

Anait Veller Vassilian

Research Institute of Biology

Group for Biochemical Conversion of Organic Waste and Microbiological Production

Senior researcher

☎ 48-78

✉ anaitvassilian@ysu.am



Education

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|--------------------|--------------------------|
| Institution | Yerevan State University |
| Faculty | Biology |
| Date | 1979 - 1984 |
| Degree name | Qualified specialist |

Scientific Rank/degree

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|--------------------|--------------------------|
| Institution | Yerevan State University |
| Date | 2005 |
| Degree name | Associate professor |
| Specialty | Biological sciences |

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| Institution | Yerevan State University |
| Date | 1993 |
| Degree name | Candidate |
| Specialty | Biological sciences |
| Scientific Supervisor | Prof, Armen Trchounian |
| Research Topic | ATPase activity of membranes of unc and trk mutants of anaerobically grown Escherichia coli |

Language skills

Русский English

Work experience

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| Institution | Yerevan State University |
| Period of time | 2005 till now |
| Rank/degree | Associate Professor at the Department of Ecology and Nature Protection |

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|-----------------------|------------------------------------------------------------------------|
| Institution | Yerevan State University |
| Period of time | 2000 - 2005 |
| Rank/degree | Assistant Professor at the Department of Ecology and Nature Protection |

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|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Institution | The University of Chicago IL, USA |
| Period of time | 1998 - 1998 |
| Rank/degree | Researcher at the Department of Molecular Genetics and Cell Biology /MGCB/ University of Chicago, IL USA /Prof. M. Fonstein/ IHFSPO UNESCO |
| Institution | The University of Chicago IL, USA |
| Period of time | 1995 - 1996 |
| Rank/degree | Researcher at the Department of Molecular Genetics and Cell Biology /MGCB/ University of Chicago, IL USA /Prof. B. Strauss/ IHFSPO UNESCO |
| Institution | The University of Chicago IL, USA |
| Period of time | 1991 - 1992 |
| Rank/degree | Researcher at the Department of Molecular Genetics and Cell Biology /MGCB/ University of Chicago, IL USA /Prof. B. Strauss/ Intenational Human Frontier Science Program |
| Institution | Yerevan State University |
| Period of time | 1988 - 2000 |
| Rank/degree | Senior laboratory assistant at the Department of Plants Physiology and Anatomy |
| Institution | Yerevan State University |
| Period of time | 1984 - 1988 |
| Rank/degree | Laboratory assistant at the Department of Plants Physiology and Anatomy |

Scientific interests

- Biochemistry, Environmental Science, Microbiology and Biotechnology

Participation in international conferences and seminars

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|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| 01/11/1991 - 01/09/1992 | Researcher at the Department of Molecular Genetics and Cell Biology, Prof. B. Strauss University of Chicago United States of America (the) |
| 01/12/1995 - 01/03/1996 | International Human Frontier Science Program Fellowship, UNESCO University of Chicago United States of America (the) |
| 01/09/1998 - 01/12/1998 | International Human Frontier Science Program Fellowship, UNESCO University of Chicago United States of America (the) |

13/06/2016 - 21st WHEC Congress in Zaragoza, Spain
16/06/2016 Spain

30/06/2022 - 2nd FEMS Conference on Microbiology, Belgrade, Serbia
02/07/2022 Serbia

09/07/2023 - FEMS2023 Congress in Hamburg, Germany
13/07/2023 Germany

Publications

Article

Biotechnological potential of spent coffee grounds for biohydrogen production by Escherichia coli

Liana Vanyan, Hayarpi Aghekyan, Anait Vassilian, Anna Poladyan, Karen Trchounian

International Journal of Hydrogen Energy 2025 1121-1131

Article

Role of the FhIA transcriptional activator in metabolic changes in Escherichia coli during fermentation of mixed carbon sources at acidic pH

Heghine Gevorgyan, Marine Parsadanyan, Anait Vassilian, Anna Poladyan, Karen Trchounian

Biochimie 2025 1-9

Article

Microbial Valorization of Sunflower Husk for Sustainable Biohydrogen and Biomass Production

Llana Vanyan, Akerke Toleugazykyzy, Kaiser Yegizbay, Ayaulym Daniyarova, Lyudmila Zuloyan, Gayane Mikoyan, Anait Vassilian, Anna Poladyan, Kairat Bekbayev, Karen Trchounian

Energies 2025 3885

Article

Escherichia coli FocA/B-dependent H⁺ and K⁺ fluxes: Influence of exogenous versus endogenous formate

