

A GLOBAL UPGRADE TO 5G TECHNOLOGIES WILL INCREASE ENVIRONMENTAL EMF EXPOSURES. THIS MAP INTRODUCES THE TECHNOLOGY WITH OVERVIEWS. IT ALSO OFFERS LINKS TO STUDIES AND ARTICLES ABOUT SOME OF THE KNOWN DELETERIOUS BIO-EFFECTS OF THE TERAHERTZ RADIATION OR MILLIMETER WAVES THAT FORM THE 5G CARRIER SPECTRA. THE PHYSICS AND ENGINEERING OF 5G IS NOT PRESENTED, EXCEPT IN SIMPLE TERMS.

AS FREQUENCY INCREASES AND WAVELENGTH DECREASES; LIVING CELL FUNCTIONS AND STRUCTURES BECOME MORE VULNERABLE TO DAMAGE. SEVERAL STUDIES DISCUSS DNA 'BREATHING', SWEAT GLAND ANTENNAE, AND WATER COHERENCE PROPERTIES AFFECTED BY MILLIMETER WAVES.

"5G stands for "Fifth Generation" and is a **massively complex network made up of both cloud-based wireless transceivers and ground-based fiberoptic wired systems that will enable full buildout of the "Internet of Things,"** including driverless cars, interconnectivities between cell phones and 'smart' homes and businesses, and faster telecom services and entertainment to businesses and consumers among myriad applications yet-to-be-imagined. There are serious concerns at all levels of government and in many private sectors about such massive interconnectivity regarding cybersecurity, safety, and privacy -- concerns that may be irreconcilable given how technology basically functions in an interconnected world."

Starling Childs and Blake Levitt, BLEC

EXPERTS SPEAK OUT:

[Dr. Devra Davis: 5G](#)

★ [Dr. Leszczynski: Moratorium](#)

[Dr. Cindy Russell: Letter Re: FCC](#)

★ [Dr. Joel Moskowitz: 5G Article Links](#)

★ [Dr. Paul Ben-Ishai: Health, Sub-MM Waves](#)

[Dr. Yael Stein: Human Sweat Gland Antennas](#)

[Dr. Ron Powell: Oppose 5G on Health Grounds](#)

"[M]ore research is also needed as **specific characteristics of the millimeter waves (e.g., pulsing, modulation) to be employed in 5G cellular technology may be more important than the frequency or intensity of the waves in terms of biologic and health effects.**" Dr. Joel Moskowitz

Desiree Jaworski, executive director of the Center for Safer Wireless: "Right now, you don't have to live next to a cell tower. If you're concerned about it, you can move away," she said. "But once they have these **cell antennas everywhere**, you won't be able to do that."

"[A]lthough the forces generated are tiny, **resonant effects allow THz waves to unzip double-stranded DNA, creating bubbles in the double strand that could significantly interfere with processes such as gene expression and DNA replication.** That's a jaw dropping conclusion." arXiv MIT Tech Review

"5G will use much higher frequency bands [24 to 100+ GHz]... antennas that can aim and amplify signals... massive deployment of small cells... tens of billions of dollars in economic activity... hundreds of billions of microchips... **if something can be connected, it will be connected... unlike other countries... we won't wait for the standards...**" Tom Wheeler, former FCC Chair

"The beauty of millimeter waves is there's so much spectrum, we can now contemplate systems that use spectrum not only to connect base stations to mobile devices but also to link base stations to other base stations or back to the switch. We can imagine **a whole new cellular architecture.**" Theodore Rappaport, Polytechnic Institute NYU

SOME BIO-EFFECTS FOUND IN STUDIES

- Inflammation, oxidative stress
- Alteration in water properties
- Alteration of plasma dielectric permittivity
- Alteration of plasma absorption coefficient
- Anomalous temperature changes
- Variable microbe growth rate changes
- Disturbed protozoan growth control mechanisms
- Altered chromosome function, structure, repair
- Altered membrane channel function, excitability
- Altered membrane antibiotic sensitivity
- Altered cell metabolic activities
- Specific peripheral receptor responses
- Changes in embryonic survival

★ **NO ENVIRONMENTAL REVIEW?**

IS 5G AND IOT SUSTAINABLE?

★ **SPARROW KILLER**

Home: [Oscillatorium](#)
Newest version [this map](#)
Date of this update: 03-07-18

**MILLIMETER WAVES:
5G,
OUR BODIES,
OUR ENVIRONMENT**

**CURRENT STATE OF RESEARCH,
TERAHERTZ BIO-EFFECTS**

OVERVIEW OF STUDIES

What Is It?

