

Recently, the work of a Greek scientist appeared regarding health damage caused by mobile phone radiation, which can bring light into the darkness of this difficult topic:

[PANAGOPOULOS, DJ:](#) “Comparing DNA damage induced by mobile telephony and other types of man-made electromagnetic fields” 11Mar2019

The author first offers a short but impressive overview of 71 + x studies on the effects of electromagnetic radiation (EMR) on various organisms, from protozoa to humans.

Examples: DNA damage and its consequences, e.g. reduced fertility, damage to the nervous system, tumours, etc., have been found in many different species.

Consequences of EMR in humans are electro-hypersensitivity (EHS), DNA damage, oxidative stress, sperm damage, brain tumors (which, due to the long latency period, have only recently been proven to be a result of EMR), and others.

Mobile communication radiations, such as those emitted by mobile phones, routers and mobile masts, consist of a carrier wave in the range around 1 GHz on which low frequencies are modulated. Only these low frequencies contain the information to be transmitted, such as speech, text, images and videos.

Many of the studies carried out so far have worked only with a constant carrier wave, e.g. 900 MHz, without modulation, i.e. without information transmission. Let us call this a 'pure carrier wave'. However, such waves do not occur in daily mobile communication.

The many investigations with pure carrier waves often did not yield any useful results and remained unsatisfactory and contradictory. In this respect, the skeptics were right: The harmful effects of EMR have not yet been conclusively and consistently proven.

For such negative assertions, however, one must refrain from the studies which already worked with realistic radiations, as they actually occur when using mobile phones, i.e. high-frequency carrier frequency with low-frequency modulation. PANAGOPOULOS found 71 such studies in the literature. And these showed a completely different picture: Almost always harmful effects were observed, which were much stronger than the effects of pure carrier waves (if the latter showed any effects at all).

The special feature of this work. PANAGOPOULOS comes to the surprising conclusion that the damage caused by high-frequency electromagnetic radiation EMR does not derive from this radiation itself, but from the modulating ELF (Extremely Low Frequencies), which contain the actual information transmitted.

In addition, PANAGOPOULOS conducted his own trials on *Drosophila*¹ from 2006 to 2016. *Drosophila* was exposed to 'realistic mobile radiation' as it actually occurs in mobile phones, routers, etc., and the influence on the fertility of the flies was determined. There were consistently strong effects, in contrast to usually no or much weaker effects with pure, unmodulated EMR. The experiments are described in detail in the publication.

There has been a major shortage of EMR research so far

and no consistent results were achieved.

This is rightly objected by the skeptics.

Consequently, research into the health effects of EMR must use 'realistic EMR', as they occur in practice, and not use just pure, unmodulated radiofrequencies.

This realization is of great importance for the entire research

on the disease-causing effects of EMR.

The most important parameters of 'realistic mobile radiations' are:
intensity, frequency, exposure duration, polarization, pulsing, modulation.

Among these parameters, the extreme variability of everyday mobile signals proved to be the most effective (and thus the most harmful), and for variability, the variations of the intensity of the radiation of cell phones had the strongest effect.

**Also PANAGOPOULOS' own experiments show again
the importance of the use of realistic EMR
when investigating the harms of mobile communication.**

In addition, PANAGOPOULOS for the first time has been able to compare the harmful effects of different types of mobile radiation, as used in 2G, 3G, 4G, under identical experimental conditions.

Note: 'Realistic EMR' are not only emitted by mobile phones, but also by cell phone masts, routers, cordless phones and all devices connected to a WLAN network, such as in a Smarthome.

¹ *Drosophila melanogaster*, a fruit fly, is one of the best studied organisms in the world and is also very important for genetics. It is easy to keep, has a short generation sequence of 9-14 days, and has only four different chromosomes. Gene mutations are easy to detect.

Note: The high frequencies of mobile communication are not only modulated by low frequencies, but also pulsed, which makes them even more harmful.

Note: Another reason for the different study results of EMR research in the past was that some of the studies were funded by industry. See [“Radiation Research and The Cult of Negative Results”](#)

Bibliography:

e001 PANAGOPOULOS, DJ: “Comparing DNA damage induced by mobile telephony and other types of man-made electromagnetic fields” <https://doi.org/10.1016/j.mrrev.2019.03.003> **11Mar2019**
<https://www.sciencedirect.com/science/article/pii/S1383574218300991?via%3Dihub>,
https://www.researchgate.net/publication/331661949_Comparing_DNA_Damage_Induced_by_Mobile_Telephony_and_Other_Types_of_Man-Made_Electromagnetic_Fields

e901 [Radiation Research and ‘The Cult of Negative Results’](#) The results of scientific investigations into the effects of non-ionizing EMR are highly dependent on whether the study is sponsored by industry or not.
Microwave News <http://www.microwavenews.com/RR.html> **31Jul2006**

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