

**BIOGRAPHICAL SKETCH OF
PROF. SINERIK N. AYRAPETYAN**



Date of Birth: **May 28, 1941**

Marital Status: **Married, has a son and a daughter**

Place of Birth: **Armenia**

Nationality: **Armenian**

Business address: **UNESCO Chair in Life Sciences, Life Sciences International Postgraduate Educational Centre (LSIPEC), Avan – 31 Acharian St., Yerevan 0040, Armenia**

Position Held: **Head of Research Council of LSIPEC and Coordinator of UNESCO Chair**

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Education

| Degrees | Dates | University |
|--------------------|--------------|--|
| Master of Sciences | 1960 -1966 | Yerevan State University |
| PhD | 1966 – 1969 | Bogomolets Inst. Physiology, Acad. Sci. Ukraine. |
| Doctor of Sciences | 1970 – 1980 | Bogomolets Inst. Physiology, Acad. Sci. Ukraine. |

Career/Employment

| Employers | Position | Dates |
|---|--|-----------------|
| Life Sciences International Postgraduate Educational Center | Chairholder of UNESCO Chair in Life Sciences | 1997-present |
| Life Sciences International Postgraduate Educational Center | Head of Research Council | 2010-present |
| Life Sciences International Postgraduate Educational Center | President | 1997 - 2010 |
| Armenian National Academy of Sciences | Head of the Biophysics Center | 1989 - 1997 |
| Institute of Experimental Biology, Arm. NAS | Head of Membranology Laboratory | 1973 - 1989 |
| Department of Physiology, Yerevan State University | Associate Professor | 1971 - 1973 |
| The Institute of Physiology of the Armenian Academy of Sciences | Senior Researcher | 1969 - 1971 |
| Visiting Researcher | | |
| Department of Pharmacology and Physiology, Southampton University | Visiting Professor | 1996 (a month) |
| Department of Life Science, Nottingham University, UK | Visiting Professor | 1995 (3 months) |

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| SUNY at Albany, New York | Visiting Professor | 1989- 1992 |
| National Institute of Physiological Sciences, Okazaki, Japan | Visiting Researcher | 1981 (6 months) |
| Physiological Dept. of King's Collage, London, UK | Visiting Researcher | 1980 (3 months) |
| Physiological Department of Belgrade University, Yugoslavia | Visiting Researcher | 1980 (3 months) |
| Institute of Biology, Hungarian Academy of Sciences, Tihany | Visiting Researcher | 1975 (3 months) |

Specialization

- **main field: biophysics, neuroscience**
- **other fields: ionizing and non-ionizing radiobiology**
- **current research interest: intracellular signaling system in norm and pathology**

Membership of Professional Societies

Member of: International Society of Invertebrate Neurobiology (ISIN)
European Society for Neurochemistry (ESN)
International Society for Neurochemistry (ISN)
International Brain Research Organization (IBRO)
International Union of Pure and Applied Biophysics (IUPAB)
Bioelectromagnetics Society (BEMS)
WHO International Advisory Committee on Electromagnetobiology

President of: All Armenian Research Council

Editor in Chief of

Journal "Bioavailability and Bioequivalence"
Biomedical Engineering Current Research

Member of Editorial Board of:

Journal of "Electromagnetic Biology and Medicine"
Journal of "ISRN Biophysics"
Journal of "European Journal of Biophysics"
Journal of "Advances in Life Sciences"
Journal of "Applied Pharmacy"
Journal of "BBA General Subjects"
Journal of "International Dental and Medical Research"
Journal of "International Journal of Basic and Applied Sciences"
Journal of "Insights of Medical Sciences"
Journal of "Chronicles of Pharmaceutical Science Journal"
Journal of "Clinical Investigation"
Journal of "Global Drugs and Therapeutics"
Journal of "Genetic Engineering and Biotechnology"
Journal of "Basic, Applied Pharmacy and Pharmacology"

Summary of Investigations:

2013 - present - "Bioremediation as a modern and efficient method for water pollution management".

Conclusion: H₂O₂-induced bactericide properties elevated by non-critical concentration of CO₂.

2013 - present – "Agrobiotechnology and food safety"

Conclusion 1: Extremely low frequency of electromagnetic field (ELF EMF)-treated water as a tool for the increase of the growth and development of microbes and plants.

Conclusion 2: ELF EMF treatment as a novel method for the activation of bull sperm motility.

