

Research Institute of Biology

Laboratory of Microbiology, Bioenergetics and Biotechnology

Researcher

Education

Institution	Yerevan State University
Faculty	Faculty of Biology, Department of Biochemistry, Microbiology and Biotechnology
Date	2018 - 2021
Degree name	PhD student

Institution	Yerevan State University
Faculty	Faculty of Biology, Department of Biochemistry, Microbiology and Biotechnology
Date	2016 - 2018
Degree name	Masters

Institution	Yerevan State University
Faculty	Faculty of Biology, Department of Biochemistry
Date	2012 - 2016
Degree name	Bachelor

Scientific Rank/degree

Institution	Yerevan State University
Date	2021
Degree name	Candidate
Specialty	Biological sciences
Scientific Supervisor	Trchounian Karen Armen
Research Topic	The interaction between proton FOF1-ATPase and formate-hydrogen lyase during fermentation of a mixture of different carbon sources

Language skills

Հայերեն English Русский

Work experience

Institution	YSU, Faculty of Biology, Biology research institute, Laboratory of Microbiology, Bioenergetics and Biotechnology
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Period of time	2023 till now
Rank/degree	Scientific Researcher
Institution	YSU, Faculty of Biology, Biology research institute, Laboratory of Basic and Pathological Biochemistry, Faculty of Biology, YSU
Period of time	2021 - 2023
Rank/degree	Junior Scientific Researcher
Institution	YSU, Faculty of Biology, Department of Biochemistry, Microbiology and Biotechnology
Period of time	2021 - 2023
Rank/degree	Administrative assistant
Institution	YSU, Faculty of Biology, Department of Biochemistry, Microbiology and Biotechnology
Period of time	2021 till now
Rank/degree	Assistant Professor
Institution	YSU, Faculty of Biology, Biology research institute, Laboratory of Biochemistry
Period of time	2019 - 2021
Rank/degree	Laboratory assistant
Institution	YSU, Faculty of Biology, Department of Biochemistry, Microbiology and Biotechnology
Period of time	2018 - 2021
Rank/degree	PhD student



Participation in international conferences and seminars

30/06/2022 - 02/07/2022	FEMS Conference on Microbiology Serbia
20/10/2021 - 22/10/2021	Biotechnology: Science and Practice Innovation and Business Armenia
08/08/2021 - 12/08/2021	TUBA World Conference on Energy Science and Technology Turkey
07/06/2021 - 11/06/2021	XI International Scientific Conference «Microbial biotechnologies: fundamental and applied aspects» - Belarus

20/06/2021 -	World Microbe Forum
24/06/2021	United States of America (the)
26/11/2020 -	THE 7TH INTERNATIONAL RENEWABLE AND CLEAN ENERGY CONFERENCE
27/11/2020	Armenia
29/10/2020 -	V INTERNATIONAL CONFERENCE OF BIOTECHNOLOGY AND HEALTH
31/10/2020	Armenia
16/11/2020 -	Microbial Stress 2020
18/11/2020	Italy
11/11/2019 -	Modern trends in Biochemistry, Radiation and Space Biology: The Great Sissakian
13/11/2019	and importance of his research Yerevan State University Armenia
06/07/2019 -	The 44th Congress of the Federation of European Biochemical Societies
11/07/2019	Poland
07/07/2018 -	The 43rd Congress of the Federation of European Biochemical Societies
12/07/2018	Czech Republic (the)

Membership

Institution	Armenian Microbiological Association (FEMS member society)
Period of time	2018 till now
Institution	All-Armenian Association of Biochemists, FEBS constituent society
Period of time	2018 till now
Institution	ArMicro ASM student chapter, Yerevan, Armenia
Period of time	2018 till now
Institution	American Society for Microbiology (ASM)
Period of time	2017 till now
Institution	European Federation of Biotechnology (EFB)
Period of time	2021 till now

Publications

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***FOF1-ATPase mediates regulation of fermentation and energy metabolism at pH 5.5**

Heghine Gevorgyan, Karen Trchounian

Scientific Reports 2025 35873

*Article***Regulation of metabolism and proton motive force generation during mixed carbon fermentation by an *Escherichia coli* strain lacking the FOF1-ATPase**

Heghine Gevorgyan, Lilit Bagdasaryan, Karen Trchounian

Biochimica et Biophysica Acta - Bioenergetics 2024 149034

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

Heghine Gevorgyan, Anna Poladyan, Karen Trchounian, Anait Vassilian

Archives of Biochemistry and Biophysics 2024 109999

*Article***Propionic and valproic acids have an impact on bacteria viability, proton flux and ATPase activity**

Heghine Gevorgyan, Tamara Abaghyan, Margarita Mirumyan, Konstantin Yenkoyan, Karen Trchounian

Journal of Bioenergetics and Biomembranes 2023 397-408

*Article***The influence of hydrogen production on the formation of metabolic pathways and regulation of Δp H in *Escherichia coli***

