

# MISINFORMATION & DISINFORMATION

## ON 5G & HEALTH

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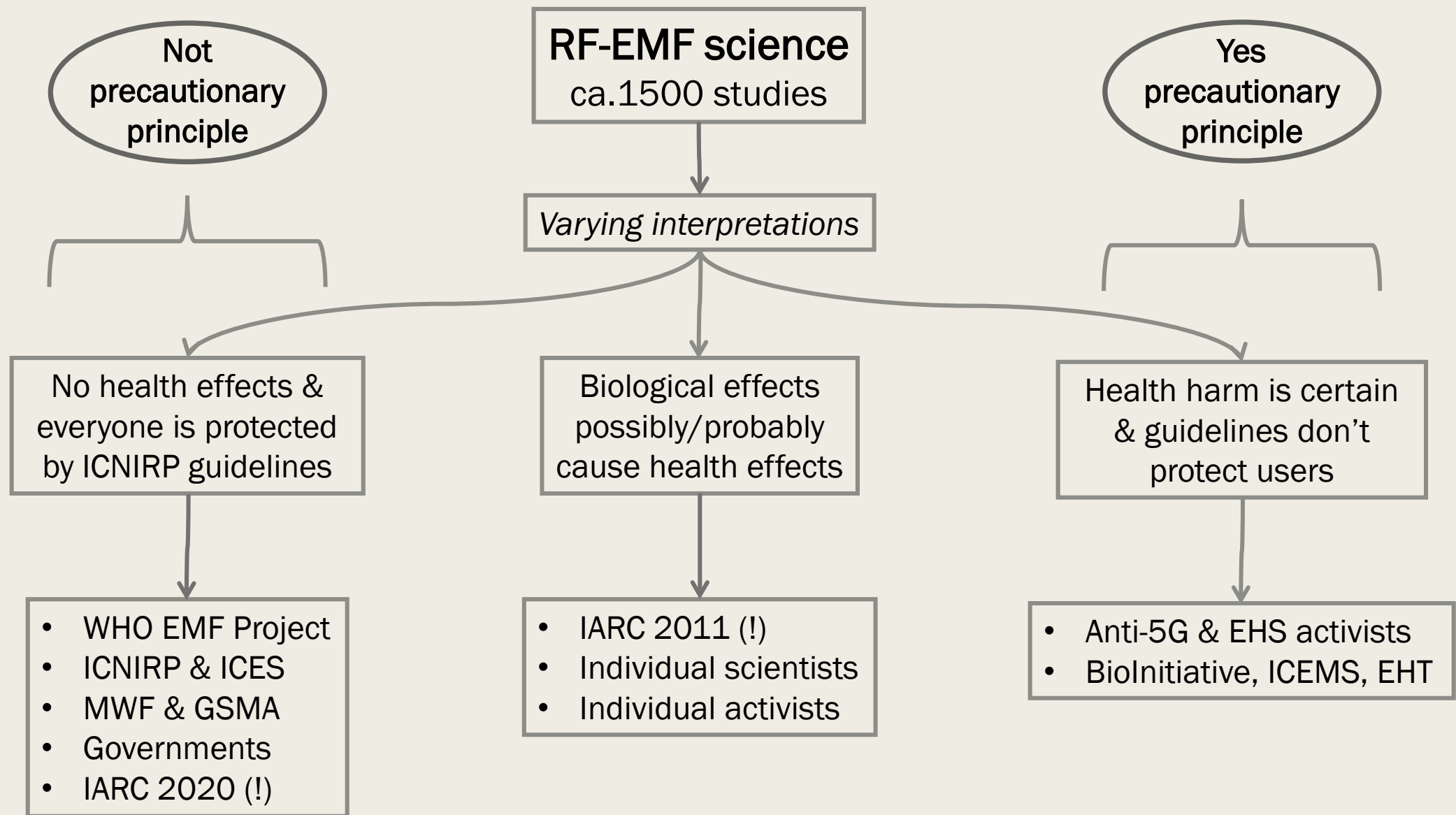
# The most common misinformation

## Industry/ICNIRP

- There are thousands of studies showing that EMF is safe - incorrect
- 5G was tested and we know it is safe - incorrect
- Any equipment radiating below ICNIRP guidelines is safe - disputable

## Activists

- There are thousands of studies showing EMF harms health - incorrect
- 5G was not tested for health effects – incorrect (only mm-waves)



