

EKHSOON L HOLMUHAMEDOV, PhD, DSci

PERSONAL INFORMATION



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CURRENT APPOINTMENT

Adjunct Professor Medical University of South Carolina, Center for Cell Death, Injury and Regeneration, Charleston SC USA
Consultant Center for Integrated Research in Cardiovascular Aging, Aurora Health Care, Milwaukee WI USA

EDUCATION

Doctor of Science	Institute of Theoretical and Experimental Biophysics, Russian Academy of Sciences, Pushchino, Russia	2008
Research Associate	Mayo Clinic Rochester, Department of Cardiovascular Diseases, Rochester, MN	1997-2004
Research Associate	NASA, Ames Research Center Moffett Field, California	1995-1997
Postdoctoral Scientist	Upjohn Pharmaceutical Company, Kalamazoo, Michigan	1993-1995
PhD in Biophysics	Institute of Biophysics USSR Academy of Sciences, Pushchino, USSR	1980
Graduate School	Institute of Biophysics USSR Academy of Sciences, Pushchino, USSR	1975-1980
MSc in Biophysics	Institute of Biophysics USSR Academy of Sciences, Pushchino, USSR	1973-1975

PROFESSIONAL EXPERIENCE

Chief Research Scientist	Institute of Cell Biophysics, Russian Academy of Sciences, Pushchino, Russian Federation	2017-pr
Lead Research Scientist	Institute of Theoretical and Experimental Biophysics, Russian Academy of Sciences, Pushchino, Russia	2016-pr
Consultant	Center for Integrative Research on Cardiovascular Aging, Aurora Research Institute, AHC, Milwaukee, WI	2015-2017
Chief of Cardiovascular Research Laboratory	Center for Integrative Research on Cardiovascular Aging, Aurora Research Institute, AHC, Milwaukee, WI	2011-2015
Director	Aurora BBRG Imaging Core, St. Luke's Medical Center Milwaukee WI 53215	2013-2015
Associate Professor	Medical University of South Carolina, Center for Cell Death, Injury and Regeneration, Charleston SC	2008-2011
Co-Director	Imaging Facility, Department of Cell & Developmental Biology, University of North Carolina, Chapel Hill, NC	2006-2008
Assistant Professor	Department of Cell & Developmental Biology, University of North Carolina at Chapel Hill, Chapel Hill, NC	2004-2008
Assistant Professor	Department of Biomedical Engineering, University of North Carolina at Chapel Hill, North Carolina	2003-2004
Research Scientist	Mayo Clinic, Mayo Medical School Rochester, MN	1997-2004

National Awardee	NASA Ames Research Center, Moffett Field, CA	1995-1997
Research Scientist	Upjohn Pharmaceutical Company, Kalamazoo, MI	1993-1995
Visiting Professor	University Bordeaux II, Bordeaux, France	1992-1993
Visiting Professor	State University of New York at Albany, Albany, NY	1992-1993
Visiting Scientist	Environmental Test Systems Inc, Elkhart, IN	1989-1991
Associate Professor	Institute of Biophysics Acad. Sci., Pushchino, USSR	1985-1992
Assistant Professor	Institute of Biophysics Acad. Sci., Pushchino, USSR	1980-1985

HONORS & AWARDS

2002	Presidential Award, American Society for Clinical Pharmacology and Therapeutics, USA
1995-1997	National Research Council Associateship Award, National Aeronautics and Space Administration (NASA), USA
1992-1993	Visiting Professor Award, University Bordeaux II, France
1992	Visiting Professor Award, State University of NY at Albany, USA
1989	Foreign Professor Award, Polish Academy Warsaw, Poland
1988-1989	Visiting Professor Award, Magdeburg Medical Academy, Germany
1980-1982	USSR Academy of Sciences Award, USSR

PRESENT and PAST MEMBERSHIP IN PROFESSIONAL ASSOCIATIONS

American Biophysical Society
American Heart Association
International Society for Heart Research
American Society for Cell Biology
The Mitochondrial Medicine Society
United Mitochondrial Disease Foundation
Russian Biochemical Society

PRESENT and PAST SCIENTIFIC REVIEWER

PLoSOne
Journal of Biological Chemistry
American Journal of Physiology
Journal of Physiology (London)
Cardiovascular Research
Circulation Research
Journal of Molecular and Cellular Cardiology
Mitochondrion
Pflugers Archives - European Journal of Physiology

