

Nikolay Vladimir Avtandilyan

Research Institute of Biology

Basic and Pathological Biochemistry Laboratory
Head of laboratory

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🌐 R⁶

🎓 Education

Institution	Yerevan State University
Faculty	Faculty of Biology/Department of Biochemistry
Date	2008 - 2010
Degree name	Masters

Institution	Yerevan State University
Faculty	Faculty of Biology/Department of Biochemistry
Date	2004 - 2008
Degree name	Bachelor

🎓 Scientific Rank/degree

Institution	Yerevan State University
Date	2013
Degree name	Candidate
Specialty	Biological sciences
Scientific Supervisor	Դավթյան Միսակ Արշամի
Research Topic	Ուրեոթելիկ և ոչ ուրեոթելիկ արգինազների դերը պոլիամինների կենսասինթեզում

🌐 Language skills

English Русский

📁 Work experience

Institution	Yerevan State University
Period of time	2022 till now
Rank/degree	Head of The Laboratory of Basic and Pathological Biochemistry, Institute of Biology

🔬 Scientific interests

- Biochemistry, Medical biochemistry, Molecular biology, Animal model, Experimental biology, Experimental pathology

Membership

Institution	European Association for Cancer Research
Period of time	2021 till now

Institution	Federation of European Biochemical Societies (FEBS)
Period of time	2010 till now

Publications

Article

Characterization and antibacterial/cytotoxic activity of silver nanoparticles synthesized from *Dicranum scoparium* moss extracts growing in Armenia

Gayane Semerjyan, Inesa Semerjyan, Mikayel Ginovyan, Nikolay Avtandilyan

AIMS Biophysics 2025 29–42

Article

Tissue remodeling during high-altitude pulmonary edema in rats: Biochemical and histomorphological analysis

Ruzanna A. Shushanyan, Hasmik M. Karapetyan, Edita E. Nadiryan, Nikolay V. Avtandilyan,

Anna V. Grigoryan, Anna F. Karapetyan

Tissue and Cell 2025 102727

Article

Elucidating the impact of *Hypericum alpestre* extract and L-NAME on the PI3K/Akt signaling pathway in A549 lung adenocarcinoma and MDA-MB-231 triple-negative breast cancer cells

Hayarpi Javrushyan, Mikayel Ginovyan, Tigran Harutyunyan, Smbat Gevorgyan, Zaruhi Karabekian,

Alina Maloyan, Nikolay Avtandilyan

PLOS ONE 2025 e0303736

Article

Silver nanoparticles fabricated using phycocyanin from *Arthrospira platensis*: green synthesis, physicochemical characterization, and biological activities

Ani Harutyunyan, Astghik Hambardzumyan, Liana Gabrielyan, Anush Aghajanyan, Meri Kocharyan,

Nikolay Avtandilyan, Alina Zurnachyan, Inga Bazukyan, Wojciech Kujawski, Lilit Gabrielyan

Microbial Cell Factories 2025 1-23

Article

***Hypericum alpestre* extract exhibits in vitro and in vivo anticancer properties by regulating the cellular antioxidant system and metabolic pathway of L-arginine**

Mikayel Ginovyan, Hayarpi Javrushyan, Hasmik Karapetyan, Izabela Koss-Mikołajczyk,

Barbara Kusznierevicz, Anna Grigoryan, Alina Maloyan, Agnieszka Bartoszek, Nikolay Avtandilyan

Cell Biochemistry and Function 2024 1-21

Article

The role of oxidative stress and neuroinflammatory mediators in the pathogenesis of high-altitude cerebral edema in rats

Ruzanna A. Shushanyan, Nikolay V. Avtandilyan, Anna V. Grigoryan, Anna F. Karapetyan

Respiratory Physiology and Neurobiology 2024 104286

Article

5-fluorouracil and Rumex obtusifolius extract combination trigger A549 cancer cell apoptosis: uncovering PI3K/Akt inhibition by in vitro and in silico approaches

Mikayel Ginovyan, Hayarpi Javrushyan, Svetlana Hovhannisyanyan, Edita Nadiryan, Gohar Sevoyan,

Tigran Harutyunyan, Smbat Gevorgyan, Zaruhi Karabekian, Alina Maloyan, Nikolay Avtandilyan

