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Short Biography - Arthur A. Pilla, PhD

Arthur Pilla received his Ph.D., magna cum laude, from the University of Paris, France in 1965, was Director of Orthopedic Research at Mount Sinai School of Medicine, NY, and created and taught the first course in Bioelectrochemistry in the United States at Columbia University, NY. He is retired faculty from these institutions. Arthur Pilla's early studies led to pioneering publications on models and experimental methods for the study of fast electrochemical relaxation processes at porous electrodes for fuel cell and other energy applications. He commenced studies of the bioeffects of weak magnetic and electric fields in 1969, and by 1972 had created the electrochemical information transfer model (ECM) to predict and quantify the bioeffects of non-thermal electromagnetic fields (EMF). This led to the first PEMF clinical trials on non-union bone fractures (1977), which resulted in the first FDA-cleared electromagnetic bone growth stimulator device.

Since these early studies, EMF has enhanced the healing of millions of non-union and delayed union bone fractures worldwide and it is now established that a delayed union fracture has as much chance to heal using non-operative, non-invasive electromagnetic treatment at home, as it does with the first bone graft. He extended his work to show weak ultrasound signals could be effective for fresh bone fracture repair, which led to the first such device for human clinical application in the US, and the creation of a unified model for mechanoelectric stimulation of bone repair. Both EMF therapy and Ultrasound are now part of the orthopedist's armamentarium for fracture repair. More recently, Dr Pilla has extended the ECM model to include calmodulin (CaM)-dependent nitric oxide (NO) signaling for tissue growth, repair and maintenance. This led to the development of efficient low-cost non-thermal pulsed radio frequency EMF signals which have been demonstrated to produce anti-inflammatory, angiogenic and tissue healing effects. Dr Pilla predicted that any EMF signal configured using the ECM model would instantaneously modulate CaM-dependent NO signaling and therefore cytokine and growth factor release in challenged tissues. This has been confirmed using non-thermal radio frequency signals in peer-reviewed basic and clinical studies. EMF therapy is now part of the surgeon's armamentarium to reduce post-operative pain, inflammation and narcotic use in order to enhance surgical repair and reduce morbidity. Arthur Pilla's most current research involves the use of electromagnetic fields to treat traumatic brain injury (TBI), neurodegenerative diseases, osteoarthritis, non-healing diabetic wounds and cognitive enhancement. Dr. Pilla is the co-author of several professional books in Electrochemistry and Bioelectromagnetics and author or co-author of over 200 medical/scientific publications. He has been awarded 16 patents, has 21 patents pending in EMF therapeutics, and is a Founder of several EMF companies, including Ivivi Health Sciences. He has received many national and international awards and honors in the fields of electrochemistry and bioelectromagnetics.