**No consensus on interpretation of science and lack of good will for consensus debate**

# When asked why users should trust/rely on ICNIRP

- Eric van Rongen, then Chairman of the ICNIRP  
*“... Everybody can believe what they want [...] it’s up to people to decide which group they think is more reliable, in what they should believe...”*
- Telecoms, governments, WHO - chose to rely on **ICNIRP**
- Activists chose to rely on **BioInitiative**

# ICNIRP & BioInitiative - somewhat alike

- Both are prone to **provide skewed evaluation of the scientific evidence** on EMF and health
  - *Both are “private clubs” where current members/leaders elect/select new members, without need to publicly justify selection*
  - *Both lack of accountability before anyone*
  - *Both lack of transparency of their activities*
  - *Both lack of supervision of activities*
  - *Both provide skewed science evaluation because of the close similarity of the opinions of members*

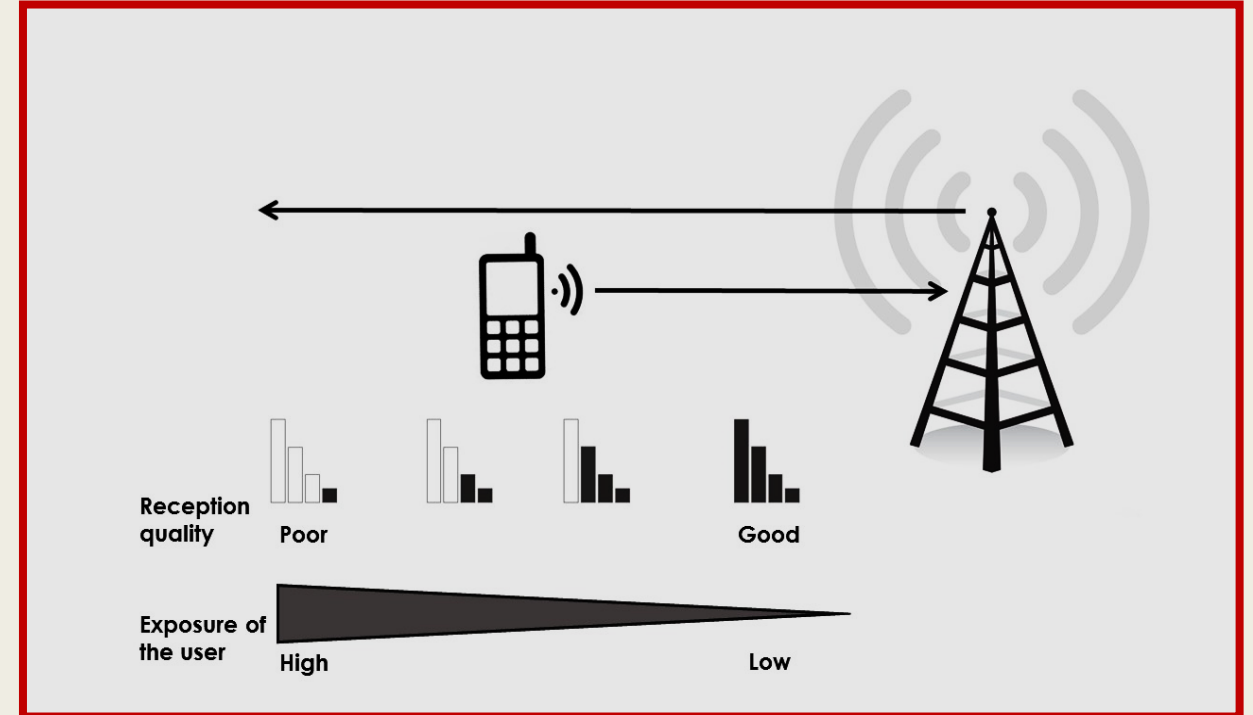
# Cancer risk –

possible (2B) or probable (2A) but not certain (1)

- Interphone, Hardell, Cerenat, Canadian Interphone - four different sets of epidemiological data indicate the increase in risk of brain cancer in long-term avid users, defined as talking for 30 minutes/day for 10 years or longer
- Study, executed within **Interphone** project, showing correlation between location of brain cancer and the side of head where user predominantly kept the phone
- Toxicology study from US **NTP** showing increase in risk of developing cancer in male rats
  - *Suggestions that the Italian **Ramazzini** study had similar outcome as NTP is, in my opinion incorrect*
- Data from in vitro and animal studies showing effect on cellular DNA
- **ICNIRP – dismisses completely cancer risk**
- **BioInitiative - considers cancer risk as certain (IARC group 1)**

