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## 🌐 Знание языков

Հայերեն Русский English

## 🔬 Научные интересы

- Биоэнергетика, Биохимия, Микробиология, Биотехнология

## 🏆 Государственные награды и почетные звания

2016 Премия Моррисона Рогозы Американского общества микробиологии (ASM)

2019 Серебряная медаль по случаю 100-летия ЕГУ

## 📖 Публикации

Статья

### **A novel, cost-effective approach for the production of hydrogenase enzymes and molecular hydrogen from recycled whey-based by-products**

Meri Iskandaryan, Lusine Baghdasaryan, Ela Minasyan, Karen Trchounian, Antranikian Garabed,

Anna Poladyan

International Journal of Hydrogen Energy 2025 1191-1202

Статья

### **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

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### **Redox regulation of hydrogen production in Escherichia coli during growth on by-products of the wine industry**

Lusine Baghdasryan, Karen Trchounian, Gary Sawers, Anna Poladyan

Applied Microbiology and Biotechnology 2025 146

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### **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

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**Microbial Valorization of Sunflower Husk for Sustainable Biohydrogen and Biomass Production**

Llana Vanyan, Akerke Toleugazykyzy, Kaisar Yegizbay, Ayaulym Daniyarova, Lyudmila Zulojan, Gayane Mikoyan, Anait Vassilian, Anna Poladyan, Kairat Bekbayev, Karen Trchounian  
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**Escherichia coli FocA/B-dependent H<sup>+</sup> and K<sup>+</sup> fluxes: Influence of exogenous versus endogenous formate**

Lilit Grigoryan, Anush Babayan, Anait Vassilian, Anna Poladyan, Gary Sawers, Karen Trchounian  
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**ՄԱՆԿԱՎԱՐԺՈՒԹՅՈՒՆ ԵՎ ԴԱՍԱՎԱՆԴՄԱՆ ՄԵԹՈԴԻԿԱ «ԼԵԳՈ ԼՈՒՐՋ ԽԱՂ»-Ի ՄԵԹՈԴԸ ԲՈՒՀԱՎԱՆ ՈՒՍՈՒՑՄԱՆ ՄԵՋ**

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Հայկական պետական մանկավարժական համալսարանի գիտական տեղեկագիր 2025 99-108

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**EFFECT OF THE PLANT TRIFOLIUM PRATENSE L. ON AMIDATION OF BRAIN PROTEINS IN RATS EXPOSED TO VIBRATION**

I. A. BADALYAN, N. K. HAYRAPETYAN, A. A. POLADYAN

Proceedings of the YSU B: Chemical and Biological Sciences 2025 36-42

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**Conversion of spent coffee grounds into bioenergy and biomass using Clostridium species: A sustainable pathway for renewable energy**

Rima Avetisyan, Hripsime Petrosyan, Akerke Toleugazykyzy, Bakytzhan Bolkenov, Roza Bekbayeva, Kairat Bekbayev, Karen Trchounian, Anna Poladyan

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**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

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**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

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**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  
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**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

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**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

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**Development of an H<sub>2</sub> fuel cell electrochemical system powered by *Escherichia coli* cells**

Torgom Seferyan, Lusine Baghdasaryan, Meri Iskandaryan, Karen Trchounian, Anna Poladyan

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**The antimicrobial effects of silver nanoparticles obtained through the royal jelly on the yeasts *Candida guilliermondii* NP-4**

Seda Marutyan, Hasmik Karapetyan, Lusine Khachatryan, Anna Muradyan, Syuzan Marutyan,

Anna Poladyan, Karen Trchounian

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**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

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*Статья*

**Valorization of whey-based side streams for microbial biomass, molecular hydrogen, and hydrogenase production**

Anna Poladyan, Karen Trchounian, Ela Minasyan, Meri Iskandaryan, Hayarpi Aghekyan, Sargis Aghayan,

Avetis Tsaturyan, Ani Paloyan, Garabed Antranikian, Lev Khoyetsyan

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

Heghine Gevorgyan, Anait Vassilian, Anna Poladyan, Karen Trchounian

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*Статья*

**THE EFFECT OF ANTIOXIDANT ACTIVITY OF PLANTS TRIFOLIUM PRATENSE L. AND CRATAEGUS LAEVIGATA ON LIPID PEROXIDATION IN RAT'S TISSUES EXPOSED TO HYPOBARIC HYPOXIA**

I. A. BADALYAN, A. A. POLADYAN

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**BIOMASS AND BIOHYDROGEN PRODUCTION BY ESCHERICHIA COLI UPON CONSUMPTION OF MEAT INDUSTRY AND LIGNOCELLULOSIC CORN WASTES MIXTURE**

Syuzanna Blbulyan, Satenik Mirzoyan, Karen Trchounian, Anna Poladyan

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*Статья*

**Biomass and biohydrogen production during dark fermentation of Escherichia coli using office paper waste and cardboard**

Anna Poladyan, Lena Margaryan, Karen Trchounian, Armen Trchounian

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**Application of organic waste glycerol to produce crude extracts of bacterial cells and microbial hydrogenase—the anode enzymes of bio-electrochemical systems**

