

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*

DR. RON POWELL: OPPOSE 5G ON HEALTH GROUNDS

DR. JOEL MOSKOWITZ: 5G AND OUR HEALTH

DR. CINDY RUSSEL: LETTER RE: FCC

DR. DEVRA DAVIS: YOUTUBE, 5G

"[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

IS 5G AND IoT SUSTAINABLE?

MM WAVES TO INFILCT PAIN

PERSONAL DATA COLLECTED

Home: [Oscillatorium](#)  
Newest version [this map](#)  
Date of this update: 03-30-17

#### What Is It?

##### The Vision

[BLEC letter to FCC](#)

[What are small cells?](#)

[%g Wireless Future](#)

[The Promise: YouTube](#)

[FCC opens higher frequencies](#)

[Difference between 4G and 5G](#)

[Internet of Things and mm waves](#)

[FCC approves Spectrum Frontiers](#)

**WHAT IS 5G? EVERYTHING YOU NEED TO KNOW (A VISION)**

**5G: INFO INTRO PACKET**

#### Articles

##### TSA scanners shred DNA

[Scanners, bubbles in DNA](#)

[MMW, airport scanners, cancer](#)

[Government backing may be key](#)

[Ellen Marks: Test 5G before rollout](#)

[Blanket planet, UH MW frequencies](#)

[Municipalities warn FCC re: mandate](#)

[Scanners, variations in bio-responses](#)



#### Studies

[50 GHz, male infertility](#)

[MMW, cytotoxic activity](#)

[35, 94 GHz, corneal injury](#)

[60 GHz, acute ocular injuries](#)

[MMW, membrane permeability](#)

[MMW and endogenous opioids](#)

[MMW, control of neural function](#)

[40 GHz, therapeutic, migraine](#)

[MMW and neural system response](#)

[MMW, predisposition to cataracts](#)

[DNA breathing dynamics, THz field](#)

[MMW and cell-to-cell communications](#)

[MMW, puffing of giant chromosomes](#)

[MMW, thymocytes, resonance reactions](#)

[THz potential to control gene expression](#)

[MMW absorbed into blood cells near skin](#)

[60 GHz, thermal, non-thermal effects](#)

[MMW, metabolic stress, additive impact](#)

[35 GHz, thermal effects, circulatory failure](#)

[MMW, bacteria, antibiotic sensitivity altered](#)

[50 GHz, DNA breakage, free radicals, brain](#)

[60 GHz, voltage gated K+, Na+ channels](#)

[Personal, occup. exposure measurement complex](#)

[MMW, Ca++ pumps, channels, cardiac pacemaker](#)

[35 GHz, inflammation, oxi. stress, energy metabolism](#)

#### RELATED MAPS

[EMF, EYES](#)  
[BIO-EFFECTS](#)  
[CELL TOWERS](#)  
[WIRELESS COMMONS](#)  
[EMF, WATER, CALCIUM](#)

**8 WAYS 5G AND THE INTERNET OF EVERYTHING WILL IMPACT OUR LIVES**

**STUDY: HUMAN SWEAT GLANDS AS ANTENNAS**

**MORPHOLOGY OF HUMAN SWEAT GLAND**

**DR. Yael Stein Letter: HUMAN SWEAT GLANDS AS ANTENNAS**

**SWEAT GLANDS AS ANTENNA MODEL**