Conclusion 3: Double frequency of impedancemetric characteristics of meat as a novel method for determining its quality.

2010 - present - "Study of determination mechanism of age-dependent magneto- and microwave sensitivity of rat brain and heart muscles in norm and pathology".

Conclusion: Age-dependent dysfunction of α_3 Na⁺/K⁺ pump isoform-dependent signaling system controlling cell hydration for the decrease of magneto sensitivity of heart muscle and brain tissue hydration.

2009 - present - "The study of functional role of different Na⁺/K⁺ pump isoforms in regulation of cell hydration in norm and pathology".

Conclusion: α_3 isoform-dependent signaling system serves as a universal sensor through which the biological effect of weak environmental signals on cells and organisms are realized.

2008 - present - "Cellular and molecular mechanism of biological effect of background ionizing radiation, electromagnetic fields and infrasound frequency of mechanical vibration on plants, microbes, invertebrate and vertebrate organisms".

Conclusion: Cell bathing aqua medium serves as one of the essential primary targets for biological effects of ionizing and non-ionizing radiation.

2007 - present - "The role of the dysfunction of Na⁺/K⁺ pump in age-dependent medical disorders".

Conclusion: Age-dependent dysfunction of α_3 isoform-dependent signaling system controlling cell hydration serves as a primary mechanism for generation of age-related medical disorders.

2007 - present - "The correlation between brain cell hydration and pain sensation in mammals".

Conclusion: Cell over-hydration promotes the nociceptive signals generation, while dehydration relieves pain and has anesthetic effects on mammals.

2007 - present - "The study of cell hydration as a marker for biological effect of environmental factors".

Conclusion: Cell hydration serves as a universal and extra-sensitive sensor for environmental factors in plants, microbes and mammals.

2001 - present – "The study of the effect of cell bathing aqua structure on cell metabolic activity".

Conclusion: - The environmental factor-induced changes in both water molecules' disassociation and peroxide formation in cell bathing medium serve as messengers through which cell bathing medium could modulate its metabolic activity.

1998 - 2009 – "The study of low frequency of EMF and infrasound on physicochemical properties of water and peroxide formation".

Conclusion: EMF and infrasound have 4 and 8Hz frequency "windows" at which they have more pronounced effects on water molecules dissociation, heat fusion, electrical conductivity, gas solubility and hydrogen peroxide formation in water.

1997 - 2005 – “The nature of metabolic mechanism through which extremely weak chemical and physical factors could modulate the membrane conductive function (excitability and chemo sensitivity)”.

Conclusion: cGMP/cAMP-dependent $\text{Na}^+/\text{Ca}^{2+}$ exchanger serve as a universal and extra-sensitive membrane sensor for extremely low concentrations of biologically active substances and weak physical factors.

1994 - 2009 – “The role of the structural changes of cell bathing aqua medium in realization of biological effects of non-ionizing radiation (Electromagnetic fields and infrasound) on cells and organisms”.

Conclusion: EMF-induced changes of physicochemical properties and formation of ROS serve as main mechanisms through which non-thermal biological effects of magnetic and electrical fields on cells and organisms are realized.

1994 – 1997 - “The metabolic mechanism of the effect of NO on heart muscle contractility” (In collaboration with Prof. Robert Walker, UK).

Conclusion: The NO-induced heart muscle relaxation is due to the activation of cGMP-dependent Ca^{2+} efflux and $\text{Na}^+/\text{Ca}^{2+}$ exchange in forward mode from the cells.

1994 - 1997 - “The correlation between $\text{Na}^+/\text{Ca}^{2+}$ exchange and intracellular cAMP/cGMP”

Conclusion: The intracellular cGMP plays a key role in activation of Ca^{2+} efflux through $\text{Na}^+/\text{Ca}^{2+}$ exchange in forward mode and Ca^{2+} pump mechanisms, while intracellular cAMP activates Ca^{2+} influx by $\text{Na}^+/\text{Ca}^{2+}$ exchange in reverse mode.

1990 - 1998 - “Biological effect of extremely low concentration of transmitters on membrane functional activity” (In collaboration with David Carpenter, USA, Robert Walker, UK, Peter Usherwood, UK, Yanosh Salanki, Hungary).

Conclusion: Low concentrations, having no effect on membrane conductive properties, regulate the conductive function of membrane through the modulation of intracellular signaling system.

1989 - 1990 - “Metabolic regulation of N-cholinoreceptor affinity”

Conclusion: The Na^+ -pump inactivation leads to the increase of the number of functionally active chemoreceptors in membrane and the decrease of their affinity to ligands.