Anna Poladyan, Syuzanna Blbulyan, Tatiana Semashko, Volha Dziameshka, Liudmila Zhukouskaya,

Armen Trchounian

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**ETHANOL SUPPLEMENTATION AS A NEW APPROACH TO REGULATE GROWTH AND HYDROGEN PRODUCTION OF ESCHERICHIA COLI UPON GLYCEROL FERMENTATION**

A. A. Poladyan

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**Growth of the facultative chemolithoautotroph Ralstonia eutropha on organic waste materials: Growth characteristics, redox regulation and hydrogenase activity**

Anna Poladyan, Syuzanna Blbulyan, Mayramik Sahakyan, Oliver Lenz, Armen Trchounian

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**Characterization of hydrogen production by Escherichia coli wild-type and mutants of hydrogenases utilizing xylose as fermentation substrate**

Anna Poladyan, Armen Trchounian

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

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**Escherichia coli wild type and hydrogenase mutant cells growth and hydrogen production upon xylose and glycerol co-fermentation in media with different buffer capacities**

Anna Poladyan, Lusine Baghdasaryan, Armen Trchounian

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**Hydrogen production by Escherichia coli growing in different nutrient media with glycerol: Effects of formate, pH, production kinetics and hydrogenases involved**

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**NEW APPROACHES TO ENHANCE HYDROGEN PRODUCTION FROM GLYCEROL BY ESCHERICHIA COLI**

A. Poladyan

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**Optimizing strategy for Escherichia coli growth and hydrogen production during glycerol fermentation in batch culture: Effects of some heavy metal ions and their mixtures**

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**Alkanna orientalis (L.) Boiss. plant isolated cultures and antimicrobial activity of their extracts: phenomenon, dependence on different factors and effects on some membrane-associated properties of bacteria.**

Margarit Petrosyan, Yekaterina Shcherbakova, Naira Sahakyan, Zaruhi Vardanyan, Anna Poladyan, Yuri Popov, Armen Trchounian

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Karen Trchounian, Varduhi Abrahamyan, Anna Poladyan, Armen Trchounian

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**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

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**Redox stress in geobacilli from geothermal springs: Phenomenon and membrane-associated response mechanisms**

Astghik Ghazaryan, Syuzanna Blbulyan, Anna Poladyan, Armen Trchounian

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**Համակարգչային տեխնոլոգիաների կիրառման առավելությունները և փորձը բուհական կենսաբանության դասավանդման ընթացքում**

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**Hydrogen-oxidizing hydrogenases 1 and 2 of Escherichia coli regulate the onset of hydrogen evolution and ATPase activity, respectively, during glucose fermentation at alkaline**

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**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

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**Glycerol fermentation and molecular hydrogen production by Escherichia coli batch cultures affected by some reducing reagents and heavy metal ions**

Anna Poladyan, Karen Trchounian, Armen Trchounian, Mikayel Minasyants

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**Multiple and reversible hydrogenases for hydrogen production by Escherichia coli: dependence on fermentation substrate, pH and the F<sub>0</sub>F<sub>1</sub>-ATPase**

Karen Trchounian, Anna Poladyan, Anait Vassilian, Armen Trchounian

Critical Reviews in Biochemistry and Molecular Biology 2012 236-249

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**Effect of Different Substrates on Growth and Redox Potential Kinetics of Escherichia coli Wild Type and Hydrogenases Lacking Mutant**

Anna Poladyan, Satenik Mirzoyan, Armen Trchounian

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**Glycerol Fermentation and Hydrogen Metabolism by Escherichia coli: New Approaches to Enhance Hydrogen Production**

A. Poladyan, K. Trchounian, A. Trchounian

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**Hydrogen production by Escherichia coli wild type and hydrogenase mutants upon formate and glycerol fermentation under different growth conditions**

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K.Trchounian, A. Poladyan, L. Gabrielyan, A. Trchounian

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Karen Trchounian, Astghik Vardanyan, Anna Poladyan, Armen Trchounian

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**ESCHERICHIA COLI GROWTH AND HYDROGEN PRODUCTION USING BREWERY WASTE: OPTIMAL PRETREATMENT AND ROLE OF HYDROGENASES**

A. Poladyan, K. Trchounian, A. Trchounian

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**Glucose concentrations influence on activities of FoF<sub>1</sub> ATPase and hydrogenase 4 in Escherichia coli**

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Թռչունյան Կ.Ա., Գաբրիելյան Լ.Ս., Փոլադյան Ա.Ա., Թռչունյան Ա.Հ.

