefore safety means that these are not safety guidelines. Consequently, any claims of safety made by the multi-trillion euro telecommunications industry based on these "safety guidelines" are simply fraudulent.

These failures of the "safety guidelines" must be considered in terms of the principle that is at the core of the scientific method. That principle is that when we have a scientific theory and we test predictions of that theory and the theory predictions are shown to be false, ***then we must throw the theory out.*** It follows that when we have eight highly repeated findings each of which show that the "safety guidelines" do not predict biological effects and do not, therefore, predict safety, it is a scientific requirement that the "safety guidelines" be thrown out. The failure of ICNIRP, he European Commission and various regulatory agencies to throw out the "safety guidelines" clearly shows that their actions are both unscientific and anti-scientific.

Penetration of Millimeter Wave Effects

What can we say, then, about 5G? MM-waves used for 5G also work via VGCC activation. 5G is designed to carry extraordinarily high amounts of information per second and is, therefore, extraordinarily highly pulsed. The electrical parts of these MM-waves do not penetrate well into buildings, such that millions of 5G antennae are planned in close proximity to our home, schools, churches, businesses, etc, such that it will be nearly impossible to avoid exposures. Given the high pulsation level for 5G radiation, even short exposures may well produce severe biological effects. In addition to this, the finding that 5G systems involve output power sometimes like 30 times higher output than did previous systems, we have an strong argument for disaster (Human exposure to RF fields in 5G downlinkI Nasim, S Kim - arXiv preprint arXiv:1711.03683, 2017 - arxiv.org).

It has been argued by the industry that 5G will only produce effects in the outer millimeter of the body because of the absorption of 5G radiation and other MM-wave frequency EMFs. It is the case that 5G and other millimeter wave frequencies will produce very strong surface effects which are of major concern. But it has also been shown that MM-waves produce highly penetrating effects, impacting human brain function and EEG activity and also impacting many internal organs in animals.
Zalyobokskaya NP, 1977. Biological effect of millimeter radiowaves. Vrachebnoye Delo 3: 116-119. Declassified and Approved for release 2012/05/10: CIA-RDP88B01125R000300120005-6
Levedeva NN, Reactions of the central nervous system to peripheral effects of low-intensity EHF emissions. Approved for release 2000/08/10: CIA-RDP96-00792R000100070001-9
Potekhina IL, Akoyev GN, Yenin LD, Oleyner 1992 Effects of low-intensity electromagnetic radiation in the millimeter range on the cardiovascular system of the white rat. Fiziol Zh 78:35-41
Numerous other citations showing penetrating effects of millimeter waves are cited in: Betskii OY & Lebedeva NN. Low-intensity millimeter waves in biology and medicine. In: Clinical Application of Bioelectromagnetic Medicine, Marcel Decker, New York, pp. 30-61. A very recent paper came to the same conclusion that millimeter waves produce highly penetrating effects for the same reason, extensive empirical evidence: Kostoff et al (Toxicol Lett 2020:323;35-40).

So the industry claims are wrong on this as in so many other areas. How can we get such penetrating effects? The magnetic parts of the coherent EMFs are highly penetrating. They place forces on dissolved ions in the aqueous parts of our cells and bodies, moving those ions and regenerating the electrical parts of

the EMFs with the same frequency and pulsations, just much lower intensity. Those can then activate the VGCC voltage sensor because of its extraordinary sensitivity to the electrical forces of even very weak EMFs. So the physics again tells us how the system works on the main actual biological target the VGGC voltage sensor.

The impacts of any full fledged 5G (it always works together with 4G) ***will be vastly worse than any initial impacts seen following the turning on of 5G***, because initially 5G has little to communicate with, so it will initially have much less pulsation. My six worst nightmares is that 5G will produce widespread in in most cases universal or near-universal impact of the following types (and each of these needs to be considered in detail, based on the available evidence): 1. A rapid and irreversible crash in human reproduction to close to zero, based mainly but not solely on the impacts on male reproduction. 2. A rapid (albeit somewhat slower than in 1) crash in our collective brain function produced by massive impacts on human brain structure and function. 3. Very early onset Alzheimer's dementia also caused by the human brain impact seen in 2. 4. Autism and ADHD caused primarily by perinatal 4G/5G exposures. 5. Massive deterioration in the human gene pool, caused by the DNA effects in human sperm and possibly also on human eggs. 6. Widespread sudden cardiac death in all age ranges caused by the EMF impacts on the pacemaker cells in the sino-atrial node of the heart.