1988 - 1989 - “Correlation between Na^+/K^+ pump activity and intracellular concentration of cAMP”.

Conclusion: Pump inactivation leads to the increase of intracellular cAMP contents, while its activation has opposite effect.

1987 – 1991 - “The study of the functional role of Na^+/K^+ pump in regulation of cell sensitivity to ionizing radiation” (in collaboration with Dvoretzky A.I., Shainskaya A.M., Ukraine).

Conclusion: Ionic radiation-induced Na^+/K^+ pump inhibition leads to the increase of the number of pump units in the membrane. High affinity ouabain receptors are more sensitivity to ionizing radiation than low affinity receptors.

1986 - 1988 – “Correlation between Na^+/K^+ pump activity and $\text{Na}^+/\text{Ca}^{2+}$ exchange”.

Conclusion: There is a negative correlation between Na^+/K^+ pump and $\text{Na}^+/\text{Ca}^{2+}$ exchange activity that is realized by intracellular level of cyclic AMP.

1984 - 1992 - “The study of the role of lipid composition in regulation of membrane protein function” (In collaboration with Prof. Toshifumi Takenaka, Japan)

Conclusion: Short-chain fatty acids can be effective modulators of both ouabain-sensitive and ouabain-insensitive fractions of Na efflux from the cells, membrane excitability and chemosensitivity.

1984 - 1991 - “The ionic membrane mechanism of ionizing radiation on neuromembrane function”
Conclusion: Ca^{2+} -dependent activation of Lipase A₂ activity is the gate for ionizing radiation-induced membrane damage (In collaboration with Prof. Konstantin Karageuzyan, Armenia).

1980 – 1988 - “The role of lipid surrounding of membrane proteins in regulation of their functional activity”.

Conclusion: The negative correlation between Na^+/K^+ and $\text{Na}^+/\text{Ca}^{2+}$ exchange depends on membrane lipids' fluidity. The increase of the latter makes the mentioned correlation disappear. Decanoic acid-induced membrane fluidity leads to the activation of the agonist-induced K currents.

1980 - 1988 - “The effect of water fluxes through the membrane on membrane excitability” (In collaboration with Prof. Kiozo Koketsu, Japan)

Conclusion: Transmembrane water fluxes having activation effect on membrane current have the same direction and inactivation effect on current having opposite direction.

1977 - 1984 - “The study of the functional role of electrogenic Na^+/K^+ pump in regulation of cell volume”

Conclusion: Na^+/K^+ pump has a cell volume regulation function: its activation leads to cell shrinkage, while inactivation to cell swelling.

1980 - 1990 - “The study of functional role of pump-induced cell volume changes in regulation of membrane chemosensitivity and excitability”

Conclusion: Number of functionally active protein molecules having enzymatic chemoreceptive and ion channel forming properties depend on cell surface: surface increasing leads to elevation of the number of functionally active proteins, while shrinkage has opposite effect.

1969 - 1976 - “Regulation mechanism of pacemaker activity of Helix neurons” (In collaboration with Prof. Howard Wachtel, USA)

Conclusion: The electrogenic sodium pump-dependent cell volume changes are responsible for membrane potential's oscillation of pacemaker neurons.

1965 - 1969 - “The study of the role of cell metabolic processes in generation of membrane potential of snail neuron” (postgraduate thesis, advisor- Prof. Platon Kostyuk, Ukraine)

Conclusion: The resting potential of snail neurons consists of two components of different nature: first is purely diffused, and is due to the presence of ionic gradient on the membrane, second is generated by electrogenic sodium pump.

Selective Publications:

Books

1. "Bioelectromagnetics: Current Concepts" 2006 (Eds. S. Ayrapetyan (Armenia) & M. Markov (USA) NATO Science Series, Springer Press. 480 pages.
2. "Agricultural Biotechnology and Biosafety for Food Security in the Caucasus Region and Moldova" 2004 (Eds. K. Nichterlein (FAO, Italy) & S.N. Ayrapetyan (Armenia) Noyan Tapan Press, 175 pages.
3. "Modern Problems of Cellular and Molecular Biophysics" 2001 (Eds. Ayrapetyan S. N. (Armenia) & North A.C. T. (IUPAB, UK), 360 pages.
4. "Pain Mechanisms and Management" 1998 (Eds. Ayrapetyan S.N. (Armenia) & Apkarian A.V. (USA), IOS press, Netherlands, 390 pages.
5. "Biological Effects of Electric and Magnetic Fields – Sources and Mechanisms" volume 1, 1994 (Eds. D. O. Carpenter (USA) & S.N. Ayrapetyan (Armenia), Academic press, New York.
6. "Biological Effects of Electric and Magnetic Fields – Beneficial and Harmful Effects" volume 2, 1994 (Eds. D. O. Carpenter (USA) & S.N. Ayrapetyan (Armenia), Academic press, New York.
7. "Metabolic Regulation of Membrane Function" 1990 (Eds. Ayrapetyan S. N Arvanov V. L, Arutchyan N, I, Kalantaryan L.B., Suleymanyan M.A), Armenian Academy of Sciences Publishers, Yerevan.
8. "The Membrane Ionic Transport upon the Effect of Ionic Radiation" 1990, Dvoretzky, A. I, Ayrapetyan, S. N., Shainskaya, A. M., Chebotarev, Y. Y., Naukovo Dumka, Kiev.

Book Chapters

1. Ayrapetyan S., Amyan A., Ayrapetyan G. (2006) The Effect of Static Magnetic Fields, Low Frequency Electromagnetic Fields and Mechanical Vibration on Some Physiochemical Properties of Water. In: *Water and the Cell* (Eds: G. Pollack, I. Cameron, and D. Wheatley), Springer Press, The Netherlands, pp: 151-164.
2. Ayrapetyan S. (2006) Cell Aqua Medium as a Preliminary Target for the Effect of Electromagnetic Fields. In: *Bioelectromagnetics: Current Concepts*, S. Ayrapetyan and M. Markov, eds., NATO Security through Science Series, Springer Press, The Netherlands, pp: 31-64.
3. Heqimyan A., Narinyan L., Nikoghosyan A., Ayrapetyan S. (2015) Age-dependent magnetic sensitivity of brain and heart muscles, In: M. Markov (Ed.) *Electromagnetic Fields in Biology and Medicine*, USA, CRC Press, pp. 217-230. doi: 10.1201/b18148-15
4. Ayrapetyan S., Baghdasaryan N. Mikayelyan Y., Barseghyan S., Martirosyan V., Heqimyan A., Narinyan L., Nikoghosyan A. (2015) Cell hydration as a Marker for Nonionizing Radiation, In: M. Markov (Ed.) *Electromagnetic Fields in Biology and Medicine*, USA, CRC Press, pp. 193-215 DOI: 10.1201/b18148-1
5. Ayrapetyan S. The intracellular signaling system controlling cell hydration as a biomarker for EMF dosimetry, In: M. Markov (Ed.) *Dosimetry in Bioelectromagnetics*, USA, CRC Press, (in press).

Research Articles

2017

Narinyan L., Ayrapetyan S., (2017) Cyclic AMP-dependent signaling system is a primary metabolic target for non-thermal effect of microwaves on heart muscle hydration, *Electromagnetic Biology and Medicine*, 36(2):182-191; doi:10.1080/ 15368378.

Musheghyan G., Minasyan A., Arajyan G., Ayrapetyan S., (in press) 4Hz mechanical vibration relieves pain through Na^+/K^+ -ATPase α_3 isoform-dependent brain tissue dehydration, *International Journal of Basic and Applied Sciences*

2016

Nikoghosyan A., Heqimyan A., Ayrapetyan S. (2016) Non-thermal microwave radiation-induced brain tissue dehydration as a potential factor for brain functional impairment, *International Journal of Basic and Applied Sciences*, 5(4):188-195 doi: 10.14419/ijbas.v5i4.6430

Ayrapetyan S. (2016) Cell hydration-induced changes of membrane conductivity as a marker for estimation of biological effects of chemical and physical factors on organism, 8:e72. doi:10.4172/jbb.10000e72

Ayrapetyan G, Hayrapetyan H, Ayrapetyan S. (2016) The Effect of non-thermal microwave-treated physiological solution on isolated heart muscle of snail, *Current Chemical Biology*, 10(1):2-8.

