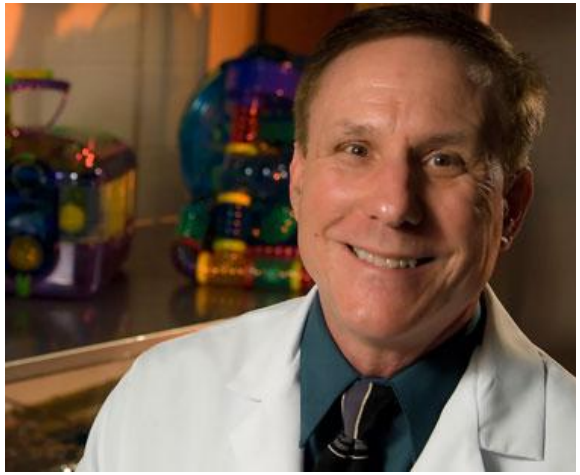
Gary W. Arendash

Gary W. Arendash, PhD is an American neuroscientist and human longevity researcher. He is credited with developing Transcranial Radiofrequency Treatment (TRFT) from pre-clinical studies into clinical trials showing that TRFT stops and reverses the progressive cognitive decline of Alzheimer's Disease (AD). [1][2]



In 2020, the FDA's first "breakthrough" designation for a device to safely treat AD was provided to TRFT (a.k.a. Transcranial Electromagnetic Treatment; TEMT).[3] Together with his colleagues, Dr. Arendash has identified multiple mechanisms of TRFT action, including disaggregation and brain removal of toxic proteins, brain mitochondrial (energy) enhancement, and substantial reductions in inflammation within both the brain and body. [1][2][4] Since inflammation is central to most diseases of aging and aging itself,[5] Dr. Arendash has proposed TRFT as a safe bioengineered technology likely to extend human lifespan.[6] His most-acknowledged quote is: "*The enigma of extending human longevity is best addressed by a single advanced technology that can target the many diseases that cause aging".*

Biography ----------

Gary Arendash was born of Slovakian/Ukrainian heritage in San Diego, California. He received his Bachelor of Science degree in Biology and Chemistry from San Diego State University. Dr. Arendash then received his Ph.D. in Physiology/Neuroscience from the University of California, San Francisco (UCSF) Medical School. Thereafter, he undertook a three-year Post-Doctoral Fellowship at the UCLA Brain Research Institute. Dr. Arendash then went through the ranks of Professorship to Full Professor in the Department of Cell Biology, Microbiology, and Molecular Biology (currently the Department of Molecular Biosciences) at the University of South Florida (USF) in Tampa, Florida. Thereafter, he became a Research Professor at the USF Health Byrd Alzheimer's Center and Research Institute.

Upon leaving USF in 2011, Arendash sought to translate his successful pre-clinical studies with TRFT into human clinical trials. He thus founded a biotech company (NeuroEM Therapeutics, Inc) that developed a first-of-its-kind medical device providing TRFT to the entire human brain.[7] Dr. Arendash then used TRFT devices in clinically evaluating their safety and efficacy in Alzheimer's Disease patients.[7] For both his pre-clinical studies at USF and his ensuing clinical studies showing TRFT can stop and reverse AD cognitive

decline,[1][2] Dr. Arendash was awarded Professor Emeritus status in the Department of Molecular Biosciences at USF.

Over his research career to present, Dr. Arendash has attained 27 research grants in the U.S.[8], published 136 peer-reviewed papers[9], has had over 13,000 citations of his research work,[9] and is the lead or sole inventor on nine patents at the United States Patent and Trademark Office (USPTO) [8]. In early 2024, Dr. Arendash left NeuroEM Therapeutics, Inc., wherein he had been the CEO for all but the final few years. He then founded the non-profit RF Longevity in 2024 to continue publishing TRFT research results and to engage in continued clinical trials of TRFT against age-related diseases and for extension of human longevity.

Scientific Career ----------

Research During his Years at the University of South Florida

Dr. Arendash's initial research interests at USF involved aged rats as a model for human brain aging. His aged rat studies culminated in a study he and his University of Florida colleagues published in the journal *Science* providing initial evidence that Alzheimer's Disease (AD) likely starts in the human brain a decade or two before it is diagnosed.[10] With the development of AD "transgenic" mice that display neuropathologic and memory dysfunctions of human AD, Dr. Arendash and his USF colleagues then focused on utilizing these Alzheimer's transgenic mice to identify potential therapeutics for prevention or treatment of AD. His pre-clinical research was focused in three major areas:

1) Investigating the Therapeutic Effects of Caffeine and Coffee against Alzheimer's Disease. Dr. Arendash and colleagues found that long-term oral caffeine treatment protects adult AD transgenic mice from developing cognitive impairment and reverses the cognitive impairment of old AD mice – both effects involved reducing brain levels of the AD toxin β-amyloid[11][12]. In a retrospective human study of patients with the prelude to AD (called mild cognitive impairment; MCI), they later demonstrated that none of those MCI patients with an initial blood caffeine level above a critical level (in 3-4 cups of coffee/day) developed dementia over the ensuing 2-4 years.[13] By contrast, all of the MCI patients with lower blood caffeine levels went on to develop dementia. This clinical study provided the first direct evidence that caffeine/coffee intake is associated with a reduced risk of dementia. These clinical studies were reported extensively by the news media.[14] [15]

2) Providing Initial Evidence that Immunotherapy could be Effective in Treating Alzheimer's Disease. The immunotherapeutic approach to AD was initiated in 1999-2000, in part by a study Dr. Arendash and Dr. David Morgan published in the journal *Nature* in 2000.[16] That study showed that active immunization with β-amyloid injections greatly improved the cognitive performance of AD transgenic mice. Active immunization studies in human AD patients then ensued with some success, although such β-amyloid

immunotherapy has largely been replaced with passive immunotherapy in AD patients using monoclonal antibodies against β-amyloid. Two such drugs (lecanemab and donanemab) are currently the primary treatments for AD cognitive decline.[17] The 2000 paper by Dr. Arendash and David Morgan[16] remains as one of only a few papers that formed the foundation for immunotherapy as a viable approach against AD.