Scientific Reports 2024 1-16

Article

THE REGULATION OF DEAMINATION OF ADENINE COMPOUNDS IN BREAST AND LIVER IN DMBA-INDUCED BREAST CANCER RATS TREATED BY HYPERICUM ALPESTRE

G. H. PETROSYAN, S. V. MARUTYAN, N. V. AVTANDILYAN

Proceedings of the YSU B: Chemical and Biological Sciences 2024 17-26

Article

RABBITS ARGINASE I AND II: ACTIVITY AND pH SENSITIVITY OF SELF-FORMATION POLYPEPTIDES

S. M. HOVHANNISYAN, E. K. BARSEGHYAN, N. V. AVTANDILYAN

Proceedings of the YSU B: Chemical and Biological Sciences 2024 35-43

Article

Royal Jelly-Mediated Silver Nanoparticles Show Promising Anticancer Effect on HeLa and A549 Cells Through Modulation of the VEGF α /PI3K/Akt/MMP-2 Pathway

Meri Kocharyan, Syuzan Marutyan, Edita Nadiryan, Mikayel Ginovyan, Hayarpi Javrushyan,

Seda Marutyan, Nikolay Avtandilyan

Applied Organometallic Chemistry 2024 1-11

Article

Anti-cancer effect of in vivo inhibition of nitric oxide synthase in a rat model of breast cancer

Nikolay Avtandilyan, Hayarpi Javrushyan, Mikayel Ginovyan, Anna Karapetyan, Armen Trchounian

Molecular and Cellular Biochemistry 2023 261-275

Article

Anti-cancer effect of Rumex obtusifolius in combination with arginase/nitric oxide synthase inhibitors via downregulation of oxidative stress, inflammation, and polyamine synthesis

Mikayel Ginovyan, Hayarpi Javrushyan, Gayane Petrosyan, Barbara Kusznierevicz,

Izabela Koss-Mikołajczyk, Zuzanna Koziara, Monika Kuczyńska, Patrycja Jakubek, Anna Karapetyan,

Naira Sahakyan, Alina Maloyan, Agnieszka Bartoszek, Nikolay Avtandilyan

International Journal of Biochemistry & Cell Biology 2023 106396

Article

Screening revealed the strong cytotoxic activity of Alchemilla smirnovii and Hypericum alpestre ethanol extracts on different cancer cell lines

Mikayel Ginovyan, Svetlana Hovhannisyanyan, Hayarpi Javrushyan, Gohar Sevoyan, Zaruhi Karabekyan,

Narine Zakaryan, Naira Sahakyan, Nikolay Avtandilyan

AIMS Biophysics 2023 12-22

Article

The Action Mechanisms, Anti-Cancer and Antibiotic-Modulation Potential of Vaccinium myrtillus L. Extract

Mikayel Ginovyan, Anush Babayan, Anahit Shirvanyan, Alvard Minasyan, Meri Qocharyan,

Barbara Kusznierevicz, Izabela Koss-Mikołajczyk, Nikolay Avtandilyan, Anne Vejux, Agnieszka Bartoszek,

Naira Sahakyan

Discovery Medicine 2023 590-611

Article

The possible anti-inflammatory properties of hydro-ethanolic extract of Oregano

Armenuhi Moghrovyan, Mikayel Ginovyan, Nikolay Avtandilyan, Lilya Parseghyan, Armen Voskanyan,

Naira Sahakyan, Anna Darbinyan

Functional Foods in Health and Disease 2023 476-486

Article

THE CYTOTOXIC PROPERTIES OF ALCHEMILLA SMIRNOVII EXTRACT ON THE HELA CANCER CELLS VIA DOWNREGULATION OF ARGINASE ACTIVITY

S.M. Hovhannisyanyan, E.E. Nadiryan, M.V. Qocharyan, G.H. Petrosyan, G.P. Sevoyan, Z.I. Karabekyan,

H.G. Javrushyan, M.M. Ginovyan, N.V. Avtandilyan

ԵՊՀ գիտական տեղեկագիր. Քիմիա և կենսաբանություն: 2023 238-247

Article

REGULATORY EFFECTS OF RUMEX OBTUSIFOLIUS AND HYPERICUM ALPESTRE EXTRACTS ON THE QUANTITY OF IL-2 IN IN VITRO AND IN VIVO CANCER MODELS