Ayrapetyan S. (2016) (Short Communication) The nM ouabain-induced tissue dehydration as a novel diagnostic marker for neuronal pathology, *Global Drugs and Therapeutics*, 2(1):1-2. doi: 10.15761/GDT.1000108

2015

Ayrapetyan S. (2015) The Dysfunction of cAMP-dependent $\text{Na}^+/\text{Ca}^{2+}$ Exchange in Reverse Mode as a Primary Mechanism for Age-dependent Cardio-muscle Failure, *J Bioequiv Availab*, 8:1, <http://dx.doi.org/10.4172/jbb.10000e70>

Ayrapetyan S. (2015) The Dysfunction of Metabolic Controlling of Cell Hydration Precedes Warburg Phenomenon in Carcinogenesis. *J Bioequiv Availab* 7:e59. doi: 10.4172/jbb.10000e59

Ayrapetyan S.N (2015) The Role of Cell Hydration in Realization of Biological Effects of Non-ionizing Radiation (NIR). *Electromagnetic biology and medicine*. 34(3):197-210.

Narinyan L. Ayrapetyan S. (2015) Dysfunction of nM Ouabain-Induced Activation of the Signaling System Responsible for Age-Related Heart Muscle Failure. *Advances in Life Science* 5(4):73-84 DOI: 10.5923/j.als.20150504.01

Nikoghosyan A., Heqimyan A., Ayrapetyan S. (2015) Primary Mechanism Responsible for Age-Dependent Neuronal Dehydration. *International Journal of Basic and Applied Sciences*, 5(1):5-14. doi: 10.14419/ijbas.v5i1.5388

2014

Narinyan L., De J., Ayrapetyan S. (2014) Age-Dependent Increase in Ca^{2+} Exchange Magnetosensitivity in Rat Heart Muscles. *Biochemistry and Biophysics*. 2:3 Paper ID: BAB9299.

Martirosyan V., Ayrapetyan S. (2014) Comparative Study of Time-Dependent Effects of 4 and 8Hz Mechanical Vibration at Infrasound Frequency on E. coli K -12 Cells Proliferation. *Electromagnetic Biology and Medicine* 01/2014, Posted online on April 11 (doi:10.3109/15368378.2014.906449).

Deghoyan A., Nikogosyan A., Heqimyan A., Ayrapetyan S. (2014) Age-Dependent Effect of Static Magnetic Field on Brain Tissue Hydration. *Electromagnetic biology and medicine* 33(1):58-67 (DOI:10.3109/15368378.2013.783852).

Ayrapetyan S., De J., (2014) Cell Hydration as a Biomarker for Estimation of Biological Effects of Non-Ionizing Radiation on Cells and Organisms. *The Scientific World Journal*, vol. 2014, Article ID 890518, 8 pages, doi:10.1155/2014/890518.

Martirosyan V., Mikayelyan Y., Barseghyan S., Papinyan V., Ayrapetyan S. At 15 Hz ELF EMF-Treated Water Increases the Efficiency the Usage of Solonetz-Solonchak Soil and Crop yield. *Electromagnetic Biology and Medicine* (in press).

2013

Ayrapetyan S. (2013) Editorial: Cell Hydration Variation is a Primary Mechanism for Intracellular Signaling System. *J Bioequiv Availab*. 5:e35.

Ayrapetyan S., Heqimyan A., Deghoyan A. (2013) Cell Dehydration as a Mechanism of Ketamine Analgesic and Anesthetic Effects. *J Bioequiv Availab*. 5:136-141.

Ayrapetyan, S. (2013) Na⁺/K⁺ Pump α_3 Isoform is a Universal Membrane Sensor for Weak Environmental Signals. *J Bioequiv Availab*. 5:031-040. doi: 10.4172/jbb.1000131.

Baghdasaryan N.S., Mikayelyan Y.R., Nikoghosyan A.K., Ayrapetyan S.N. (2013) The Impact of Background Radiation, Illumination and Temperature on EMF-Induced Changes of Aqua Medium Properties. *Electromagnetic biology and medicine* 32(3):390-400.

Martirosyan V., Baghdasaryan N., Ayrapetyan S. (2013) Bidirectional Frequency-Dependent Effect of Extremely Low-Frequency Electromagnetic Field on E. coli K-12. *Electromagnetic Biology and Medicine* 32(3):291-300.

Martirosyan V., Baghdasaryan N., Ayrapetyan S. (2013) The Study of the Effects of Mechanical Vibration at Infrasound Frequency on [3H]-Thymidine Incorporation into DNA of E. coli K-12. *Electromagnetic Biology and Medicine* 32(1):40-47.

Deghoyan A., Simonyan R., Wachtel H., Ayrapetyan S. (2013) The Skeletal Muscle Impedancemetric Characteristics as a Marker for Detection of Functional State of Organism. *ISRN Biophysics*, 2013, Volume 2013, Article ID 948074.