<u>What are we actually seeing initially from 5G?</u>

The reports of human effects in Switzerland included many reports of neurological/neuropsychiatric effects and also cardiac effects . https://www.illustre.ch/magazine/5g-sentons-cobayes?utm_source=facebook&fbclid=IwAR1kXKK1yWBDKoaZRVOQB7gRvC8o-1a3GyVbQHJPyPkAzzpl73iKYtaiA6Q There are, of course many reviews reporting such effects, as discussed above, following EMF exposures. The physicians in Stuttgart reported these same two types of effects following 5G rollout and in addition, high amounts of electromagnetic hypersensitivity (EHS). https://www.stuttgarter-nachrichten.de/inhalt.demo-am-staatsministerium-in-stuttgart-protest-gegen-5-g-in-weissen-arztkitteln.f964401b-85f9-4915-a236-4f3177597300.html All three of these effects were reported to occur following smart meter exposures in both the Lamech and also the Conrad studies; all three were also reported to occur in the largest EMF occupational exposures studies ever performed as reviewed by Professor Emeritus Karl Hecht. The difference is that the effects appear to be much more severe following 5G exposure as opposed to the occupational exposure studies or even the smart meter studies. I am aware of still more severe apparent 5G neuropsychiatric effects in Southern California, but those have not been published to date. We have every reason to believe that any full fledged 5G system, communicating with the "internet of things" will produce still vastly greater effects than any of these initial findings.

It was proudly announced in England that an ambulance service will be using 5G communication between the ambulances and the hospitals served by them. The first such ambulance, it was proudly announced, was to be put into operation in Coventry in the West Midlands region of the UK: https://www.coventrytelegraph.net/news/coventry-news/what-is-5g-15108544 So what happened when that 5G ambulance was operational? What happened is that three of the ambulance personnel died within an 11 day period of apparent suicide: Three NHS workers die suddenly while working for same 'toxic' ambulance trust. Could 5G be related? Alan Selby Mirror Sun, 24 Nov 2019 02:23 UTC; https://www.bbc.com/news/uk-england-suffolk-50522214 ; https://www.itv.com/news/anglia/2019-11-22/concern-for-welfare-of-east-of-england-ambulance-staff-after-three-deaths-in-11-days/ Shortly before their deaths a whistleblower wrote to the East of England Ambulance Service NHS Trust's boss complaining about psychological abuse. There are widespread neuropsychiatric effects produced by low intensity EMF exposures, including depression. Depression can cause suicide and various neuropsychiatric effects may well lead to abusive behavior.

Two large occurrences of panic in cattle in the North Friesland area of the Netherlands correlated with 5G testing exposures: www.melkvee.nl/artikel/191780-koeien-in-paniek-mogelijk-door-testen-5g-netwerk/ This should not be surprising, given that EMF exposures cause neurological/neuropsychiatric effects. Two specific mechanisms are likely to be involved in producing panic in cattle. Excessive VGCC activity produces fear conditioning in animals and in humans (Kabir et al, J Physiol 2016; 20:5823-5837). EMFs also acting via excessive VGCC activity also produce large increases in the release of norepinephrine, the

fight or flight hormone. These two are likely to act together to produce panic. The impact of EMFs on milk production in dairy cattle suggests that cattle may be quite sensitive to EMF effects. There are also several incidences of bizarre, aggressive behavior of cattle and sheep from Germany that may also be related to 5G radiation effects:

1. https://www.nordbuzz.de/niedersachsen/niedersachsen-ort29155/papenburg-oldenburg-niedersachsen-schock-schafe-brechen-attackieren-menschen-11833036.html
2. https://www.sueddeutsche.de/bayern/bayern-peiting-kuh-bauernhof-dach-1.4626878
3. https://www.bayerische-staatszeitung.de/staatszeitung/leben-in-bayern/detailansicht-leben-in-bayern/artikel/danger-die-kuh-das-wilde-wesen.html
4. https://www.tz.de/bayern/altoetting-bayern-tier-drama-kuh-buext-aus-stall-aus-sie-ueberlebt-ihren-ausflug-nicht-12189661.html5. Ahttps://www.tz.de/welt/ice-strecke-kassel-wuerzburg-kuh-laeuft-in-tunnel-und-legt-bahnverkehr-lahm-zr-11832114.html
5. Ahttps://www.tz.de/welt/ice-strecke-kassel-wuerzburg-kuh-laeuft-in-tunnel-und-legt-bahnverkehr-lahm-zr-11832114.html

Each of these needs to be clearly investigated for possible roles of 5G radiation. The 5th of these is the most clearly linked to 5G because the cow involved is from North Friesland, where cattle were, as noted in the second paragraph above, exposed to 5G radiation. Each of these must be investigated before any final conclusions can be drawn. However given that the "safety guidelines" have been repeatedly shown to fail to predict biological effects and therefore safety and that therefore, all assurances of safety based on those "safety guidelines" are fraudulent, and that there are plausible mechanisms by which EMF exposures can cause these effects, it is essential that the obvious possible cause, electromagnetic field exposures from 5G and/or high antenna density 4G radiation, should be extensively studied.

There have been a series of very unusual human birth defects, in both Germany and France, involving aberrant limb development, such as aberrant hand and finger structure and even missing hands or missing arms. https://www.faz.net/aktuell/gesellschaft/menschen/gelsenkirchen-drei-saeuglinge-mit-handfehlbildungen-geboren-16382810.html <img alt="France launches nationwide investigation after babies born with missing or malformed limbs" class="media__image" src="//cdn.cnn.com/cnnnext/dam/assets/171108105918-baby-feet-stock-large-169.jpg"> None of the many articles on these limb birth defects have suggested a link to 5G EMF exposures but such a link should be considered. The reason for that is that Bates et al, Ion Channels in Development and Cancer, Annu Rev Cell Dev Biol 2015; 31: 231-247 showed that elevation of both VGCC activity and also elevation of other voltage-gated ion channels can produce aberrant limb development. While the excessive activities of single channels do not produce aberrations identical to those in these recent human birth defects, a combination of excessive voltage-gated ion channel activities may well do so. Among the genetic studies showing that excessive activity of a particular VGCC produce limb developmental defects are the studies on Timothy syndrome. The Timothy syndrome mutation produces much higher VGCC activity because the closing mechanism of the channel is defective, such that activated channels close extremely slowly such that they produce much higher [Ca2+]i. The Timothy syndrome mutation produces not only limb development aberrations but also severe cases of autism and also cardiac effects. Most Timothy syndrome individuals die of apparent sudden cardiac death at age ranges circa 3 to 7 years old – the oldest known Timothy syndrome individual died at age 13. Here we have two effects produced or apparently produced by 5G exposures, the cardiac effects and the limb birth defects and a third proposed to be caused perinatal by 5G exposures, namely autism, all linked in their causation to VGCC activation.

There were hundreds of birds which died of apparent sudden cardiac death during three days of 5G testing in a park near Rotterdam. https://www.healthnutnews.com/hundreds-of-birds-dead-during-5g-experiment-in- the-hague-the-netherlands/ There had been earlier stories published on these bird deaths where the industry denied doing 5G testing but in this article, it was shown that workers had been told to lie about those tests. It has been shown in rodents that MM-wave exposure (non-pulsed) can cause sudden cardiac death (Potekhina IL, Akoyev GN, Yenin LD, Oleyner 1992 Effects of low-intensity electromagnetic radiation in the millimeter range on the cardiovascular system of the white rat. Fiziol Zh 78:35-41 (in Russian)), making it very plausible that these bird deaths were in fact caused by 5G exposures. A second apparent large epidemic of birds falling out the sky of apparent cardiac death occurred last October shortly

after the 5G ambulance was turned on in Coventry (see discussion above): , In October, there were already reports that birds fell down from the sky outside the Coventry hospital, after 5G antennas were turned on to enable the Smart Ambulance 5G wireless system in Coventry. See link: https://www.facebook.com/Francesalexandrina/posts/2704854299560059

Insect will be massively impacted by 5G EMFs. In 2000 and 2001, two US patents issued for the use of millimeter wave EMFs as insecticides (patent #s 6,073,365 and 6,192,598). These were for using non-pulsed EMFs not the extraordinarily pulsed and therefore dangerous 5G EMFs.