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**Growth and Bioenergetics Properties of Facultative Chemolithoautotrophic Bacterium**

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### **Batch Fermentation Characteristics and Hydrogen Production of Escherichia coli Wild Type and Hydrogenase Mutants Using Xylose As Feedstock**

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### **HYDROGEN PRODUCTION BY BACTERIA: STIMULATION EFFECTS AND RESPONSIBLE HYDROGENASES DURING XYLOSE VS. GLUCOSE DARK FERMENTATION**

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### **Ralstonia eutropha Hydrogenase Application in Bioelectrocatalysis as Anode Enzyme**

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### **Analysis of the Escherichia coli hydrogenases as anodic enzymes in bioelectrochemical system**

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**H<sub>2</sub> - Oxidizing Activity of *Escherichia coli* Upon Utilization of Different Waste Components**

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**Ethanol Affected Bacterial Growth and molecular Hydrogen Production by *Escherichia coli* Upon Fermentation of Glycerol**

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**Prospective Trends in Biotechnology for Biohydrogen**

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**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.

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**Biohydrogen Production from Roasted Coffee Waste: Understanding the Role of *E. coli* Hydrogenases During Fermentation**

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**WINE GRAPE WASTE APPLICATION FOR *ESCHERICHIA COLI* BIOMASS AND H<sub>2</sub> PRODUCTION**

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

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**The valorization of whey-based side-streams for microbial biomass, hydrogen and**

### **hydrogenase enzyme production**

Anna Poladyan, Hayarpi Aghekyan, Ella Minasyan, Karen Trchounian, Ani Paloyan, Sargis Aghayan, Garabed Antranikian, Meri Iskandaryan, Diana Ghevondyan

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Փոլադյան Ա.Ա., Գևորգյան Հ.Խ., Վանյան Լ.Մ., Բաբայան Ա.Ռ., Բաղդասարյան Լ.Հ., Վասիլյան Ա.Վ.,  
Պետրոսյան Հ.Հ.

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*Конференция*

**THE OXIDATIVE STRESS AND POSSIBLE PREVENTIVE ACTION OF PLANT BORN POLYPHENOLS**  
Anahit Shirvanyan, Anush Babayan, Alvard Minasyan, Margarit Petrosyan, Anna Poladyan,  
Naira Sahakyan

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**THE OXIDATIVE STRESS AND T2DM-INDUCED DIABETIC NEPHROPATHY: POSSIBLE PREVENTIVE ACTION OF PANT-BORN OLIGOMERIC POLYPHENOLS**  
Gohar Sahakyan, Anne Vejux, Margarit Petrosyan, Anna Poladyan, Naira Sahakyan

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*Конференция*

**Characteristic effects of gold nanoparticles on growth and H<sub>2</sub> metabolism of *Ralstonia eutropha* H16 and *Escherichia coli***  
Anna Poladyan, Tatev Manutsyan, Meri Iskandaryan, Syuzanna Blbulyan, Anait Vassilian,  
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**The role of glycine-betaine in the hydrogen metabolism of *Ralstonia eutropha* H16**  
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**Fe ions effect on hydrogenase activity of *Ralstonia eutropha* H16 in various growth media**  
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**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,  
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**REDOX REGULATION OF HYDROGEN PRODUCTION IN ESCHERICHIA COLI DURING GROWTH ON BYPRODUCTS OF THE WINE INDUSTRY**  
Lusine Baghdasaryan, Karen Trchounian, Garabed Antranikian, Anna Poladyan, Ofelya Karapetyan

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**BIOTECHNOLOGICAL POTENTIAL OF SPENT COFFEE GROUNDS FOR LARGE-SCALE HYDROGEN PRODUCTION**  
Liana Vanyan, Anait Vassilian, Anna Poladyan, Karen Trchounian

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

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

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

Heggine Gevorgyan, Anait Vassilian, Anna Poladyan, Karen Trchounian

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**The impact of oxygen-tolerant hydrogenases on cell energetics of Cupriavidus necator H16**

Meri Iskandaryan, Anna Poladyan

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

Liana Vanyan, Anait Vassilian, Anna Poladyan, Karen Trchounian

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**Bioenergetic Properties of Microbes as Potential Target for Antibacterial Activity of Plant-Based Compounds**

Anna Poladyan, Karen Trchounian, Naira Sahakyan

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**Cupriavidus necator H16 growth and H<sub>2</sub>-oxidizing Activity Using Mixture of Glycerol and Roasted Coffee Waste**

R. Avetisyan, L. Mnatsakanyan, K. Trchounian, A. Poladyan

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**Evaluation of an H<sub>2</sub> fuel cell electrochemical system powered by microbial cells**

M. Iskandaryan, A. Poladyan, L. Baghdasaryan, T. Seferyan

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**Effect of glycine on the heterotrophic growth and [NiFe]-hydrogenase activity of Cupriavidus necator H16**

M. Iskandaryan, J. Schoknecht, O. Lenz, A. Poladyan

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**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

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**Biomass and bioethanol production from dairy waste by Saccharomyces cerevisiae ATCC 13007**

Liana Anikyan, Anahit Shirvanyan, Karen Trchounian, Anna Poladyan

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*Конференция*

**Fermentation of Molasses by Clostridium spp. for Biohydrogen and Biomass Production: A**

## **Step Toward Renewable Energy and Circular Bioeconomy**

Rima Avetisyan, Karen Trchounian, Anna Poladyan

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*Конференция*

### **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

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