E.E. Nadiryan, S.M. Hovhannisyanyan, M. V. Qocharyan, G.H. Petrosyan, H.G. Javrushyan, M.M. Ginovyan,

N.V. Avtandilyan

ԵՊՀ գիտական տեղեկագիր. Քիմիա և կենսաբանություն: 2023 248-257

Article

ALTERATION OF TOTAL AND MITOCHONDRIAL ATPASE ACTIVITY IN THE BREAST AND LIVER IN BREAST CANCER-INDUCED RATS

Seda V. Marutyan, Gayane A. Petrosyan, Anna R. Muradyan, Lilit A. Marutyan, Syuzan A. Marutyan,

Nikolay V. Avtandilyan

Proceedings of the YSU B: Chemical and Biological Sciences 2022 151-160

Article

Antihyperglycemic activity of L-norvaline and L-arginine in high-fat diet and streptozotocin-treated male rats

Hayarpi Javrushyan, Edita Nadiryan, Anna Grigoryan, Nikolay Avtandilyan, Alina Maloyan

Experimental and Molecular Pathology 2022 104763

Article

EVALUATION OF THE ANTIOXIDANT ACTIVITY AND THE ANTI-CANCER PROPERTIES OF ALCHEMILLA SMIRNOVII JUZ. EXTRACT ON THE HELA CANCER CELL LINE

S. Hovhannisyanyan, E. Nadiryan, M. Qocharyan, G. Sevoyan, M. Ginovyan, N. Avtandilyan

Article

The effects of NO on the urea cycle pathway in short-term intermittent hypobaric hypoxia in rats

Hayarpi Javrushyan, Nikolay Avtandilyan, Armen Trchounian

Respiratory Physiology and Neurobiology 2021 103598

Article

NEW THERAPEUTIC APPROACHES IN BREAST ANTICANCER TREATMENT USING ARMENIAN HERBAL EXTRACTS

H.G. JAVRUSHYAN, N.V. AVTANDILYAN, M.M. GINOVYAN, A.H. TRCHOUNIAN

Biological Journal of Armenia 2021 32-38

Article

The potential therapeutic effect of NG-hydroxy-nor-L-arginine in 7,12-dimethylbenz(a)anthracene-induced breast cancer in rats

Nikolay Avtandilyan, Hayarpi Javrushyan, Anahit Mamikonyan, Anna Grigoryan, Armen Trchounian

Experimental and Molecular Pathology 2019 1-10

Article

The Involvement of Arginase and Nitric Oxide Synthase in Breast Cancer Development: Arginase and NO Synthase as Therapeutic Targets in Cancer

Nikolay Avtandilyan, Hayarpi Javrushyan, Gayane Petrosyan, Armen Trchounian

BioMed Research International 2018 8696923,9

<https://www.hindawi.com/journals/bmri/2018/8696923/>

Article

THE CHANGE OF POLYAMINES AND NITRIC OXIDE QUANTITIES IN HUMAN BLOOD SERUM OF PROSTATE AND BLADDER CANCER

H. Javrushyan, N. Avtandilyan, A. Mamikonyan, A. Trchounian

Biological Journal of Armenia 2017 125-132

<http://biology.asj-oa.am/view/year/2017.html>

Article

CHANGES OF ARGINASE ACTIVITY AND ARGINASE ISOENZYME SPECTRUM IN HUMAN SERUM DURING DIFFERENT STAGES OF BREAST CANCER BEFORE SURGERY AND AFTER CHEMOTHERAPY

Mariam Sargsyan, Hermine Gevorgyan, Nikolay Avtandilyan, Susanna Karapetyan

ԵՊՀ ՈՒԳԸ գիտական հոդվածների ժողովածու 2017 176-183

Article

The change of arginase activity in blood serum during breast and prostate cancers

Avtandilyan N.V., Karapetyan S.A., Alexanyan K. A.

Electronic Journal of Natural Sciences of NAS RA 2016 12-14

<http://ejns.sci.am>

Article

The relationship between arginase activity and change of polyamines quantity in human

blood serum during breast cancer.

Avtandilyan N. V., Karapetyan S. A., Aleksanyan K. A.

