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The Invisible Risk Factor of Autism

Analysis by Dr. Joseph Mercola

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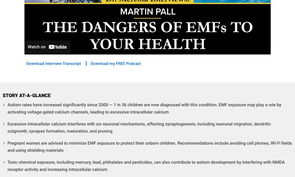

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STORY AT-A-GLANCE

- Autism rates have increased significantly since 2000 — 1 in 36 children are now diagnosed with this condition. EMF exposure may play a role by activating voltage-gated calcium channels, leading to excessive intracellular calcium
- Excessive intracellular calcium interferes with six neuronal mechanisms, affecting synaptogenesis, including neuronal migration, dendritic outgrowth, synapse formation, maturation and pruning
- Pregnant women are advised to minimize EMF exposure to protect their unborn children. Recommendations include avoiding cell phones, Wi-Fi fields and using shielding materials
- Toxic chemical exposure, including mercury, lead, phthalates and pesticides, can also contribute to autism development by interfering with NMDA receptor activity and increasing intracellular calcium
- Strategies to reduce EMF exposure include identifying major sources, limiting wireless device use, hardwiring internet connections and avoiding "smart" appliances. Consuming magnesium and NrG3 boosting foods may help mitigate EMF damage

The rates of autism spectrum disorder, commonly shortened to ASD or autism, continue to rise among America's youth. According to Autism Parenting Magazine, about 1 in 36 children are now diagnosed with this condition. To paint a different picture, the frequency of autism is now 241% higher than statistics recorded in 2000.[1]

Back in 2017, I interviewed Martin Pall, Ph.D., professor emeritus at Washington State University, regarding how electromagnetic fields (EMFs) can affect human health via the stimulation of voltage-gated calcium channels (VGCCs). Through the years, he has continued to build on this research, and has recently published an extensive study that digs deeper into the role of EMFs in our VGCCs, and how it can give rise to autism.

How EMF Exposure Contributes to Autism

In Pall's study,[2] published in Brain Sciences, he elucidates "a causal/explanatory model which explains the neurodevelopmental, physiological, biochemical, environmental and genetic causal mechanisms of ASDs."

According to Pall,[3] autism may occur via synaptogenesis dysfunction in the developing brains of children. The central mechanism around this phenomenon is the stimulation of VGCCs exacerbated by EMF exposure. This raises [Ca2+], also known as intracellular calcium, causing autism.

For those unfamiliar, synaptogenesis is another term for synapse formation.[4] Synapses are sites wherein neurons communicate with each other, similar to a telephone cable connecting two phones together. As your child interacts with the environment, their brain forms new connections (synaptogenesis). "Essentially, your child's brain is adapting to their unique environment, and learning to process it more efficiently," according to Yale Baby School.[5]

The autism inducing EMFs referred throughout Pall's research refer to the mammade variety, meaning they are generated via electric currents. He refers to these as "coherent" EMFs, which are "emitted in a particular vector direction, with a particular frequency polarity and phase."[6]

On the other hand, he refers to natural EMFs as "incoherent," as they are made up of photons emitted in various directions, polarities and phases. Due to this incoherence, they only create a minuscule amount of magnetic force that likely won't pose a threat to your health.

Six Nerve Mechanisms Affected by Excessive Intracellular Calcium

Pall outlines that during the perinatal period (before and after birth), there are six neuronal mechanisms impacting synaptogenesis, and the likely cause is — you guessed it — excessive intracellular calcium. In his words, the flooding of calcium "causes abnormal regulation of each of the six mechanisms," which are outlined below:

Neuronal migration — A process that occurs during embryonic development, migration events are essential to establish cortex laminae.[7]

Dendritic outgrowth — Short, narrow and highly branched cells that function as the receiving or input portions of a neuron.[8]

Synapse formation — Occurs after birth and plays a role in the creation of neuronal networks.[9]

Synapse maturation — The process that shapes a synapse so that it can achieve a fully functioning state.[10]