Heghine Gevorgyan, Anait Vassilian, Anna Poladyan, Karen Trchounian

International Journal of Hydrogen Energy 2022 40264-40274

*Article***Metabolic pathways and Δp H regulation in *Escherichia coli* during the fermentation of glucose and glycerol in the presence of formate at pH 6.5: the role of FhlA transcriptional activator**

Heghine Gevorgyan, Satenik Khalatyan, Anait Vassilian, Karen Trchounian

FEMS Microbiology Letters 2022 1-9

*Manual***FERMENTATION**

HEGHINE GEVORGYAN, KAREN TRCHOUNIAN

2022 76

*Article***Interdependence of *Escherichia coli* formate dehydrogenase and hydrogen-producing hydrogenases during mixed carbon sources fermentation at different pHs**

Karen Trchounian, Heghine Gevorgyan, Gary Sawers, Armen Trchounian

International Journal of Hydrogen Energy 2021 5085-5099

Article

The role of *Escherichia coli* FhlA 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

INDUSTRIAL WASTE-BASED HYDROGEN PRODUCTION TECHNOLOGY: THE PROFITABILITY FOR INDUSTRIAL WASTE GENERATORS

Liana Vanyan, Heghine Gevorgyan, Hripsime Petrosyan, Armen Trchouian, Karen Trchouian

ՎԵՐԱԿԱՆԳՆՎՈՂ ԵՎ ՄԱՔՈՒՐ ԷՆԵՐԳԻԱՅԻ 7-ՐԴ ՄԻԶԱՉԳԱՅԻՆ ՀԱՄԱԺՈՂՈՎԻ ՆՅՈՒԹԵՐ 2021 56-59

Article

THE EFFECT OF MOLECULAR HYDROGEN GENERATION ON THE METABOLIC NETWORK FORMATION DURING FERMENTATION OF MIXED CARBON SOURCES IN *Escherichia coli* AT pH 7.5

Heghine Gevorgyan, Armen Trchouian, Karen Trchouian

ՎԵՐԱԿԱՆԳՆՎՈՂ ԵՎ ՄԱՔՈՒՐ ԷՆԵՐԳԻԱՅԻ 7-ՐԴ ՄԻԶԱՉԳԱՅԻՆ ՀԱՄԱԺՈՂՈՎԻ ՆՅՈՒԹԵՐ 2021 60-64

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. Trchouian

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

Manual

Մանրեների կենսաքիմիա և կենսատեխնոլոգիա. լաբորատոր աշխատանքներ
Կարեն Թոշովսյան, Հեղինե Գևորգյան, Լուսինե Կարապետյան

2021 130

Article

Formate and potassium ions affect *Escherichia coli* proton ATPase activity at low pH during mixed carbon fermentation

Heghine Gevorgyan, Armen Trchouian, Karen Trchouian

IUBMB Life (International Union of Biochemistry and Molecular Biology Life) 2020 915-921

Article

THE UTILIZATION OF CARBON SOURCES MIXTURE (GLUCOSE, GLYCEROL AND FORMATE) AND GENERATION OF FERMENTATION END-PRODUCTS BY *ESCHERICHIA COLI*

H. Kh. GEVORGYAN

Proceedings of the YSU B: Chemical and Biological Sciences 2020 55-62

Article

Understanding the role of *Escherichia coli* hydrogenases and formate dehydrogenases in the FOF1-ATPase activity during the mixed acid fermentation of mixture of carbon sources

Heghine Gevorgyan, Armen Trchouian, Karen Trchouian

IUBMB Life (International Union of Biochemistry and Molecular Biology Life) 2018 1040-1047

Conference

The impact of FOF1-ATPase on H₂ producing hydrogenase activity in Escherichia coli during mixed carbon sources fermentation

H. Gevorgyan, S. Mirzoyan, A. Trchounian, K. Trchounian

Conference

Investigation of Escherichia coli bacteria growth during fermentation of mixed carbon sources at different external formate concentration

HEGHINE GEVORGYAN, ARMEN TRCHOUNIAN, KAREN TRCHOUNIAN

Conference

Interaction of membrane-bound enzymes related to proton transport and hydrogen production in Escherichia coli at acidic pH

Heghine Gevorgyan, Armen Trchounian, Karen 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 SIGNIFICANT ROLE OF FHLA PROTEIN IN ESCHERICHIA COLI GROWTH, PROTON ATPASE ACTIVITY AND ΔPH REGULATION DURING MIXED CARBON FERMENTATION AT PH 6.5

Heghine Gevorgyan Khazhak

Conference

pH homeostasis in Escherichia coli at acidic pH during fermentation of glucose and glycerol in the presence of external formate