Biological Journal of Armenia 2016 92-99

<http://www.flib.sci.am/eng/Biology/>

Article

Relationship between liver polyamines quantity and arginase isoenzymes activity after arginase inhibition by NG-hydroxy-L-arginine

Avtandilyan N.V., Karapetyan S.A.

Electronic Journal of Natural Sciences of NAS RA 2015 3-6

<http://ejns.sci.am>

Article

Պոլիամինների քանակության փոփոխության ուսումնասիրումը լյարդի արգինազի իզոֆերմենտների արգելակման ժամանակ

Մարիամ Սարգսյան, Նիկոլայ Ավթառդիյան, Սուսաննա Կարապետյան

ԵՊՀ ՈԻԳԸ գիտական հոդվածների ժողովածու 2015 75 - 81

<http://www.ysu.am/sss/hy>

Article

The relationship of blood serum arginase activity and polyamines quantity during human breast cancer

Avtandilyan N.V., Karapetyan S.A., Aleksanyan K.A.

New Armenian Medical journal 2015 10 - 10

http://www.ysmu.am/index.php?option=com_content&view=article&id=111&Itemid=638&...

Article

Polyamines quantity change after inhibition of rats kidney and brain arginase isoenzymes by NG-hydroxy-L-arginine.

Karapetyan S. A., Avtandilyan N. V.

Issues in theoretical and clinical medicine 2014 20-24

<http://pananarm.info/>

Article

The change of the activity of arginase isoenzymes after the intravenous injection of polyamines

Avtandilyan N.V., Karapetyan S.A., Davtyan M.A.

Electronic Journal of Natural Sciences of NAS RA 2014 9-12

<http://ejns.sci.am>

Article

The research of the role of nonureotelic arginases in polyamines biosynthesis in brain and kidney in vitro

Avtandilyan N.V.

Biological Journal of Armenia 2013 26-32

<http://www.flib.sci.am/eng/Biology/>

Article

Polyamines are noncompetitive inhibitors for nonureotelic arginases in the different tissues of rats

Avtandilyan N.V., Karapetyan S.A., Davtyan M.A.

Electronic Journal of Natural Sciences of NAS RA 2013 7-10

<http://ejns.sci.am>

Article

The change of kinetics of nonureotelic arginase under influence of exogenous polyamines in rat brain and kidney

Avtandilyan N.V., Karapetyan S.A., Davtyan M.A.

Perspectives for development of molecular and cellular biology - 3. International young scientists conference
2012 48-52

<http://www.molbiol.sci.am>

Conference

Serum arginase activity during women breast and men prostate cancers.

Nikolay V. Avtandilyan, Susanna A. Karapetyan, Knarik A. Alexanyan

Conference

The change of arginase activity in the serum of patients diagnosed with breast cancer.

Sargsyan M.S., Avtandilyan N.V., Karapetyan S.A.

Conference

Изменение аргиназной активности и количества полиаминов в сыворотке крови при злокачественных опухолях предстательной железы

Геворгян Э.Р., Автандилян Н.В., Карапетян С.А.

Conference

Arginase and NO-synthase are target enzymes in breast anticancer therapy

N. Avtandilyan, A. Trchounian

Conference

INHIBITION OF NOS ACTIVITY AS AN EFFECTIVE ANTICANCER THERAPY AGAINST 7,12-DMBA RAT MODEL OF BREAST CANCER

Mamikonyan A., Avtandilyan N., Javrushyan H., Trchounian A.

Conference

Arginase is an enzyme with real tricks in antitumor treatment of 7,12-dimethylbenz(a) anthracene induced breast cancer in rats

G.Petrosyan, N. Avtandilyan, H. Javrushyan, A. Trchounian

Conference

The potential therapeutic effect of nor-NOHA and L-NAME in breast cancer treatment

N. Avtandilyan, A. Trchounian

Conference

Oxidative stress in the 7,12-dimethylbenz[a] anthracene rat model of breast cancer: suppression by a NO-synthase inhibitor NG- nitro-L-arginine methyl ester

N.Avtandilyan, G.Petrosyan, A.Trchounian

Conference

Effect of L-arginine catabolic enzymes inhibitors on 7,12-dimethylbenz(a)anthracene-induced mammary tumors in rats