Synaptic pruning — By six years old, your child's brain will have the ability to eliminate less important neuronal connections for high-quality ones.[11]

MeCP2 function — This refers to the gene that helps maintain the synapses.[12]

When the functions of these six mechanisms are impaired, synaptogenesis dysfunction occurs, which may result in autism. According to Pall:[13]

> *"Synaptogenesis dysfunction produces tissue connectivity changes in the autism/ASD brain which are thought, in turn, to produce many autism symptoms. It may act, in part, to disrupt and change neural network formation, a possible central causal mechanism of autism/ASDs."*

Pall says the six mechanisms "have been shown to be abnormal in autism/ASD patients."[14] Hope, specifically? Again, evidence points back to excessive intracellular calcium via the VGCCs. His paper cites two previous studies, published in 2007 and 2009, showing that intracellular calcium has a strong link to autism.

For context, VGCCs, which are found in high concentrations in the brain, play a role in intracellular processes, such as neurotransmitter release.[15] Once they're exposed to EMFs, calcium floods inward, which, based on Pall's collated research, may cause synaptic dysfunction ultimately resulting in autism.[16]

In another study, similar findings were observed. According to the researchers, coherent EMFs "can cause irregular gating of electro-sensitive ion channels or VGCCs on the cell membranes,[17] which can lead to DNA damage resulting in infertility and cancer." Like Pall, these researchers also noted that incoherent EMFs, regardless of intensity, will not cause health issues.[18]

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Babies Are Already at Risk for Autism Even Before Birth

Based on the six affected mechanisms described by Pall, it seems that autism may begin even before a child is born. In his review, he came across a study that compared EMF exposure levels of women who gave birth to babies diagnosed with autism compared to normal controls. From here, he noted that babies born with autism were at risk because of where the mother slept during her pregnancy, as well as where the baby slept in the months after birth.[19]

If you're pregnant, it would be wise to minimize your exposure to EMFs, as it's paramount to protecting your unborn child's health. Pall emphasizes the following recommendations:[20]

> *"Pregnant women should not use cell phones, cordless phones, should avoid Wi-Fi fields and should use wired connections to the internet, avoid Bluetooth, should not spend time near smart meters, cell phone towers, avoid high voltage powerlines, etc.*
>
> *Pregnant women should avoid being in buildings with high dirty electricity in their electric powerlines. Such avoidance is very challenging. A second choice is to use shielding to protect the fetus and the young baby after birth.*
>
> *You can get large, shielded T-shirts to protect the fetus, wearing a regular cloth T-shirt underneath to minimize body contact. Such shielding materials have large numbers of metal (often silver) fibers. I believe that shielding mostly acts by disrupting the coherence of the EMFs, therefore greatly lowering any electric or magnetic forces."*

Another option is to apply shielding paint to the walls of your home. They usually come in black and can be painted over once dry so you can maintain your home's original design. More importantly, shielding paint protects your home from EMF sources from your neighbors, which is something you may have little control over. Pall also advises buying an EMF meter to identify the hotspots in your home.[21]

NMDA-R and Toxic Chemicals — Another Potential Pathway to Autism

Pall's study[22] also highlights the role of toxic chemical exposure in the development of autism. Specifically, they interfere with NMDA receptor (NMDA-R) activity, thus increasing intracellular calcium.[23] The NMDA-R is the receptor of glutamate, which is your brain's primary excitatory neurotransmitter, and is also important for synaptic plasticity.[24] Chemicals mentioned in Pall's review include:

Mercury
Lead
Cadmium
Arsenic
Phthalates
Bisphenol A (BPA)
Polyfluoroalkyl substances (PFAS) or "forever chemicals"
Polychlorinated biphenyls (PCBs)
Pesticides (organophosphate, carbamate, organochlorine and pyrethroid)
Glyphosate