Heghine Gevorgyan, Armen Trchounian, Karen Trchounian

Conference

Study of Co-Fermentation of Glucose and Glycerol in the Presence of External Formate in Escherichia Coli Bacteria at pH 6.5. The Role of Fhla Regulatory Protein

H. Gevorgyan, S. Khalatyan, A. Trchounian, K. Trchounian

Conference

The Role of Hydrogenases on the Interplay Between Potassium Transport System and FOF1-ATPase During the Co-fermentation of Mixed Carbon Sources in E. coli at pH 7.5

H. Gevorgyan, K. Trchounian

Conference

The Role of Molecular Hydrogen Generation in the Metabolic Flux During Co-utilization of Mixed Carbon Sources in Escherichia coli at pH 6.5

H. Gevorgyan, K. Trchounian

Conference

The Role of FhIA Regulatory Protein in Escherichia coli ATPase Activity at pH 5.5 During Fermentation of Mixed Carbon Sources

S. Khalatyan, H. Gevorgyan, K. Trchounian

Conference

Role of fhlA Regulatory Protein in the Assimilation of Substrates and Generation of Fermentation End-products in Escherichia coli at Acidic pH
S. Khalatyan, H. Gevorgyan, K. Trchounian

Conference

The role of formate neutralization and molecular hydrogen generation in the metabolic flux in Escherichia coli during fermentation of mixed carbon sources
Gevorgyan H., Poladyan A., Trchounian K.

Conference

INFLUENCE OF BIOHYDROGEN PRODUCTION ON THE RATIO OF GENERATED ACIDS AND REGULATION OF Δ pH IN E. coli DURING FERMENTATION OF MIXED CARBON SOURCES AT pH 7.5
Heghine Gevorgyan, Karen Trchounian

Conference

The contribution of proton ATPase in E. coli growth during mixed carbon sources fermentation at different pHs
Heghine Gevorgyan, Lilit Bagdasaryan, 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 ԹԱՓՈԼՆԵՐԻՑ ԿԵԼՍԱՉԱՆԳՎԱՅԻ ԵՎ ԿԵԼՍԱՓԵԼԵՐԳԻԱՅԻ ՓՈԽԱԿԵՐՊՄԱՆ ԿԵԼՍԱՓԻՄԱԿԱՆ ՈՒՂԻՆԵՐԻ ԲՆՈՒԹԱԳՐՈՒՄԸ ԵՎ ՕԹՍԻԴԱՎԵՐԱԿԱՆԳՈՂԱԿԱՆ ԿԱՐԳԱՎԿՈՐՈՒՄԸ
Փոլանյան Ա.Ա., Գևորգյան Հ.Խ., Վանյան Լ.Մ., Բաբայան Ա.Ռ., Բաղդասարյան Լ.Հ., Վասիլյան Ա.Վ.,
Պետրոսյան Հ.Հ.

Conference

Influence of acidic pH on the interaction between proton ATPase and enzymes responsible for molecular hydrogen generation
Karen Trchounian, Heghine Gevorgyan, Lilit Bagdasaryan, Anait Vassilian, Anna Poladyan

Conference

The penetration of PPA is mediated with H⁺ efflux in Gram-negative and Grampositive bacteria
Tamara Abagyan, Heghine Gevorgyan, Margarita Mirumyan, Konstantin Yenkyan, Karen Trchounian

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

Exploring the role of propionic acid: link between gut microbiome and neurodevelopmental disorders

Conference

The regulation of ATPase activity by K⁺ ions in gut isolated E. coli strains and its role in propionic acid sensing

Tamara E. Abagyan, Heghine Gevorgyan, Margarita Mirumyan, Konstantin Yenkoyan, Karen Trchounian

Conference

Contribution of Proton ATPase in the Formation of Proton Motive Force in Escherichia coli during Mixed Carbon Fermentation at pH 5.5

H.Gevorgyan, K.Trchounian

Conference

Effects of Amino Acid Mutations in E. coli DcuD Transporters in Proton Flux at pH 7.5

H.Gevorgyan, L.Jorknitsyan, A.Valle, J.Bolivar, K.Trchounian

Conference

Proton and Potassium Flux Alterations in the Presence of Propionic Acid in Gut-Isolated Escherichia coli

H. Gevorgyan, T. Abagyan, K. Yenkoyan, K. Trchounian

Conference

Impact of short-chain fatty acids on the anaerobic growth of Escherichia coli K12 and Enterococcus hirae ATCC9790

Tamara Abagyan, Heghine Gevorgyan, Karen Trchounian

Conference

Gad Acid Resistance System Plays a Critical Role in Escherichia Coli Growth, Significantly Influencing the Extracellular pH During Fermentation

Heghine Gevorgyan, Kirsten Jung, Karen Trchounian

Conference

The Impact of Different Concentrations of Formate and Lactate on Escherichia coli Growth Properties and H₂ Production

Tamara Abagyan, Heghine Gevorgyan, Karen Trchounian