# PROBLEM: Epidemiology case-control studies have no radiation exposure data

- Surrogate for radiation exposure – minutes of using cell phone
- Such surrogate leads to underestimation of the effect
- Two persons talking for the same length of time may have entirely different radiation exposure because of the different proximity to cell tower
- Persons with dramatically different radiation exposure are analyzed as if having the same exposure



# DNA damage & genotoxicity (?)

Scientifically unfounded “*rush to conclusions*” on RF-EMF genotoxicity and cancer link

- DNA “*damage*” does not automatically mean genotoxicity
- DNA damage occurs constantly spontaneously and is repaired
- **No studies to show what is the fate of the RF-EMF-associated “*DNA damage*”**
  - *Is DNA damaged by RF or is RF impairing repair of spontaneous DNA damage?*
  - *Is DNA damage repaired or does it persist in further generations of cells?*
  - *Is DNA damage occurring in humans?*

Considering the efficiency of DNA repair mechanisms in cells, claims that mobile phone radiation is genotoxic, are **not proven** yet



# EHS psychological provocation studies

- Scientists do not know if self-diagnosis of EHS is correct – **do not know if real EHS sufferers are in examined volunteers group (!)**
- Scientists introduce bias by excluding volunteers with preexisting conditions
- Bias introduced by volunteers quitting study for fear of exposures
- Bias introduced by volunteers withdrawing due to mistrust in scientists
- Scientists do not have proof that the used methods can detect EHS – lack of positive controls
- Bias introduced by placebo and nocebo phenomena – human mind may affect symptoms

# EHS biochemical studies, Belpomme et al.

- Scientists do not know if self-diagnosis of EHS is correct - **do not know if real EHS sufferers are in examined volunteers group (!)**
- Scientists introduce bias by excluding volunteers with preexisting conditions
- Changes in expression of the examined biochemical markers were found only in relatively small number of examined self-diagnosed EHS persons
- None of the examined biochemically stress factors was prevalent in EHS persons
- No experimental evidence that any of the examine biochemical markers was EMF-induced
- Proposed pathophysiological model for the development of EHS, without the evidence linking symptoms of EHS with EMF exposures, makes this model of mechanism unreliable

## CONCLUSION

- Belpomme's research can not be used as proof EHS and as diagnostic tool for EHS