Each of these chemicals have mechanisms that can lead stimulate NDMA-R activity, leading to increased intracellular calcium. For example, BPA was shown to reduce dendritic spine density in animal test models, which is "consistent with effects that produce synaptogenesis dysfunction." Meanwhile, acetaminophen exposure can cause hepatotoxicity and toxic encephalopathy. This results in excessive ammonia that increases NDMA-R activity, leading to autism.[25]

If these chemicals are pervasive in the food and the environment, what can you do to protect yourself and your children? Pall recommends eating an organic diet to minimize exposure as much as possible.[26]

In addition, I recommend you read my article "Chemicals in Ultraprocessed and Fast Food Packaging Pose Serious Risks for Pregnant Women." There, I outline effective strategies that can help reduce your exposure to phthalates and other chemicals.

Additional Strategies to Protect Your Family from EMFs

There's no doubt that EMF exposure is a significant health hazard that needs to be addressed on a public level. However, the recent rollout of 5G and other advanced wireless technologies may make it difficult. Therefore, it would be wise to focus on protecting yourself for now.

In addition to the recommendations mentioned by Pall, here's a more comprehensive summary of EMF-reducing strategies you can implement:

Identify major sources of EMFs, such as your cellphone, cordless phones, Wi-Fi routers, Bluetooth headsets and other Bluetooth-equipped items, wireless mice, keyboards, smart thermostats, baby monitors, smart meters and the microwave in your kitchen. Ideally, address each source and determine how you can best limit their use
Barring a life-threatening emergency, don't give your child a cellphone or a wireless device of any type. Children are far more vulnerable to cellphone radiation than adults due to having thinner skull bones. Research[27] also demonstrates that infants up to 25 months do not effectively learn language from videos, and that they learn best when taught through personal interaction.
Connect your computer to the internet via a wired Ethernet connection and be sure to put it in airplane mode. Also, avoid wireless keyboards, trackballs, mice, game systems, printers and portable house phones. Opt for the wired versions.
If you must use Wi-Fi, shut it off when not in use, especially at night when you're sleeping. Ideally, work toward hardwiring your house so you can eliminate Wi-Fi altogether. If you have a notebook without any Ethernet ports, a USB Ethernet adapter will allow you to connect to the internet with a wired connection.
Avoid using wireless chargers for your cellphone, as they too will increase EMFs throughout your home. Wireless charging is also far less energy efficient than using a regular charger, as it draws continuous power (and emits EMFs) whether you're using it or not.
Shut off the electricity to your bedroom at night. This typically works to reduce electrical fields from the wires inside your walls unless there is an adjoining room next to your bedroom. If that is the case, you will need to use a meter to determine if you also need to turn off power in the adjacent room.
Use a battery-powered alarm clock, ideally one without any light.
If you still use a microwave oven, consider replacing it with a steam convection oven, which will heat your food as quickly and far more safely.
Avoid using "smart" appliances and thermostats that depend on wireless signaling. This would include all new "smart" TVs. They are filled with sensors that emit a Wi-Fi signal and, unlike your computer, you cannot shut the Wi-Fi signal off. Consider using a large computer monitor as your TV instead, as they don't emit Wi-Fi.
Refuse a smart meter on your home if you can. If a smart meter is unavoidable, you can install a shield over it.[28]
Consider moving your baby's bed into your room instead of using a wireless baby monitor. Alternatively, use a hard-wired monitor.
Replace CFL bulbs with incandescent bulbs. Not only do they emit unhealthy light, but more importantly, they will actually transfer current to your body just being close to the bulbs.
Avoid carrying your cellphone on your body unless in airplane mode and never sleep with it in your bedroom unless it is, again, in airplane mode. Even then, it can emit signals, which is why I put my phone in a Faraday bag.
When calling someone with your cellphone, use the speakerphone and hold the device at least 3 feet away from you. Seek to radically decrease your time on the cellphone. Instead, use VoIP software that you can use while connected to the internet via a wired connection.
Avoid using your cellphone and other electronic devices at least an hour (preferably several) before bed, as the blue light from the screen and EMFs both inhibit melatonin production. According to the Sleep Foundation, blue light from computer and cellphone usage increases the time it takes for you to fall asleep.[29]
The effects of EMFs are reduced by calcium-channel blockers, so make sure you're getting enough magnesium. Most people are deficient in magnesium, which will worsen the impact of EMFs. According to Pall's study, "Magnesium deficiency is often found in autism patients and magnesium salt supplements have been found to be helpful in autism treatment."[30]
Increasing NrG2, which is a biological hormetic that upregulates superoxide dismutase, catalase and all the other beneficial intercellular antioxidants, is also helpful mainly because it lowers inflammation, improves your mitochondrial function and stimulates mitochondrial biogenesis, among other benefits.
You can activate NrG2 by consuming NrF2-boosting food compounds such as sulforaphane from cruciferous vegetables, foods high in phenolic antioxidants, the long-chained omega-3 fats DHA and EPA, carotenoids (especially lycopene), sulfur compounds from allum vegetables, isothiocyanates from the cabbage group and terpenoid-rich foods.
Molecular hydrogen has been shown to target free radicals produced in response to radiation.[31]

