

*Devoted to biomedical achievements in  
Medial History and IEEE Milestones  
(Institute of Electrical and Electronics  
Engineers milestones)*

Alma mater motto—潛心篤志

HaiYing Shen, M.D., Ph.D.

Cardiologist and Biomedical Scientist

HaiYing Shen is the Founder of

**Cell Electrophysiology**  
**Molecular Cell Biology-founded Medical  
Electrophysiology**  
**Natural Electromagnetic Dynamics**  
**Bioelectromagnetic dynamics**  
**Earth's electromagnetic dynamics**  
**Celestial electromagnetic dynamics**  
**Aesthetics**  
**Time-quantized fine electromagnetic dynamics**

**Utility Patent**

**TIME-QUANTIZED YN TRANSISTORS**  
**TIME-QUANTIZED YN MOTORS**  
**TIME-QUANTIZED YN ELECTROMAGNETIC  
LEVITATIONS**

**Spiritual Advisor**

William Harvey (De Motu Cordis (onCirculation)  
James Clerk Maxwell (A Dynamical Theory of the  
Electromagnetic Field)

**Motto**

Royal Society's "Nullius in verba"  
"One sees clearly only with the heart. What is essential  
is invisible to the eye." ('The Little Prince' by Saint-Exupéry)

**Scientific Career**

**Fields** Cardiology  
Internal medicine  
Biochemistry and molecular biology  
Medical physiology  
Molecular biology-founded cell electrophysiology  
Molecular cell biology-founded medical electrophysiology  
Bioelectrcity and bioenergy  
Natural electromagnetic dynamics  
Earth's electromagnetic dynamics  
Celestial electromagnetic dynamics  
Electromagnetic dynamics on natural mathematics  
Aesthetics  
Time-quantized fine electromagnetic dynamics

**Institutions** Division of Cardiology, Department of Internal Medicine, Korea University  
School of Medicine, Kyung Hee University  
Department of Internal Medicine, Seoul National University Hospital



(in white in three photographs)

## Academic Treatises of HaiYing Shen

### Series I: Cell Electrophysiology and Molecular Cell Biology-founded Medical Electrophysiology

#### I-1 Spontaneous high-frequency action potential (21,000 words)

Keywords: *action potential, spontaneous high-frequency action potential, tachyarrhythmias, atrial fibrillation, wound, denervation supersensitivity, neurogenic pain, hyperalgesia and allodynia, epileptic discharge, diabetic pain, regeneration and development (Sci China Life Sci. 2011 Apr;54(4):311-35. doi: 10.1007/s11427-011-4157-y)*

#### I-2 The dynamics of action potential: the bioelectromagnetized interaction created by cell biology (10,400 words)

#### I-3 The eukaryotic mechanism directed by bioelectricity (I): creation and enlightenment (18,000 words)

Keywords: *eukaryotic mechanism, eukaryotic bioelectric excitation, eukaryotic bioelectromagnetic field, bioorganic electricity generation, bioorganic information, bioorganic energy resource; cell electrophysiology, biomembrane, plasma membrane, endoplasmic reticulum, sarcoplasmic reticulum, mitochondrion, nucleus, Golgi apparatus; action potential, neuronal excitation, skeletal muscle excitation, muscle contraction*

#### I-4 Cell electrophysiology: the eukaryotic mechanism operated by molecular biology-founded cell electrophysiology

The letter on I-3 “The eukaryotic mechanism directed by bioelectricity (I): creation and enlightenment”

#### I-5 The eukaryotic mechanism directed by bioelectricity (II): discovery and breakthrough— electrophysiological topological mechanism and the targets for treatment (7,500 words)

Keywords: *apoptosis, autophagy and necrosis; activation of T lymphocytes; oncogenesis, retrovirus-related immunodeficiency and oncogenesis; oocyte activation*

#### I-6 Medical electrophysiology: the physiologic and pathophysiologic mechanism operated by molecular cell biology-founded medical electrophysiology

The letter on I-5 “The eukaryotic mechanism directed by bioelectricity (II): discovery and breakthrough— electrophysiological topological mechanism and the targets for treatment”

#### I-7 The connotation of action potential in new era

### Series II: Natural Electromagnetic Dynamics

#### II-1 Action potential and the principle of natural electromagnetic dynamics: the essence of life and the eternal elegant-beauty— from biology to the universe (22,000 words)

##### Volume I Action potential: the electromagnetic dynamic homeostasis in biology

##### Volume II The electromagnetic dynamic homeostasis in macro- and microscales of nature

##### Volume III The electromagnetic dynamic homeostasis in astrodynamics: celestial rotation and gravitation

##### Volume IV The electromagnetic dynamic homeostasis in aesthetics— the essence of life and the eternal elegant-beauty from biology to the Universe

Keywords: *action potential, bioelectricity, bioenergy resource; electromagnetic dynamics, natural electromagnetic dynamics, celestial dynamics; aesthetics, celestial aesthetics, natural mathematics, time, fine electromagnetic dynamics; earthquake, seismic waves, cyclone, capillary action*

#### II-2 The electromagnetic spin energy and the electromagnetomathematic differentiation on phasetransition

#### II-3 Across the demarcation of era: the definition on natural electromagnetic dynamics & The relativity principle of transistors

The letter on II-1 “Action potential and the principle of natural electromagnetic dynamics:the essence of life and the eternal elegant-beauty— from biology to the universe”

#### II-4 Understanding with the sincere heart: relativity and the definition of natural electromagnetic dynamics

The letter on II-1 “Action potential and the principle of natural electromagnetic dynamics: the essence of life and the eternal elegant-beauty— from biology to the universe”

#### II-5 This is the process of tech civilization: the energy and power created by natural electromagnetic dynamics

#### II-6 The supreme realm of physics created by the ingenious relativity

#### II-7 The ingenious principle creates the ultimate in life, nature and the universe— Natural Electromagnetic Dynamics

### Series III: Utility Patents on Time-quantized Fine Electromagnetic Dynamics

**I Time-quantized YN transistors** (digitalized and quantized high-frequency YN transistors): externally tuned-YN transistor, internally tuned-YN transistor, sandwiched YN transistor, tunneling YN transistor, pre-excited YN transistor and YN electricity generator

**II Time-quantized YN motors** (digitalized and quantized high-frequency YN electromagnetic spin motors): simplex YN motor, spherical-layered topological YN motor, internally tuned YN motor, externally tuned YN motor, sandwiched YN motor, pre-excited YN motor and YN auto-motor

**III Time-quantized YN electromagnetic levitations** (digitalized and quantized high-frequency YN electromagnetic levitations): YN electromagnetic spinning levitation, YN linear electromagnetic levitation, YN annular electromagnetic levitation, YN electromagnetic gravitation levitation, and YN cosmovehicle (YN electromagnetic spin-levitation spacevehicle)