INSTITUTIONAL COMMITTEES/ADMINISTRATIVE RESPONSIBILITIES

2017-pr	Chief Research Scientist	Institute of Cell Biophysics, Russian Academy of Sciences, Pushchino, Russian Federation
2016-pr	Lead Research Scientist	Institute of Theoretical and Experimental Biophysics, Russian Academy of Sciences, Pushchino, Russia
2015-2017	Consultant, Cardiovascular	Center for Integrative Research on Cardiovascular Aging, Research Laboratory Aurora Research Institute, AHC, Milwaukee, WI
2011-2015	Chief of Cardiovascular Aging Research Laboratory	Milwaukee, WI, USA
2006-2009	Co-Director of Imaging Facility	Department of Cell and Developmental Biology, UNC Chapel Hill, USA
2008-2010	Member of PhD Research Committee	Department of Pharmacology, University of North Carolina Chapel Hill NC, USA
2006-2009	Co-Director of Imaging Facility	Department of Cell and Developmental Biology, UNC Chapel Hill
2008-2010	Member of PhD Research Committee	Department of Pharmacology, University of North Carolina Chapel Hill NC

- 2004-2006 Instructor and assistant in the use of the Molecular Imaging laboratory Department of Cell and Developmental Biology, University of North Carolina at Chapel Hill, NC
- 1997-1998 Member of the team of designers of the novel Cell Culture Unit (CCU), NASA Ames Research Center, Moffett Field, CA
- 1985-1992 Member of PhD Research Committee at Institute of Biological Physics, Russian Academy of Science

TEACHING RECORD/RESEARCH RELATED TEACHING

- 2012-2015 Theory and practical application of bright-field, fluorescent and scanning confocal microscopy for residents and students, Aurora Research Institute, Milwaukee WI
- 2009-2012 Lectures, training and instructor in bright-field, fluorescent and scanning confocal microscopy, Medical University of South Carolina, Charleston SC
- 2004-2009 Training and consulting in laser fluorescent confocal microscopy and fluorescent technique in Department of Cell & Developmental Biology, UNC@CH
- 1997-2004 Instructor in mitochondrial physiology in Mayo Medical School, Mayo Clinic and Foundation, Rochester MN
- 1995-1997 Advising and training of NASA Ames Research Center's graduate students in mitochondrial Ca²⁺ transport and physiology
- 1980-1990 Training in mitochondrial physiology and Ca²⁺ transport graduate and undergraduate students of Moscow State University and Institute of Biophysics, Acad. Sci., USSR
- 1980-1990 Training course in studying the thermodynamics of Ca²⁺ transport in mitochondria, Institute of Biophysics, Academy of Sciences, USSR

MENTORSHIP/TRAINING

- 2016 Marina Chulkina, BS. Project: Molecular mechanism(s) underlying healing effect of Gepon in human diseases. Institute of Immunology of Russian Medical Academy of Sciences, Moscow Russian Federation
- 2015 Ulugbek Negmadjanov, MD. Project: The mechanism of TGF- β 1 mediated suppression of apoptotic cell death in human cardiac fibroblasts. Aurora Research Institute, Aurora Health Care, Milwaukee, WI USA
- 2014 Zeeshan Jawa, MD. Project: Use of senescent associated β -galactosidase activity in human cardiac fibroblasts. Aurora Research Institute, Aurora Health Care, Milwaukee, WI USA
- 2013 Fong Ying, BS. Project: Intracellular fluorescent redox indicators: Application to study redox changes in mouse embryonic fibroblasts. Concordia University, Aurora Research Institute, Milwaukee WI USA
- 2012 Henry Potter, BS. Project: The mechanism of mitochondria-mediated regulation of ICRAC in naive and differentiated NIH/3T3 mouse fibroblasts. Aurora Research Institute, Aurora Health Care, Milwaukee, WI USA
- 2012 Ulugbek Negmadjanov, MD. Project: Mitochondrial biogenesis in NIH/3T3 during TGF- β 1 induced differentiation. Aurora Health Care, Milwaukee, WI USA
- 2005-2008 Johnson CB, BS. Project: Cytotoxicity of NO containing dendrimer molecules. UNC@ Chapel Hill, NC
- 2005-2008 Stasko N, CB, BS. Project: Interaction of NO containing dendrimers with cultured mammalian cells. UNC@ Chapel Hill, NC
- 2007-2008 Hetrick EM, BS. Project: Bactericidal efficacy of NO releasing silica nanoparticles. UNC@ Chapel Hill, NC
- 2007-2008 Fried D. Project: NMR study of ischemic insult in perfused rat heart
- 2007-2008 Romney D. Project: Apoptotic cell death: Role of mitochondria.
- 2007-2008 Braveboy-Wagner J, BS. Project: Mitochondrial toxicity of glitazones. UNC@ Chapel Hill, NC
- 2002-2003 Ashfaque N, MD. Project: Reactive oxygen species in senescent and young hearts. Mayo Clinic Rochester, MN
- 1998-2001 Ozcan C, MD. Project: Role of mitochondrial K_{ATP} channels in cardioprotection. Mayo Clinic Rochester, MN