Narinyan L., Ayrapetyan G., Ayrapetyan S. (2013) Age-Dependent Magnetosensitivity of Heart Muscle Ouabain Receptors. *Bioelectromagnetics* 34(4):312-22.

2012

Ayrapetyan S., Yeganyan L., Bazikyan G., Muradyan R., Arsenyan F. (2012) Na⁺/K⁺ Pump α_3 Isoform-Dependent Cell Hydration Controlling Signaling System Dysfunction as a Primary Mechanism for Carcinogenesis. *J Bioequiv Availab* 4(7):112-120.

Baghdasaryan N., Mikayelyan Y., Barseghyan S., Dadasyan E., Ayrapetyan S. (2012) The Modulating Impact of Illumination and Background Radiation on 8Hz -Induced Infrasound Effect on Physicochemical Properties of Physiological Solution. *Electromagnetic Biology and Medicine* 31(4):310-319.

Ayrapetyan S. (2012) Editorial: The Dysfunction of Metabolic Controlling Cell Hydration is a Primary Mechanism for Generation of Aging-Related Nerve Disorders. *J Bioequiv Availab* 4:4 ix- xii doi:10.4172/jbb.10000e15.

Ayrapetyan S., Heqimyan A., Nikoghosyan A. (2012) Age-Dependent Brain Tissue Hydration, Ca²⁺ exchange and their Dose-Dependent Ouabain Sensitivity. *Bioequivalence & Bioavailability* 4:060-068.

Baghdasaryan N., Mikayelyan Y., Barseghyan S., Dadasyan E., Ayrapetyan S. (2012) The Density-Dependency of Dark and Low Background Radiation Effects on Water and Water Solution Properties. *Electromagnetic biology and medicine* 31(1):87-100.

Deghoyan A., Heqimyan A., Nikoghosyan A., Dadasyan E., Ayrapetyan S. (2012) Cell Bathing Medium as a Target for Non Thermal Effect of Millimeter Waves. *Electromag. Biol. Med.* 31(2):132-42.

Heqimyan A., Narinyan L., Nikoghosyan A., Deghoyan A., Yeganyan A., Ayrapetyan S. (2012) Age Dependency of High Affinity Ouabain Receptors and their Magnetosensitivity. *The Environmentalist* 32(2):228-235.

Martirosyan V., Hovnanyan K., Ayrapetyan S. (2012) Carbon Dioxide as a Microbial Toxicity Enhancer of Some Antibacterial Agents: a New Potential Water Purification Tool. *ISRN Biophysics*, vol. 2012, Article ID 906761, 7 pages, doi:10.5402/2012/906761.

Mikayelyan Y., Baghdasaryan N., Nikoghosyan A., Barseghyan S., Ayrapetyan S. (2012) The EMF-Induced Changes in Aqua Medium's Properties Depend on Background Ionizing Radiation, Illumination and Temperature. *The Environmentalist* 32(2):179-187.

Sukiasyan A., Mikaelyan Y., Ayrapetyan S. (2012) Comparative Study of Non-Ionizing and Ionizing Radiation Effect on Hydration of Winter Wheat Seeds in Metabolic Active and Inactive States. *The Environmentalist* 32(2):188-192.

Yeganyan L., Muradyan R., Arsenyan F., Bazikyan G., Ayrapetyan S. (2012) Magnetically Treated Water at 4 Hz and 2.5 mT as a Modulator of Cisplatin Effect on Cell Hydration and Ouabain Binding of Sarcoma-180 Tissue. *The Environmentalist* 32(2):236-241.

Narinyan L., Ayrapetyan G., Ayrapetyan S. (2012) Age-Dependent Magnetosensitivity of Heart Muscle Hydration. *Bioelectromagnetics* 33(6):452-458.

Dadasyan E., Ayrapetyan G., Baghdasaryan N., Mikayelyan Y., Ayrapetyan S. (2012) The Metabolic Pathway of 4Hz Mechanical Vibration-Induced Effect on Snail Heart Muscle Contractility. *Environmentalist* 32(2):166-174.

Martirosyan V., Markosyan L., Hovhanesyan H., Hovnanyan K., Ayrapetyan S. (2012) The Frequency-Dependent Effect of ELF-EMF and MV at IS Frequency on the Growth, Division and Motility of Escherichia Coli K-12. *Environmentalist J.* 32(2):157-165 DOI: 10.1007/s10669-011-9365-2.