5G will likely cause massive fires because of the impact of 5G EMFs on plants.

EMFs impact plants producing large increases in intracellular calcium levels which act in turn to produce large increases in highly volatile and highly flammable terpenes. This, in turn, can make the plants burn as if they were sprayed with a light spray of gasoline. We may have seen the first 5G fires. Five cities along the east coast of South Korea, where some of the earliest 5G rollouts in the world occurred, had their 5G systems turned on – late April 3, 2019. The five unprecedented fires occurred in those same cities 1 ½ days later, April 5, 2019! https://www.thehindu.com/sci-tech/technology/s-korea-launches-5g-networks-early-to-secure-world-first/article26730605.ece ; https://www.telegraph.co.uk/news/2019/04/05/thousands-flee-homes-wildfires-rip-south-korea/ ; https://www.thesun.co.uk/news/8799140/south-korea-biggest-wildfire-near-olympic-city/

Other possible 5G fires may have also occurred in 2019 in areas of Southern California where 5G was rolled out, including along I405 freeway.

Role of 5G in the Coronavirus Epidemic in Wuhan China

Wuhan, the capital of Hubei province in China, was chosen to be China's first 5G "smart city" and the location of China's first smart 5G highway. Wuhan is also the center of the horrendous coronavirus epidemic. The possible linkage between these two events was first discussed in an Oct. 31, 2019 article entitled: "Wuhan was the province where 5G was rolled out, now the center of deadly virus" https://5g-emf.com/wuhan-was-the-province-where-5g-was-rolled-out-now-the-center-of-deadly-virus/

The question that is being raised here is not whether 5G is responsible for the virus, but rather whether 5G radiation, acting via VGCC activation may be exacerbating the viral replication or the spread or lethality of the disease. Let's backtrack and look at the recent history of 5G in Wuhan in order to get some perspective on those questions. An Asia Times article, dated Feb. 12, 2019 (https://www.asiatimes.com/2019/02/article/china-to-launch-first-5g-smart-highway) stated that there were 31 different 5G base stations (that is antennae) in Wuhan at the end of 2018. There were plans developed later such that approximately 10,000 5G antennae would be in place at the end of 2019, with most of those being on 5G LED smart street lamps. The first such smart street lamp was put in place on May 14, 2019 (www.china.org.cn/china/2019-05/14/content_74783676.htm), but large numbers only started being put in place in October, 2019, such that there was a furious pace of such placement in the last 2 ½ months of 2019. These findings show that the rapid pace of the coronavirus epidemic developed at least roughly as the number of 5G antennae became extraordinarily high. So we have this finding that China's 1st 5G smart city and smart highway is the epicenter of this epidemic and this finding that the epidemic only became rapidly more severe as the numbers of 5G antennae skyrocketed.

Are these findings coincidental or does 5G have some causal role in exacerbating the coronavirus epidemic? In order to answer that question, we need to determine whether the downstream effects of VGCC activation exacerbate the viral replication, the effects of viral infection, especially those that have roles in the spread of the virus and also the mechanism by which this coronavirus causes death.

Accordingly, the replication of the viral RNA is stimulated by oxidative stress:

J Mol Biol. 2008 Nov 28;383(5):1081-96. Variable oligomerization modes in coronavirus non-structural protein 9. Ponnusamy R, Moll R, Weimar T, Mesters JR, Hilgenfeld R.

Other aspects of viral replication including those involved in the spread of the virus are stimulated by increased intracellular calcium [Ca2+]i, oxidative stress, NF-kappaB elevation, inflammation and apoptosis, each of which are increased following EMF exposure. The first citation below shows an important role of VGCC activation in stimulating coronavirus infection.

Virology. 2020 Jan 2;539:38-48. Porcine deltacoronavirus (PDCoV) modulates calcium influx to favor viral replication. Bai D, et al.