Lilit Grigoryan, Anush Babayan, Anait Vassilian, Anna Poladyan, Gary Sawers, Karen Trchounian

Biophysical Reports 2025 100225

Article

Biomass and bioethanol production from pretreated mixed fruit peel hydrolysate using Saccharomyces cerevisiae strains at different pH and oxygen conditions

Anahit Shirvanyan, Ayaulym Daniyarova, Anait Vassilian, Anna Poladyan, Gopalakrishnan Kumar, Duman Orynbekov, Kairat Bekbayev, Karen Trchounian

BMC Biotechnology 2025 136

Article

Gold nanoparticles activate hydrogenase synthesis and improve heterotrophic growth of Ralstonia eutropha H16

Tatevik Manutsyan, Syuzanna Blbulyan, Anait Vassilian, Tatiana Semashko, Gayane Kirakosyan,

Lilit Gabrielyan, Karen Trchounian, Anna Poladyan

Article

Growth and hydrogen production by *Escherichia coli* during utilization of sole and mixture of sugar beet, alcohol, and beer production waste

Kairat Bekbayev, Satenik Mirzoyan, Akerke Toleugazykyzy, Dinara Tlevlessova, Anait Vassilian, Anna Poladyan, Karen Trchounian

Biomass Conversion and Biorefinery 2024 909-919

Article

Role of the *Escherichia coli* FocA and FocB formate channels in controlling proton/potassium fluxes and hydrogen production during osmotic stress in energy-limited, stationary phase fermenting cells

Anush Babayan, Anait Vassilian, Anna Poladyan, Karen Trchounian

Biochimie 2024 91-98

Article

Proton conductance and regulation of proton/potassium fluxes in *Escherichia coli* FhIA-lacking cells during fermentation of mixed carbon sources

Heghine Gevorgyan, Anna Poladyan, Karen Trchounian, Anait Vassilian

Archives of Biochemistry and Biophysics 2024 109999

Article

L-amino acids affect the hydrogenase activity and growth of *Ralstonia eutropha* H16

Meri Iskandaryan, Syuzanna Blbulyan, Mayramik Sahakyan, Anait Vassilian, Karen Trchounian,

Anna Poladyan

AMB Express 2023 33

Article

Osmotic stress as a factor for regulating *E. coli* hydrogenase activity and enhancing H₂ production during mixed carbon sources fermentation

Anush Babayan, Anahit Vassilian, Karen Trchounian

AIMS Microbiology 2023 724-737

Article

The influence of hydrogen production on the formation of metabolic pathways and regulation of Δ pH in *Escherichia coli*

Heghine Gevorgyan, Anait Vassilian, Anna Poladyan, Karen Trchounian

International Journal of Hydrogen Energy 2022 40264-40274

Article

Metabolic pathways and Δ pH regulation in *Escherichia coli* during the fermentation of glucose and glycerol in the presence of formate at pH 6.5: the role of FhIA transcriptional activator

Heghine Gevorgyan, Satenik Khalatyan, Anait Vassilian, Karen Trchounian

FEMS Microbiology Letters 2022 1-9

Article

Coffee silverskin as a substrate for biobased production of biomass and hydrogen by *Escherichia coli*

Satenik Mirzoyan, Hayarpi Aghekyan, Liana Vanyan, Anait Vassilian, Karen Trchounian

Article

The role of Escherichia coli FhIA transcriptional activator in generation of proton motive force and FOF1-ATPase activity at pH 7.5

Heghine Gevorgyan, Satenik Khalatyan, Anait Vassilian, Karen Trchouian

IUBMB Life (International Union of Biochemistry and Molecular Biology Life) 2021 883-892

Article

Escherichia coli Dcu C4-dicarboxylate transporters dependent proton and potassium fluxes and FOF1-ATPase activity during glucose fermentation at pH 7.5

Lusine Karapetyan, Gayane Mikoyan, Anait Vassilian, Antonio Valle, Jorge Bolivar, Armen Trchounian,

Karen Trchounian

Bioelectrochemistry 2021 107867

Article

THE ROLE OF PROTON ATPASE SPECIFIC INHIBITOR N,N'-DICYCLOHEXYLCARBODIIMIDE AND EXTERNAL FORMATE CONCENTRATION ON E. COLI GROWTH DURING MIXED CARBON SOURCES FERMENTATION AT DIFFERENT PHs