# Limitations of research on 5G

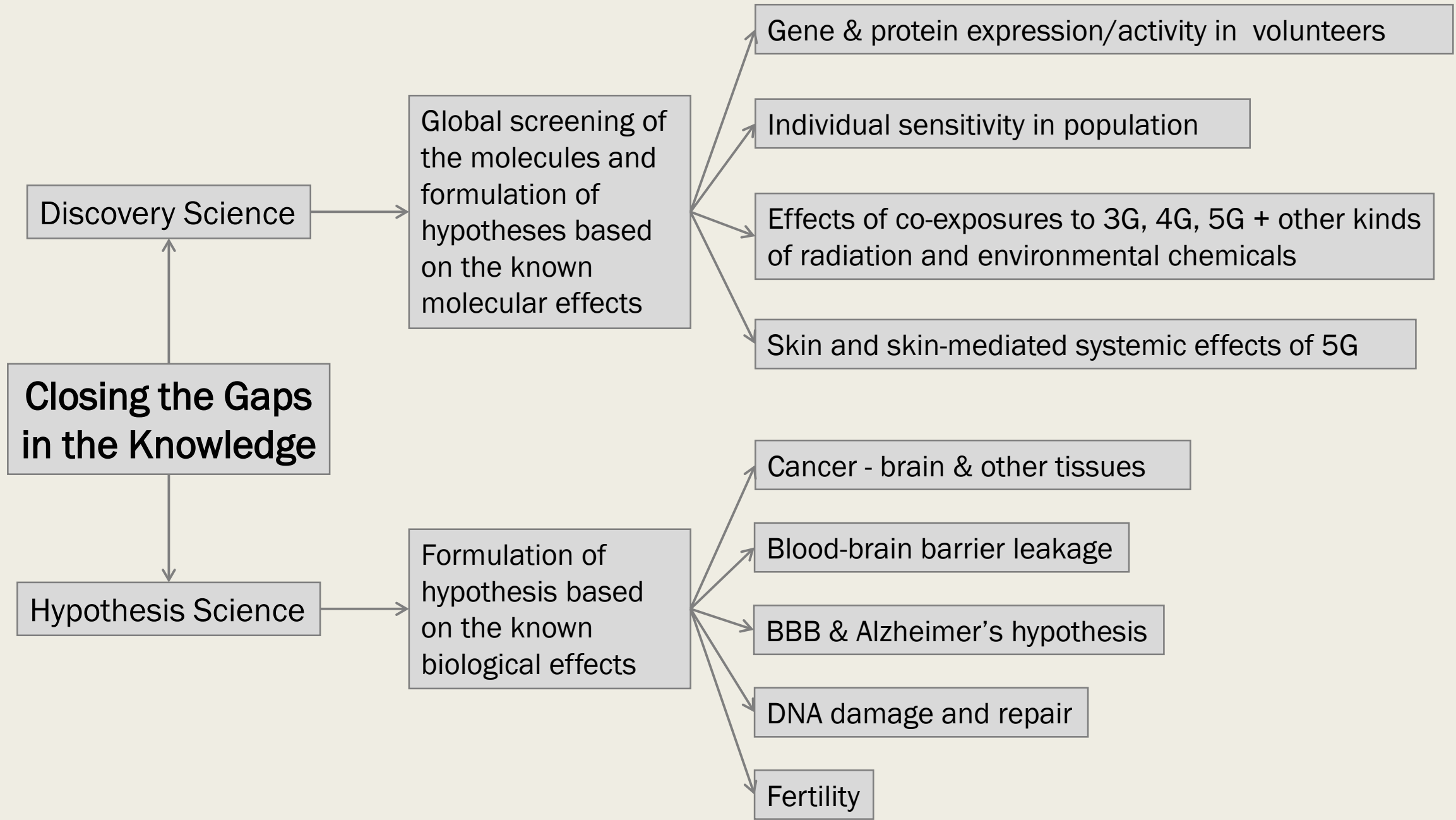
- Very limited number of studies
  - *Mobile & Wireless Forum refers some 470+ studies*
  - *EMF Portal lists some 100+ technical/dosimetry studies*
  - *Leszczynski some 100+ studies on skin and skin-related effects*
  - *ORSAA database in Australia lists some 100+ studies*
- Lack of research on 5G millimeter-waves
  - *Lack of studies examining human volunteers*
  - *Lack of studies on individual sensitivity*
  - *Lack of studies on chronic, long-term, exposures*
- Studies from a very limited number of research groups (!)
- Lack of replication studies confirming correctness of observations (!)
- Vast majority of studies done in animals and in vitro on cells grown in laboratory with very limited use in defining human health policies and safety guidelines

# Research on 5G millimeter-waves and skin

- Performed studies on mm-waves & skin
  - *Human volunteer – ca. 11 studies*
  - *Human in vitro – ca. 26 studies*
  - *Animal in vivo (rat, mice) – ca. 56 studies*
  - *Animal cells (rat, mice) – ca. 10 studies*
- **TOTAL of only ca. 103 studies on skin and mm-waves**
- If the exposure is for long periods and non-thermal – we do not know how skin cells will respond to the deposited energy
- Claims that ” ***we know skin will not be affected***” and claims that ” ***we know skin will be affected***” are premature and, based on the available scientific evidence, **misleading & false**
- We simply do not know how skin will respond to mm-waves

# Insufficient research on 5G mm-waves

- As stated in recent opinions/reviews, the research on the possible effects of mm-waves on humans is scarce and inadequate for developing reliable, health protecting human health policies:
  - *Wu T, Rappaport TS, Collins CM. IEEE Microwave Mag 2015;16:65*
  - *Foster KR, Ziskin MC, Balzano Q. Health Phys 2017;113:41*
  - *Simkó M, Mattsson MO. Int J Environ Res Public Health. 2019;16:3406*
  - *Leszczynski D. Rev Environ Health. 2020; doi: 10.1515/reveh-2020-0056*



# Conclusions

- Misinformation is combated with misinformation
- Both sides of the debate complain that the other side misinforms but, at the same time, they misinform themselves
- Misinformation by both sides of the debate erodes trust
- Omnipresence of social media facilitates erosion of trust
- Who is trustworthy?