

IF ONE HIT * IS FREE-RADICAL PRODUCTION, DNA STRAND BREAKAGE, CALCIUM EFFLUX, ETC., FROM EMF, DO WE BECOME MORE VULNERABLE TO SERIOUS PATHOLOGY? CAN EMF CREATE MORE THAN ONE HIT AT A TIME?

EXAMPLES OF EMF COMBINATION HITS:

- Oxidative stress plus reduced melatonin*
- Oxidative stress plus aberrant signaling*
- Oxidative stress from direct plus indirect effects*
- DNA strand breaks plus poor DNA repair*
- Calcium efflux plus reduced DNA repair*
- Membrane damage plus reduced DNA repair*
- EEG changes plus blood brain barrier permeability*
- Interfacial water resonance plus membrane damage*
- Reduced melatonin plus glutathione depletion and many more...*

[Combined Effects of EMF, Other Agents](#)

[Video: Dr. Blackman on Nonlinearity](#)

[Interactions May Matter Most](#)

[It Takes Two to Tango](#)

EMF AND A CONTEMPORARY MULTIPLE HIT MODEL

Information

★ [Two Hits and You're Out? AD](#)

[EMF Sensitivity and Vulnerability](#)

★ [Combined effects EMF and other agents](#)

★ [Two-Hit Hypothesis and Organ Dysfunction](#)

[Study: One RF exposure with two mechanisms](#)

[Solving complex causes of multiple-hit disorders](#)

Related Maps

[Melatonin](#)

[DNA/RNA](#)

[Nonlinearity](#)

[Free Radicals](#)

[Calcium Efflux](#)

[Cellular Triage](#)

[Interfacial Water](#)

[Bio-Effects Overview](#)

[Lifetime Accumulation](#)

[Membrane Oscillations](#)

[Proposed Mechanisms](#)

[Electro-Hypersensitivity](#)

[EMF Interactions With Toxins](#)

[Methylation/Glutathione, EMF](#)

SIGNIFICANT HITS:

- DNA effects*
- Free radical formation*
- Calcium efflux*
- Oscillatory disruption*



Examples of Multiple Hit Models

[Epilepsy](#)

[Psychosis](#)

[Schizophrenia](#)

[Multiple sclerosis](#)

★ [Retinoblastoma](#)

[Autism: Triple hit?](#)

[Peritoneal sclerosis](#)

[Alzheimer's disease](#)

[Multiple-Hits and Parkinson's](#)

[Alzheimer's disease, lipoic acid](#)

[NASH as multiple-hit pathology](#)

★ [Knudson \(cancer\) hypothesis](#)

[Vulnerable \(cardiovascular\) patients](#)

[Diathesis-stress \(psychological\) hypothesis](#)

★ [Two hit, three-hit, vestibular schwannoma](#)

EMF literature includes these conditions.

EXAMPLES OF UBIQUITOUS NON-EMF HITS:

- Neurodevelopmental vulnerabilities*
- Aging with functional declines*
- Ambient toxic exposures with bioeffects*
- History of illness with residual vulnerabilities*
- History of injuries with residual vulnerabilities*
- Pharmaceutical intake with altered physiology*
- Ionizing radiation exposure with tissue damage*
- Nutritional depletion with vulnerabilities*
- Stresses of many kinds with vulnerabilities*

Home: [Oscillatorium](#)
Newest version [this map](#)
Date of this update: 03-27-16

A single EMF exposure produces different "hits", depending on how the radiation scatters and which tissues are affected. [Study on Nonlinearity](#)

EMF CONFOUNDS EFFECTS OF OTHER EXPOSURES

"... we believe that synergistic investigations deserve special attention. Indeed, people are exposed to many different influences, and theoretically it may well be that a RF-exposure alone is ineffective whereas this exposure might enhance the mutagenicity, carcinogenicity or teratogenicity of chemical or physical factors." [EMF Synergy Paper](#)

* **Hit** in this discussion an adverse physiological effect from any cause (in this case EMF exposure). In some medical literature, hit refers specifically to genetic mutations or variations, but it may also have the broader meaning of negative effect.

MULTIPLE HITS VIA NEURAL DISRUPTION?

"Synchronous biological oscillations in cells (pacemaker cells) can be disrupted by artificial, exogenous environmental signals, resulting in desynchronization of neural activity that regulates critical functions (including metabolism) in the brain, gut and heart and circadian rhythms governing sleep and hormone cycles (Strogatz, 1987)." [BioInitiative 2012](#)