RESEARCH INTERESTS

- Mitochondrial porins (VDAC) in physiology and pathophysiology of human cells
- Mechanism(s) of mitochondria-mediated cytotoxicity of alcohol
- Role of mitochondria in development of metabolic stress
- Mechanism(s) of mitochondria-dependent cell injury in liver and heart
- Mitochondrial mechanism(s) of cardioprotection of young and aging heart
- Mitochondrial Ca²⁺ homeostasis in regulation of cytosolic Ca²⁺ signaling
- Physiological role of voltage dependent anion channels (VDAC)
- Cell signaling and regulation of VDAC open/closure
- Mitochondrial VDAC as a target for the development of novel cardioprotective agents
- Targeted modulation of the VDAC permeability in treatment of heart and liver diseases

PRIOR GRANTS

“Mitochondrial voltage dependent anion channels (VDAC) in pathogenesis of alcoholic cardiomyopathy (ACM)” 2013-2015, Aurora Research Institute, Aurora Health Care, \$50,000/year

“Mitochondrial Dysfunction and Susceptibility to Atrial Fibrillation in the Elderly” 2010-2014, NHLBI/NIH, RO1 Grant (1RO1 HL101240-01): Principal Investigator: Arshad Jahangir, MCA.

“Role of VDAC Phosphorylation in Cardiotoxicity” 2009-2011, AHA Mid-Atlantic Affiliate. \$46,000

“Mechanisms of Metabolic Adaptation to Drug Resistance” 2009-2011, The University of North Carolina at Chapel Hill: Principal Investigator: Lee Graves, UNC@CH; \$250,000 (5%)

“Mechanisms of alcoholic “wasting” disease” 2007/2008, UNC/Joint Department of Biomedical Engineering Research Initiation Project: Principal Investigator; \$50,000 (20%)

“Ethanol-induced VDAC closure in hepatocytes” 2006/2008, NIH/NIAAA1 R21 AA016011-01A1: Principal Investigator; \$275,000 (70%)

“Engineered nanoparticles for targeted delivery of NO to decrease ischemia & reperfusion injury in the heart” 2006/2008, North Carolina Biotechnology Center, NC 2006-MRG-1116: Co-Investigator: \$122,000 (25%), Principal Investigator: Timothy A Johnson, ECU

“Mitochondria and surgical myopreservation in the elderly” 2002/2008, NIH/NIA RO1 AG 21201: Co-Investigator: \$1,000,000 (5%). Principal Investigator: Arshad Jahangir.

“Global mitochondrial dysfunction in liver pathogenesis: voltage dependent anion channels as master regulators of mitochondrial metabolism” 2004/2005, UNC/CGIBD P30-DK034987: Principal Investigator. \$25,000 (20%)

“Myopreservation of the senescent heart” 2002/2005, AHA/SDG 02-30133N: Co-Investigator. \$260,000 (20%), Principal Investigator: Arshad Jahangir

“Aging and mitochondria: protective role for K_{ATP} channels” 2002/2004, Mayo Foundation-CR75: Co-Investigator. \$105,000 (20%)

“Aging and mitochondria” 001/2002, Geriatric Cardiology Society Merck Award: Co-Investigator. \$10,000 (10%), Principal Investigator: Arshad Jahangir

“Mitochondrial ATP-sensitive potassium channels: a novel target to rescue ATP synthesis in the heart” 2000/2002, AHA (Northland Affiliate): Principal Investigator: \$80,000 (20%).