Ayrapetyan S. (2012) Cell hydration as a Universal Marker for Detection of Environmental Pollution. *Environmentalist J.* 32(2):210-221.

Deghoyan A., Simonyan R., Ayrapetyan S. (2012) Double-Frequency Impedance Measurement Method of Determination of Body Hydration. *The Environmentalist* 32(2):222-227

Dvoretzky A.I., Ayrapetyan S.N., Shainskaya A.M. (2012) High-affinity Ouabain Receptors: Primary Membrane Sensors for Ionizing Radiation. *The Environmentalist* 32(2):242-248.

2011

Ayrapetyan S., Heqimyan A., Musheghyan G., Deghoyan A., Narinyan L. (2011) Tissue Hydration as a Universal and Extrasensitive Marker for the Functional State of Organism. In: *Modern Aspects of Rehabilitation in Medicine*, ed. B. Harutyunyan 'BMB-PRINT', Yerevan, 16-20 (in Russian).

Heqimyan A., Deghoyan A., Ayrapetyan S. (2011) Ketamine-Induced Cell Dehydration as a Mechanism of its Analgesic and Anesthetic Effects. *Journal of International Dental and Medical Research* 4(1):42-49.

Martirosyan V., Moosavi E., Ayrapetyan S. (2011) The Study of the Effects of Carbon Dioxide-Induced Elevation of Hydrogen Peroxide Toxicity on Microbes as a Novel Tool for Water Purification. *World Journal of Microbiology & Biotechnology* 27(5):1091-1098.

2010

Ayrapetyan S., Musheghyan G., Deghoyan A. (2010) The Brain Tissue Dehydration as a Mechanism of Analgesic Effect of Hypertonic Physiological Solution in Rats. *Journal of International Dental and Medical Research* 3(2):93-98.

2009

Hovhanissyan R., Ayrapetyan S. (2009) The Effect of Extremely Low Frequency Pulsing Magnetic Field on Pain Threshold of Human Frontal Teeth. *Journal of International Dental and Medical Research* 2(1):28-32.

Moosavi E., Martirosyan V., Ayrapetyan S. (2009) A New Approach for Water Purification from Microbial Pollution. *Proceedings of the 7th IASME / WSEAS International Conference on Heat Transfer, Thermal Engineering and Environment (HTE '09)* 175-180.

Moosavi E., Martirosyan V., Ayrapetyan S. (2009) The Effect of CO₂/H₂O on Microgrowth and Elopment, Proceeding of Recent Advances In-Heat Transfer. *Journal Engineering & Environment* 32:175-180.

Ayrapetyan G., Dadasyan E., Mikayelyan E., Barseghyan S., Ayrapetyan S. (2009) Cell Bathing Medium as a Target for Non-thermal Effect of MMW on Heart Muscle Contractility. *PIERS Proceedings, The Electromagnetic Academy Moscow, Russia*, 10(3):1057-1060.

Ayrapetyan G., Hayrapetyan H., Dadasyan E., Barseghyan S., Baghdasaryan N., Mikayelyan E., Ayrapetyan S. (2009) The Non Thermal Effect of Weak Intensity Millimeter Waves on Physicochemical Properties of Water and Water Solutions. *Electromagnetic Biology and Medicine* 28(4):331-341.

2008

Ayrapetyan G., Dadasyan E., Hayrapetyan H., Ayrapetyan S. (2008) Exogenous Hydrogen Peroxide as a Messenger for Stimulation Effect of Magnetized Physiological Solution on Heart Contractility. *Bioelectromagnetics* 29(7):549-558.

Moazezi Z., Masood S., Ayrapetyan S. (2008) Low Intensity Millimeter Wave as a Potential Tool in Treatment of Diabetic Sensorymotor Polyneuropathy. *International Dental and Medical Disorders* 1(1):50-55.

2007

Hunanyan A., Ayrapetyan S. (2007) Effect of Hydrogen Peroxide on Neuron Sensitivity to Acetylcholine. *Electromagnetic Biology and Medicine* 26(3):225-233.

Ayrapetyan G., Grigoryan A., Dadasyan E., Ayrapetyan S. (2007) The Comparative Study of the Effects of 4 Hz Electromagnetic Fields, Infrasound-Treated and Hydrogen Peroxide Containing Physiological Solutions on Na Pump-Induced Inhibition of Heart Muscle Contractility. *The Environmentalist* 27(4):483-488.