J Virol. 2011 May;85(9):4234-45. Distinct severe acute respiratory syndrome coronavirus-induced acute lung injury pathways in two different nonhuman primate species. Smits SL, et al.

Cell Calcium. 2018 Nov;75:30-41. NAADP-dependent Ca2+ signaling regulates Middle East respiratory syndrome-coronavirus pseudovirus translocation through the endolysosomal system. Gunaratne GS, et al.

J Virol. 2011 May;85(9):4234-45. Distinct severe acute respiratory syndrome coronavirus-induced acute lung injury pathways in two different nonhuman primate species. Smits SL, et al.

Proteome Sci. 2011 Mar 8;9:11. Proteomic analysis of chicken embryonic trachea and kidney tissues after infection in ovo by avian infectious bronchitis coronavirus. Cao Z, et al.

Res Vet Sci. 2015 Jun;100:12-7. Serum biomarkers of oxidative stress in cats with feline infectious peritonitis. Tecles F, et al.

J Infect Dis. 2008 Mar 15;197(6):812-6. Glucose-6-phosphate dehydrogenase deficiency enhances human coronavirus infection. Wu YH et al.

J Virol. 1998 Jun;72(6):4918-24. Transmissible gastroenteritis coronavirus induces programmed cell death in infected cells through a caspase-dependent pathway. Eleouet JF, et al.

The predominant cause of death from this coronavirus is pneumonia. Pneumonia is greatly exacerbated by each of those five downstream effects of VGCC activation, excessive intracellular calcium, oxidative stress, NF-kappaB elevation, inflammation and apoptosis. The first of the citations listed below shows that calcium channel blockers, the same type of drugs that block EMF effects, are useful in the treatment of pneumonia. This predicts that EMFs, acting via VGCC activation, will produce increasingly severe pneumonia and therefore 5G radiation as well as other types of EMFs may well increase pneumonia deaths.

Zheng et al. 2016 Preadmission Use of Calcium Channel Blockers and Outcomes After Hospitalization With Pneumonia: A Retrospective Propensity-Matched Cohort Study. Am J Ther. 2017 Jan/Feb;24(1):e30-e38.

Fang et al. 2017 Pneumolysin-Dependent Calpain Activation and Interleukin-1α Secretion in Macrophages Infected with Streptococcus pneumoniae. Infect Immun. 2017 Aug 18;85(9). pii: e00201-17.

Fettel et al. 2019 Sphingosine-1-phosphate (S1P) induces potent anti-inflammatory effects in vitro and in vivo by S1P receptor 4-mediated suppression of 5-lipoxygenase activity. FASEB J. 2019 Feb;33(2):1711-1726.

Liu and Shi. 2019 Calcium-activated chloride channel regulator 1 (CLCA1): More than a regulator of chloride transport and mucus production. World Allergy Organ J. 2019 Nov 29;12(11):100077.

Medicine (Baltimore). 2018 Nov;97(45):e13087. N-acetylcysteine improves oxidative stress and inflammatory response in patients with community acquired pneumonia: A randomized controlled trial. Zhang Q, et al.

Sci Rep. 2018 Oct 18;8(1):15393. Surfactant protein D attenuates acute lung and kidney injuries in pneumonia-induced sepsis through modulating apoptosis, inflammation and NF-κB signaling. Du J, et al.

Curr Neurovasc Res. 2020 Jan 28. MicroRNA (miR)-429 promotes inflammatory injury by targeting kruppel-like factor 4 (KLF4) in neonatal pneumonia. Zhang L, et al.

Life Sci. 2019 Jul 1;228:189-197. Long noncoding RNA SNHG16 targets miR-146a-5p/CCL5 to regulate LPS-induced WI-38 cell apoptosis and inflammation in acute pneumonia. Zhou Z, et al.

These all argue that 5G radiation is likely to greatly exacerbate the spread of the coronavirus and to greatly increase the lethality of the infections produced by it. The good news is that it is likely that those of us that live in areas with no 5G radiation and who avoid other EMFs wherever possible will probably escape much of the impacts of this prospective global pandemic. It is highly probable that one of the best things Wuhan can do to control the epidemic in the city is to turn off the 4G/5G system.