Heghine Kh. Gevorgyan, Anait V. Vassilian, Karen A. Trchounian

Proceedings of the YSU B: Chemical and Biological Sciences 2021 67-74

Article

External succinate and potassium ions influence Dcu dependent FOF1-ATPase activity and H⁺ flux of Escherichia coli at different pHs

G. Mikoyan, L. Karapetyan, A. Vassilian, A. Trchounian, K. Trchounian

Journal of Bioenergetics and Biomembranes 2020 377-382

Article

Hydrogen production by Escherichia coli using brewery waste: optimal pretreatment of waste and role of different hydrogenases

Anna Poladyan, Karen Trchounian, Anait Vassilian, Armen Trchounian

Renewable Energy 2018 931-936

<http://www.journals.elsevier.com/renewable-energy>

Article

Prolongation of H₂ production during mixed carbon sources fermentation in E. coli batch cultures: New findings and role of different hydrogenases

Satenik Mirzoyan, Anait Vassilian, Armen Trchounian, Karen Trchounian

International Journal of Hydrogen Energy 2018 8739-8746

[https://www.sciencedirect.com/journal/international-journal-of-hydrogen-energy/...](https://www.sciencedirect.com/journal/international-journal-of-hydrogen-energy/)

Article

Կրթական ծրագրերում մանրէների բազմազանության և Էկոլոգիայի հիմնահարցերի ընդգրկման անհրաժեշտության մասին

Ա.Վ. Վասիլյան, Հ.Հ. Փանոսյան, Ա.Հ. Թռչունյան

Բնագետ 2016 36-40

<http://www.ysu.am/bnaget>

Article

Hydrogen production by Escherichia coli during glucose fermentation: Effects of oxidative and reductive routes used by the strain lacking hydrogen oxidizing hydrogenases 1 (hya) and 2 (hyb)

Varduhi Abrahamyan, Anna Poladyan, Anait Vassilian, Armen Trchounian

International Journal of Hydrogen Energy 2015 7459-7464

<http://www.journals.elsevier.com/international-journal-of-hydrogen-energy/>

Article

Oxidative and Reductive Routes of Glycerol and Glucose Fermentation by Escherichia coli Batch Cultures and Their Regulation by Oxidizing and Reducing Reagents at Different pHs

Anna Poladyan, Anait Vassilian, Armen Trchounian, Arev Avagyan

Current Microbiology 2013 49-55

<http://www.springer.com/life+sciences/microbiology/journal/284>

Article

Multiple and reversible hydrogenases for hydrogen production by Escherichia coli: dependence on fermentation substrate, pH and the F₀F₁-ATPase

Karen Trchounian, Anna Poladyan, Anait Vassilian, Armen Trchounian

Critical Reviews in Biochemistry and Molecular Biology 2012 236-249

<http://www.tandfonline.com/toc/ibmg20/current>

Conference

Growth and Hydrogen Production Properties of Escherichia Coli During Fermentation of the Mixture of Glucose, Glycerol and Formate at Di

K.Trchounian, S. Mirzoyan, P. Romero-Pareja, M. Coello, A. Vassilian, A. Trchounian

Conference

COMPENSATORY H₂ PRODUCING ACTIVITY OF ESCHERICHIA COLI HYDROGENASES DURING MIXED CARBON SOURCES FERMENTATION

K. Trchounian, S. Mirzoyan, A. Vassilian, A. Trchounian

Conference

Effect of Hydrogenases on the F₀F₁-ATPase Activity in Escherichia coli During Fermentation of Glucose, Glycerol and Formate

H. Gevorkyan, A. Vassilian, G. Sawers, A. Trchounian, K. Trchounian

Conference

H₂ production by Escherichia coli during utilization of lactose or mixture of lactose and glycerol: prolongation of production and role of hydrogenases 1 and 2 at different pH

Satenik Mirzoyan, Anait Vassilian, Armen Trchounian, Karen Trchounian

Conference

Relationship of dcu transport system and proton ATPase during glycerol fermentation

L. Karapetyan, A. Valle, J. Bolivar, A. Vassilian, A. Trchounian, K. Trchounian

Conference

Simultaneous Utilization of Glucose and Glycerol in the Presence of External Formate by E. coli at Slightly Alkaline Ph

Karen Trchounian, Armen Trchounian, Heghine Gevorgyan, Anait Vassilian

Conference

The Role of Escherichia coli FOF1 -ATPase and Hydrogenases on Specific Growth Rate During Glucose Fermentation

Karen Trchounian, Hripsime Petrosyan, Liana Vanyan, Armen Trchounian, Anait Vassilian

Conference

Proton/potassium Fluxes Depend on Glucose Concentration in E. coli at pH 7.5

Liana Vanyan, Anait Vassilian, Karen Trchounian

Conference

Is FHL Complex Responsible for Sensing Glucose Concentration?