NIKOLAY AVTANDILYAN, HAYARPI JAVRUSHYAN, ANAHIT MAMIKONYAN, ARMEN TRCHOUNIAN

Conference

Suppression of tumor progression by arginase and NO-synthase combined inhibition in 7,12-dimethylbenz(a)anthracene-induced breast cancer in rats

A. Mamikonyan, H. Javrushyan, N. Avtandilyan, A. Trchounian

Conference

Antioxidant properties of some herbal extracts from Armenian flora, evaluation of their cytotoxicity and genotoxicity on HT29 cell line

Mikayel Ginovyan, Zuzanna Koziara, Monika Baranowska, Klaudia Suliborska, Patrycja Jakubek, Barbara Kusznierevicz, Nikolay Avtandilyan, Naira Sahakyan, Agnieszka Bartoszek

Conference

High antioxidant and cytotoxic activity of Rumex obtusifolius seed extract and metabolomic characterization of its bioactive phytochemicals.

M. Ginovyan, Z. Koziara, M. Baranowska, I. Koss-Mikolajczyk, K. Suliborska, P. Jakubek, B. Kusznierevicz, N. Avtandilyan, N. Sahakyan, A. Bartoszek

Conference

Deamination of adenine compounds in different organs of rats with DMBA-induced cancer

G. Petrosyan, N. Avtandilyan, S. Marutyan

Conference

Upregulation of nitric oxide quantity by L-norvaline and L-arginine in high-fat diet and Streptozotocin-treated male rats

E. Nadiryan, H. Javrushyan, N. Avtandilyan, A. Maloyan

Conference

Hypericum alpestre combined with arginase and NOS inhibitors shows antiproliferative activity in the rat breast cancer model

H. Javrushyan, N. Avtandilyan, S. Hovhannsiyan, M. Qocharyan, M. Ginovyan, A. Maloyan

Conference

Anti-inflammatory and immunostimulatory effect of Hypericum alpestre combined with arginase and NOS inhibitors in the rat breast cancer model

H. Javrushyan, E. Nadiryan, G. Petrosyan, M. Ginovyan, A. Maloyan, N. Avtandilyan

Conference

New therapeutic approach in breast anti-cancer treatment using a combination of Rumex obtusifolius extract and L-arginine pathway inhibitors

N. Avtandilyan, H. Javrushyan, A. Karapetyan, M. Ginovyan

Conference

Evaluation of immunostimulatory effect of combination of herbal extracts and chemotherapeutic drugs by quantitative alteration of interleukin-2

H. Javrushyan, G. Sevoyan, M. Ginovyan, Z. Karabekian, N. Avtandilyan

Conference

BIOLOGICAL ACTIVITY OF ARMENIAN HONEY BEES' VENOM AND LACTIC ACID BACTERIA ISOLATED FROM HONEYBEES' GUT

Anahit Sahakyan, Nelli Vardazaryan, Mery Qocharyan, Nikolay Avtandilyan, Inessa Semerjyan,

Inga Bazukyan

Conference

The combination of herbs and chemotherapeutic agents inhibits tumor progression via down-regulation of the TNF α -VEGF α /PI3K/Akt/NOS/COX-2-MMP-2 pathway in DMBA-induced breast cancer in rats

N. Avtandilyan, M. Kocharyan, S. Hovhannisyanyan, S. Gevorgyan, H. Javrushyan, M. Ginovyan, A. Maloyan

Conference

From metabolomics to medicine: exploiting the functional potential of plant extracts in human health, with emphasis on Ribes nigrum, Ficus carica and Vitis vinifera

S. Tadevosyan, M. Ginovyan, N. Avtandilyan, A. Shirvanyan, A. Bartoszek, N. Sahakyan

Conference

From agro-bio-waste to application: the power of bilberry aerial part extract as anti-cancer and antibiotic-modulating agent

N. Sahakyan, M. Ginovyan, A. Babayan, A. Shirvanyan, A. Minasyan, B. Kusznierevich,

I. Koss-Mikołajczyk, N. Avtandilyan, A. Bartoszek

Conference

Harnessing plant extracts to overcome antibiotic resistance: leaf extracts of Ribes nigrum, Ficus carica, and Vitis vinifera as resistance modifiers of E. coli strains