The Vision

- [BLEC letter to FCC](#)
- [What are small cells?](#)
- [The Promise: YouTube](#)
- [FCC opens higher frequencies](#)
- [Difference between 4G and 5G](#)
- [Internet of Things and mm waves](#)
- [FCC approves Spectrum Frontiers](#)
- ★ [5G, increased microwave exposure](#)

WHAT DO ANTENNAS LOOK LIKE?

★ **EHT REF'S, FACT SHEETS**

5G: INFO INTRO PACKET

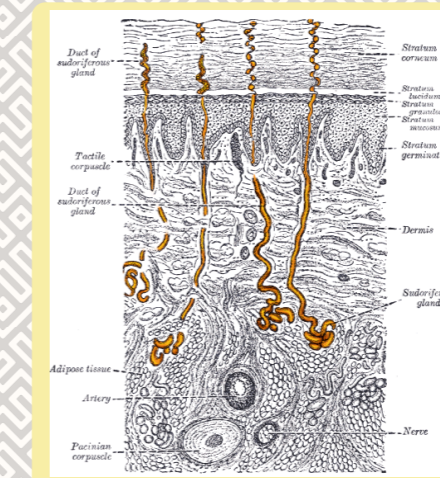
★ **5G: FACT SHEET**

Articles

- ★ [Blankets to Bullets](#)
- [TSA scanners shred DNA](#)
- ★ [Frightening Frequencies](#)
- ★ [Scanners, bubbles in DNA](#)
- [MMW, airport scanners, cancer](#)
- [Government backing may be key](#)
- [Terahertz waves tear apart DNA](#)
- [Ellen Marks: Test 5G before rollout](#)
- [Blanket planet, UH MW frequencies](#)
- [Municipalities warn FCC re: mandate](#)
- [Scanners, variations in bio-responses](#)
- ★ [Microwaves coming to a lamppost near you](#)

Studies

- [50 GHz, male infertility](#)
- [MMW, cytotoxic activity](#)
- [35, 94 GHz, corneal injury](#)
- [60 GHz, acute ocular injuries](#)
- [40 GHz, therapeutic, migraine](#)
- [MMW, membrane permeability](#)
- [MMW and endogenous opioids](#)
- [MMW, control of neural function](#)
- [MMW, predisposition to cataracts](#)
- [MMW and neural system response](#)
- [DNA breathing dynamics, THz field](#)
- [MMW and cell-to-cell communications](#)
- [MMW, puffing of giant chromosomes](#)
- [60 GHz, thermal, non-thermal effects](#)
- ★ [THz, delayed wound healing, mouse](#)
- [MMW, thymocytes, resonance reactions](#)
- [MMW, metabolic stress, additive impact](#)
- [THz potential to control gene expression](#)
- [60 GHz, voltage gated K+, Na+ channels](#)
- [MMW absorbed into blood cells near skin](#)
- [35 GHz, thermal effects, circulatory failure](#)
- [MMW, bacteria, antibiotic sensitivity altered](#)
- [50 GHz, DNA breakage, free radicals, brain](#)
- ★ [MMW, many non-thermal and thermal effects](#)
- [Personal, occup. exposure measurement complex](#)
- ★ [MMW, Genome conformation, frequency, E. coli](#)
- [MMW, Ca++ pumps, channels, cardiac pacemaker](#)
- [35 GHz, inflammation, oxi. stress, energy metabolism](#)
- ★ [10 GHz, spatial memory, enzymes, histopathology](#)
- ★ [MMW, learning and memory functions, hippocampus](#)



Human sweat gland



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- [EMF, WATER, CALCIUM](#)

MMW = millimeter waves
THz = terahertz radiation
GHz = gigahertz radiation

MMW HARVESTING

5G INDUSTRY SITE

THE HYPE SURROUNDING 5G

"5G technology will likely turn this [present] serious health risk [of EMF] into a **public health crisis.**" Weston Teller, Ph.D., Weston Price Foundation

**WHAT IS 5G?
EVERYTHING YOU NEED TO KNOW**

★ **OVERVIEW: KEVIN MOTTUS**

- MMW, SWEAT GLANDS, SKIN**
- [Terahertz channels in Skin](#)
- [Sweat Glands as Antenna Model](#)
- [Morphology of human sweat gland](#)
- [Human Sweat Glands as Antennas](#)