Liana Vanyan, Anait Vassilian, Karen Trchounian

Conference

Optimization of Fruits Waste Pretreatment for E. coli Growth and H₂ Production

S. Mirzoyan, A. Vassilian, A. Poladyan, K. Trchounian

Conference

WINE GRAPE WASTE APPLICATION FOR ESCHERICHIA COLI BIOMASS AND H₂ PRODUCTION

Syuzanna Blbulyan, Lusine Baghdasaryan, Satenik Mirzoyan, Anahit Vassilian, Tatiana Semashko,

Anna Poladyan

Conference

The contribution of proton ATPase in E. coli growth during mixed carbon sources fermentation at different pHs

Heghine Gevorgyan, Lilit Baghdasaryan, Anait Vassilian, Karen Trchounian

Conference

Role of E. coli potassium transporters in proton / potassium flux during mixed carbon fermentation at pH 7.5

Heghine Gevorgyan, Mariam Danielyan, Anait Vassilian, Karen Trchounian

Conference

ՕՐԳԱՆԱԿԱՆ ԹԱՓՈՆՆԵՐԻՑ ԿԵՆՍԱԶԱՆԳՎԱԾԻ ԵՎ ԿԵՆՍԱԷՆԵՐԳԻԱՅԻ ՓՈԽԱԿԵՐՊՄԱՆ ԿԵՆՍԱՔԻՄԻԱԿԱՆ ՈՐԴԻՆԵՐԻ ԲՆՈՒԹԱԳՐՈՒՄԸ ԵՎ ՕՔՍԻԴԱԿԵՐԱԿԱՆԳՈՂԱԿԱՆ ԿԱՐԳԱՎՈՐՈՒՄԸ
Փոլադյան Ա.Ա., Գևորգյան Հ.Խ., Վանյան Լ.Մ., Բաբայան Ա.Ռ., Բաղդասարյան Լ.Հ., Վասիլյան Ա.Վ.,

Պետրոսյան Հ.Հ.

Conference

Characteristic effects of gold nanoparticles on growth and H₂ metabolism of Ralstonia eutropha H16 and Escherichia coli

Anna Poladyan, Tatev Manutsyan, Meri Iskandaryan, Syuzanna Blbulyan, Anait Vassilian,

Tatiana Semashko

Conference

A NOVEL COST-EFFECTIVE APPROACH FOR PRODUCTION OF HYDROGENASE ENZYMES AND MOLECULAR HYDROGEN FROM WHEY-BASED BY-PRODUCTS

Anna Poladyan, Meri Iskandaryan, Ofelya Karapetyan, Ela Minasyan, Anait Vassilian, Karen Trchounian,

Garabed Anatronikian

Conference

BIOTECHNOLOGICAL POTENTIAL OF SPENT COFFEE GROUNDS FOR LARGE-SCALE HYDROGEN PRODUCTION

Liana Vanyan, Anait Vassilian, Anna Poladyan, Karen Trchounian

Conference

Influence of acidic pH on the interaction between proton ATPase and enzymes responsible for molecular hydrogen generation

Karen Trchounian, Heghine Gevorgyan, Lilit Baghdasaryan, Anait Vassilian, Anna Poladyan

Conference

Formate-hydrogen lyase has a significant role in proton motive force generation in Escherichia coli at acidic pH during mixed carbon fermentation

Heghine Gevorgyan, Anait Vassilian, Anna Poladyan, Karen Trchounian

Conference

Understanding the Role of Escherichia coli Hydrogenase-2 subunits in proton flux under different glucose concentrations

Liana Vanyan, Anait Vassilian, Anna Poladyan, Karen Trchounian

Conference

The role of the Escherichia coli FocA and FocB formate channels in proton flux during fermentation of mixed carbon sources

Anush Babayan, Anait Vassilian, Anna Poladyan, Karen Trchounian

Conference

Bioconversion of fruit waste into bioethanol and single-cell protein using Saccharomyces cerevisiae strains

Anahit Shirvanyan, Ayaulym Daniyarova, Anait Vassilian, Anna Poladyan, Kumar Gopalakrishnan,

Duman Orynbekov, Kairat Bekbayev, Karen Trchounian