M. Ginovyan, A. Shirvanyan, S. Tadevosyan, A. Babayan, B. Kusznierevich, N. Avtandilyan, A. Bartoszek,

N. Sahakyan

Conference

The morphofunctional changes in rat's liver under conditions of 7, 12-DMBA-induced breast cancer after NG-Nitro-L-arginine methyl ester treatment

A. Grigoryan, R. Shushanyan, N. Avtandilyan, A. Karapetyan

Conference

Antibacterial, hemolytic and anticancer activities of silver nanoparticles biosynthesized by phycocyanin extracted from Spirulina

L. Gabrielyan, A. Harutyunyan, A. Hambardzumyan, A. Aghajanyan, N. Avtandilyan, L. Gabrielyan

Conference

ANTI-CANCER PROPERTIES AND POTENTIAL MOLECULAR MECHANISMS OF COMBINATIONS OF HERBAL EXTRACTS AND CHEMOTHERAPEUTIC AGENTS

N. Avtandilyan, H. Javrushyan, H. Karapetyan, A. Grigoryan, E. Nadiryan, G. Sevoyan, M. Ginovyan,

A. Maloyan

Conference

Enhanced anti-inflammatory and antiproliferative effects of Inula helenium herbal extract and arginase inhibitor in breast cancer in vivo study

E. Nadiryan, H. Javrushyan, N. Avtandilyan

Conference

Investigating the anticancer advantages of pairing Rumex obtusifolius herb extract with 5-fluorouracil against breast cancer in vivo

S. Hovhannisyan, M. Ginovyan, N. Avtandilyan

Conference

Cytotoxic and prooxidant properties of ethanolic extract from Hypericum alpestre and metabolomic profiling of its bioactive phytochemicals

M. Ginovyan, I. Koss-Mikołajczyk, B. Kusznerewicz, N. Avtandilyan, A. Bartoszek

Conference

Interconnection between hyperglycemia, cancer, and arginine metabolism: a unified therapeutic approach

E. Nadiryan, H. Javrushyan, N. Avtandilyan

Conference

Bee Venom as a Source of Novel Antimicrobial Agents: A Regional Study from Armenia

Inesa Semerjyan, Melanya Grigoryan, Svetlana Hovhannisyan, Nikolay Avtandilyan, Peter Vandamme, Inga Bazukyan

Conference

Emodin inhibits HIF-1 α expression in MDA-MB- 231 cells via suppression of the PI3K/Akt/mTOR pathway

S. Hovhannisyan, M. Ginovyan, N. Avtandilyan

Conference

Hypericum alpestre Inhibits PI3K/Akt/mTOR and HIF-1 α Signaling While Activating Caspase-3 in MDA-MB-231 Cells: A Comparative Study with Dactolisib and Doxorubicin

H. Javrushyan, N. Avtandilyan, A. Maloyan

Conference

Synergistic Inhibition of HIF1 α and PI3K/Akt Signaling and Activation of Caspase3 by Emodin and Metformin Combination in MDAMB231 Cells

M. Kocharyan, H. Javrushyan, N. Avtandilyan

Conference

Phytochemicals and Chemotherapy: Present and Future Strategy

Hayarpi Javrushyan, Edita Nadiryan, Nikolay Avtandilyan, Alina Maloyan

Conference

Modulating Bone Marrow Microenvironment in Breast Cancer: Impact of Combined Chemotherapy and Herbal Extracts

Edita Nadiryan, Gayane Petrosyan, Nikolay Avtandilyan, Hayarpi Javrushyan

Conference

Hypericum alpestre Extract and L-NAME Suppress PI3K/Akt Pathway and Enhance Apoptosis in Lung and Breast Cancer Cells

Svetlana Hovhannisyan, Gayane Petrosyan, Hayarpi Javrushyan, Mikayel Ginovyan, Nikolay Avtandilyan

Conference

The Impact of *Hypericum alpestre* and *Rumex obtusifolius* on Proline Metabolism in Breast Cancer Model Animals

Hasmik Karapetyan, Ernestina Barseghyan, Nikolay Avtandilyan

Conference

Hypoxia-Linked Alterations in Arginine Metabolism and Oxidative Stress in the Bone Marrow during Breast Cancer Progression and Treatment

Hayarpi Javrushyan, Edita Nadiryan, Svetlana Hovhannisyan, Nikolay Avtandilyan