2006

Amyan A., Ayrapetyan S. (2006) The Effect of EMF-pretreated Distilled Water on Barley Seed Hydration and Germination Potential. In: *Bioelectromagnetics: Current Concepts*, S. Ayrapetyan and M. Markov, eds., NATO Security through Science Series, Springer Press, The Netherlands, pp. 65-86.

Ayrapetyan S. (2006) Cell Aqua Medium as a Preliminary Target for the Effect of Electromagnetic Fields. In: *Bioelectromagnetics: Current Concepts*, S. Ayrapetyan and M. Markov, eds., NATO Security through Science Series, Springer Press, Netherlands, pp: 31-64

Baghdasaryan N., Ayrapetyan S. (2006) The effect of SMF, EHPP and Hydrogen Peroxide on the Development of Yeasts. In: *Bioelectromagnetics: Current Concepts*, S. Ayrapetyan and M. Markov, eds., NATO Security through Science Series, Springer Press, Netherlands, pp: 391-397.

Simonyan R., Ghulyan A., Ayrapetyan S. (2006) High-Frequency Device for the Measurement of specific Absorption Rate of Biotissues of High Intensity. In: *Bioelectromagnetics: Current Concepts*, S. Ayrapetyan and M. Markov, eds., NATO Science Series, Springer Press, Netherlands, pp: 291-296.

Ayrapetyan S., Hunanyan A. (2006) Comparative Study of the Effects of EMF-treated and Hydrogen Peroxide-Containing Solutions of Neuromembrane Chemosensitivity. *Biological effects of EMFs, 4th International workshop*, Ed. Kostarakis, 1:1259-1266.

2005

Ayrapetyan G., Papanyan A., Hayrapetyan H., Ayrapetyan S. (2005) Metabolic Pathway of Magnetized Fluid-Induced Relaxation Effects on Heart Muscle. *Bioelectromagnetics* 26(8):624-630.

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Organizer of the following conferences

- 2016, 6-9 September, Armenia, Garni
The 9th EMF International Workshop: Bioelectromagnetics and Water Science to Aid Environmental Health Defence
(In collaboration with International Society for Neurochemistry)
- 2011, October 12-15, Yerevan, Armenia
UNESCO/ONRG/EOARD/NFSAT Workshop "The Impact of EMF and Infrasound at Higher Background Ionizing Radiation".
(co-organizers: Office of Naval Research Global (ONRG), European Office of Aerospace Research & Development (EOARD)).
- 2008, October 24-26, Yerevan, Armenia
Symposium "Non-Conducting Membrane Mechanisms of Under-Threshold", Signal Transduction in Neurons
(co-organizer: International Brain Research Organization (IBRO)).
- 24-26 October 2008, Yerevan, Armenia
ONRG Seminar "Electromagnetic Fields: Mechanisms of Action and Health Effect".
(co-organizer: Office of Naval Research Global (ONRG) (USA)).
- 2006, August 1-4, Yerevan, Armenia
ONRG/EOARD/IUPAB Seminar "Mechanisms of Mechanotransduction in Living Cells"
(co-organizers: Office of Naval Research Global (ONRG), European Office of Aerospace Research & Development (EOARD), International Union for Pure and Applied Biophysics (IUPAB)).
- 2005, March 3-5, Yerevan, Armenia
NATO ADVANCED RESEARCH WORKSHOP "The Mechanisms of the Biological Effect of Extra High Power Pulses."

(co-organizers: North Atlantic Treaty Organization (NATO), European Office of Aerospace Research & Development (EOARD)).

- 2005, March, 1-2, Yerevan, Armenia
UNESCO/WHO Seminar "Molecular and Cellular Mechanisms of Biological Effects of EMF "
(co-organizers: World Health Organization (WHO); International Union for Pure and Applied Biophysics (IUPAB)).
- 2002, October 14-19, Yerevan, Armenia
"Regulation of Cell Hydration in Norm and Pathology" USA-Caucasus Workshop in cooperation with Dusseldorf University
(co-organizer: US Civilian Research and Development Foundation (CRDF)).
- 2000, September 24 – October 3, Yerevan, Armenia
"Cellular Mechanism of Beneficial and Harmful Effects of Electromagnetic Fields"
(co-organizers: World Health Organization (WHO), European Office of Aerospace Research & Development (EOARD), Office of Naval Research Global (ONRG) (USA)).