In summary, we have a series of 5G linked events that have occurred in more than one situation, where we have plausible mechanisms by which 5G radiation can cause them and where we know that counter arguments are based on "safety guidelines" which fail to predict biological effects and are, therefore, fraudulent. These include:

1. Neurological/neuropsychiatric effects reported both in Switzerland and in Stuttgart Germany, effects similar to but more severe than effects caused by other EMF exposures.
2. Three suicides within 11 days of each other in the first 5G ambulance personnel.
3. Cardiac effects also reported in both in Switzerland and in Stuttgart Germany, effects similar to those found in in humans in following other EMF exposures as well as in animal experimental studies.
4. Two cases of massive, almost instantaneous 5G bird sudden cardiac death effects, one in the Netherlands and one in the UK.
5. We have cases of mass panic in cattle, as well as unusual aggressive behavior in cattle and sheep.
6. We have multiple cases of human limb birth defects in France and Germany.
7. We have multiple cases of apparent 5G fires in Korea and in Southern California.
8. We have large apparent increases in EHS in Stuttgart Germany. While this is a single example, to my knowledge, similar although more slowly developing examples of EHS have been shown to occur in occupational EMF exposure studies and in the two smart meter studies. The case may be weaker here, because it is based solely on the Stuttgart example, but is still substantial.
9. Four downstream effects produced by EMFs acting via VGCC activation, oxidative stress, NF-kappaB elevation, inflammation and apoptosis greatly stimulate both coronavirus infectious process, including aspects involved in viral spreading and also pneumonia, the predominant cause of death in the Wuhan coronavirus epidemic. It follows from this that the "coincidence" that Wuhan, China's first smart 5G city and location of China's first 5G highway and the other "coincidence" that the epidemic was first discovered when high 5G antenna densification started, with the severity of the epidemic and death rate increasing very rapidly as circe 8,000 5G antennae were built all over the city of Wuhan. It is, therefore, highly probable that these are not coincidences but rather involve causal roles of 5G EMFs.

In each of these cases, as stated above, we have plausible mechanisms by which each of them can be produced by 5G EMF exposure and where all contrary claims based on "safety guidelines" are simply fraudulent. In the eight of these of these effects (#8 being an apparent exception), we have a *prima facie* case for 5G causation.

And let me repeat that any effects seen with the initial "rollout" of 5G radiation will be a tiny fraction of those predicted by a mature 5G system interacting with the "internet of things" because any initial 5G system has very little to communicate with on initial rollout and therefore will produce only a tiny fraction of highly pulsed EMF effects of such a mature system. The very high impacts of modulating and non-modulating pulses mean that the extraordinarily high level of modulating pulses in 5G radiation, with those pulses communicating vast amounts of information per second, means that 5G radiation is vastly more

dangerous than the exposures we previously have had and those previous exposures have already having massive impacts on us and on other organisms.

The eight apparent 5G effects listed above do not include other predicted massive effects of 5G radiation where we have no evidence of whether they are occurring or not but where we have evidence of important causal roles of other EMF exposures. These include:

1. Massive impacts on male reproduction, where 5G radiation may well produce very rapid crashes in male reproduction to close to zero.
2. Universal of near universal very early onset Alzheimer's dementias (AD). Here we know that all you have to do to produce universal or near universal very early onset AD in a rat model, is to give a series of EMF pulses during one day and even during one second. If you give pulses every day, you get universal or near universal AD in six month old rats (roughly the equivalent age of a 12 year old child).
3. Universal or near universal autism. We know, from genetic studies, that human autism is caused by excessive VGCC activity and because this is the primary mechanism of action of EMFs, including MM-wave EMFs of 5G, it is highly plausible that the very highly pulsed 5G may cause universal or near universal autism.
4. Very high levels of germ line mutations caused by the impact of 5G radiation acting via VGCC activation on the DNA of human sperm and on the DNA of human oocytes. What this argues is that what little human reproduction survives the effects of #1 may well be heavily impacted by very high levels of de novo mutation.

Possible causation of each of these by 5G radiation could have been tested by animal model studies, before any 5G rollout. It is my opinion that it is an atrocity of almost unbelievable proportions that no such tests have been done.

All of this argues that 5G presents threats of the sort that we have never seen before – multiple imminent existential threats to our survival.