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The Revolutionary Path to Healing and Longevity

For the last 50 years, I have been in a relentless pursuit of how to optimize health and wellness and prevent disease. Every year I get closer to the truth. But this time, I am convinced I have finally uncovered the kernels of truth that will help nearly everyone recover from whatever physical illness they are suffering with.

I've uncovered a groundbreaking revelation that has the astounding capacity to transform global health and that is the power of cellular energy. This isn't just another health trend, it's the fundamental key to unlocking your body's innate healing abilities and achieving lasting vitality.

The Hidden Health Crisis

Nearly everyone reading this is only making about one-third of the energy they require to reverse disease and power their body to regenerate and repair damaged cells. Nearly all of us are in the black hole of self-perpetuating destruction of our gut bacteria that are crucial to help us regain our full energy potential.

Here's a startling fact: A very sensitive and inexpensive blood test shows us that over 99% of us have insulin resistance, and as a result, are unknowingly living with compromised cellular energy. This silent epidemic explains why millions struggle with persistent health issues, feeling trapped in a cycle of treatments that never quite solves the problem. But there's hope, and it lies within your very cells.

Imagine a life where your body hums with energy, where healing happens naturally, and where age is just a number. This isn't a far-off dream — it's the reality that I have been experiencing for over a year now and awaits when you master the art of cellular health.

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My newest book, "Your Guide to Cellular Health: Unlocking the Science of Longevity and Joy" is not just a manual — it's your passport to a revolution in personal wellness. This comprehensive guide will empower you with life-changing knowledge:

- Discover how to fuel your mitochondria for boundless energy and rapid healing
- Uncover the secrets of metabolism that keep you vibrant and resilient against aging and disease
- Identify and eliminate the three primary mitochondrial saboteurs lurking in your environment

- Master innovative cutting-edge lifestyle and dietary strategies that supercharge your cellular energy production

This isn't about quick fixes or temporary solutions. It's about fundamentally transforming your health at its very foundation — your cells.

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By pre-ordering "Your Guide to Cellular Health: Unlocking the Science of Longevity and Joy" you're not just getting a book — you're claiming your right to vibrant, lasting health. And to support you on this transformative journey, I'm offering five exclusive FREE gifts that will jumpstart your path to cellular vitality.

Don't wait to reclaim your health. The power to heal, to thrive and to live with unprecedented energy is within your grasp.

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This transformative project is on track for a mid-2025 launch, but we're working hard to unveil it even earlier. We appreciate your patience as we work diligently to bring you this groundbreaking resource. In the meantime, we're committed to dramatically enhancing our free content offerings, giving you even more valuable health information at your fingertips.

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This remarkable growth would place us among the most visited websites globally. Looking ahead, we're setting our sights even higher, with the ambitious goal of eventually breaking into the top most visited sites worldwide. This vision reflects our commitment to making reliable, cutting-edge health information accessible to an ever-growing global audience.

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