3) Pre-Clinical Development of Radiofrequency Wave Treatment against AD. In 2008, Dr. Arendash began his research on radiofrequency wave (RF) treatment to AD transgenic mice. With his first RF publication in 2010[18] that received world-wide media coverage[19][20], he showed that daily 1-hour RF treatments safely protected AD mice from otherwise inevitable memory impairment if given before older age. If Dr. Arendash provided the same RF treatment to old memory-impaired mice, a reversal of their cognitive impairment to normal memory occurred.[18] [21] In brains from these AD mice, Dr. Arendash and colleagues discovered that RF wave treatment "disaggregates" toxic β-amyloid accumulations inside brain cells (neurons)[18][21][22] – β-amyloid aggregates inside neurons appear to be a primary cause of AD.[23] He then demonstrated in AD mice that brain energy production (ATP level) is increased dramatically by RF wave treatment due to increased mitochondrial Complex IV activation.[22] As such, Dr. Arendash and colleagues identified the first two mechanisms of RF wave action in the brain – mechanisms that he would later verify in the brains of human AD subjects. Dr. Arendash's successful pre-clinical results with RF treatment to AD mice strongly motivated him to "translationally" continue this technology into human AD patients – that translational research became his focus after leaving USF in 2012.

Research Following the Founding of NeuroEM Therapeutics (2013 – present)

Upon leaving the USF Health/Byrd Alzheimer's Center and Research Institute, Dr. Arendash founded a private company, NeuroEM Therapeutics, Inc. (Tampa, Florida) in 2013 as its CEO and with the primary goal of "clinically" investigating the ability of RF wave treatment to be therapeutic against AD. He proposed that, if AD and other diseases of aging could be avoided or minimized through RF wave treatments, humans would experience a significant increase in their life span.[6] Within a few years, Dr. Arendash raised sufficient private funds resulting in: 1) development of an in-home, full-brain TRFT treatment device approved by the U.S. FDA for clinical studies, and 2) use of those devices in the first ever treatment of entire human brains with RF waves.[7] Results of that clinical trial were published in 2019[1] and reported in the news media. [24][25] The clinical trial demonstrated safety of TRFT in humans and its ability to reverse cognitive impairment in a small group of AD patients. Dr. Arendash followed that initial clinical study with a second study published in 2022 showing the ability of TRFT to stop cognitive decline in AD patients over an extensive 2½ year period.[2] [26] It appears that no AD therapeutic intervention has since been reported to stop long-term and/or reverse progressive AD cognitive impairment in clinical trials.[27,28]

Although there was some concern in the early 2000s from epidemiologic studies done mostly by a single research group that RF waves increase risk of brain cancers, later large and well-designed human studies have firmly concluded that RF waves at the frequency of TRFT have no negative impact on human health[29]. Particularly on the progression of brain tumors.[29] [30], recent epidemiologic studies indicate that increased RF wave exposure is in fact associated with significantly longer survival of individuals with glioma brain cancers[31].

Between 2022 and when he left NeuroEM Therapeutics at the end of 2023, Dr. Arendash published an additional two clinical papers with colleagues. In one of these papers, he discovered that TRFT "re-balances" the immune system in both the human brain and body immune systems to dramatically decrease both brain and body inflammation – a third mechanism of TRFT action.[32] Since inflammation is involved in many brain and body diseases,[5] Dr. Arendash then published a paper in 2023 proposing, and providing substantial evidence, that TRFT will increase human lifespan by dramatically decreasing inflammation to protect against or minimize many diseases of aging.[6] In 2024, a U-tube interview that Dr. Arendash did along that line for Longevity.Technology received over 15,000 views – one of the most viewed interviews ever produced by Longevity.Technology.[33]

Because he was primarily focused on continuing "clinical research" with TRFT technology against Alzheimer's Disease rather than on a more immediate commercialization of TRFT, Dr. Arendash left NeuroEM Therapeutics at the beginning of 2024. In March of that year, he founded RF Longevity as a non-profit. Between 2024 and presently, Dr. Arendash published papers at RF Longevity that expand upon TRFT's mechanisms of action by clinically showing how TRFT clears toxins from the human brain – the first clinical demonstration of a therapeutic to clear toxins such as β-amyloid and p-tau from the human brain and doing so during wakefulness.[34] [35] Brain toxin clearance is a critical process that is normally only performed by the brain during sleep.[36] In August of 2025, Dr. Arendash published his 136th paper; this, in the journal *Cancers* which provided pre-clinical and clinical evidence for why TRFT should be effective against both primary and metastatic brain cancers.[4]

Dr. Arendash remains fervently committed to continuing TRFT clinical studies against diseases of aging and to increase human longevity.

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