“Development of a system to study mechanical adaptation of isolated osteoblasts in vitro” 1996/1997, Director Discretionary Grant, NASA Ames Research Center: Principal Investigator. \$80,000 (25%)

PATENTS

1. USA Patent Application “Multi-purpose monitoring system”. Applicant Ekhsan Holmuhamedov. Serial No: 10/423,453. Filing Date 04/25/2003 (under submission)
2. Malaysian Patent Application “Multi-purpose oxygen sensor”. Applicant Ekhsan Holmuhamedov. Serial No: PI 2005 2055. Filing Date 09/05/2005 (under submission)
3. USSR Patent # 1656438 “Multichannel System for Investigation of Biological Suspensions”. Applicant Ekhsan Holmuhamedov
4. USSR Patent # 3933138 “Post-poisoning Therapy of Intoxication with Organophosphates”. Applicant Ekhsan Holmuhamedov

RESEARCH AND EDUCATIONAL PRESENTATIONS

- Chamber-specific differences in human cardiac fibroblast proliferation and responsiveness toward simvastatin. Aurora Research Institute, Aurora Health Care, Milwaukee WI USA 2015
- Mitochondrial biogenesis and switch between aerobic and anaerobic glycolysis in embryonic mouse and human cardiac fibroblasts. Aurora Research Institute, Aurora Health Care, Milwaukee WI USA 2015
- Alcohol oxidation dependent closure of mitochondrial Voltage Dependent Anion Channels (VDAC) in development of alcoholic cardiomyopathy. Aurora Health Care, Milwaukee WI 2013-14
- Mitochondria-dependent oxidative stress in cardiac diseases: Role in promoting fibrosis. Aurora Health Care, Milwaukee WI 2012
- Protonophoric mechanisms of cardioprotection by diazoxide and pinacidil. Mayo Clinic Rochester, MN Jul 2007
- Mitochondrial mild-uncoupling decreased production of reactive oxygen species. Mayo Clinic Rochester, MN Aug 2005
- Mitochondria: Target in cardioprotection: University of North Carolina, Chapel Hill, NC, Jul 2003.
- Mitochondria: A new pharmacological target for cellular protection: Abbott Laboratories, Abbott Park IL, Jun 2000.
- Mitochondrial Ca²⁺ homeostasis: role in intracellular calcium signaling: Mayo Clinic, Rochester MN, Feb 1997.
- Effect of the gravity on mitochondrial function in isolated osteoblasts: Roche Biosciences, CA, May 1996.
- Mitochondrial Ca²⁺ handling in hepatocytes: NASA Ames Research Center, CA, Apr 1995.
- The mechanism of ethaphos toxicity in mammals: US Army Medical Research Institute of Chemical Defense, MD, May 1995.
- Generation and propagation of Ca²⁺ waves in mitochondrial suspension: University Bordeaux II, France, Dec 1992.
- Non-cholinergic mechanism of organophosphate toxicity: The Upjohn Company, MI, Jan 1991.
- Ion-transporting systems of mitochondria: SUNY at Albany, NY, Mar 1991.
- Ca²⁺-induced oscillations of ion fluxes and volume in isolated rat liver mitochondria: Medical College of Ohio, OH, Sep 1989.
- Mitochondrial red-ox potential in thin layer of mammalian brain: Magdeburg Medical Academy, Germany, Jun 1988.
- Effect of glucose on intracellular Ca²⁺ concentration in Ehrlich tumor cells: Institute of Experimental Biology, Poland, Oct 1988.
- Energetic status of mitochondria determined from NADH fluorescence: Institute of Biochemistry and Biophysics, Bulgaria, May 1986.

PRESENTATIONS AT NATIONAL AND INTERNATIONAL MEETINGS

1. Aldehydes formed by ethanol metabolism and lipid peroxidation suppress ureagenic respiration: Possible involvement of Voltage Dependent Anion Channels (VDAC). *Mitochondrial Biology Symposium, National Heart, Liver and Blood Institute, NIH, 2011*
2. Aldehyde products of ethanol oxidation and oxidative stress suppress ureagenic but not basal respiration of cultured hepatocytes. *Annual Biophysical Meeting, 2011*
3. Regulation of cellular metabolism by closing of voltage dependent anion channels in the outer mitochondrial membrane. *International Symposium on Biological Motility: from Fundamental Achievements to Nanotechnologies, 2010*
4. Acute ethanol exposure suppresses ureagenesis in cultured rat hepatocytes: role of ethanol oxidation, acetaldehyde and histone deacetylase. *American Association for the Study of Liver Diseases, 2010*
5. Closure of VDAC Causes Internal Oxidative Stress in Rat Liver Mitochondria and Promote the Ca²⁺-induced Mitochondrial Permeability Transition. *Charleston Conference on Mitochondrial Physiology & Pathobiology 2009*

6. Minocycline and Doxycycline, but not Other Tetracycline-Derived Compounds, Inhibit Mitochondrial Calcium Uptake and Protect Liver Cells from Chemical Hypoxia and Ischemia/Reperfusion Injury. *Charleston Conference on Mitochondrial Physiology & Pathobiology 2009*
7. Deletion of Mitochondrial Voltage Dependent Anion Channels (VDAC) Increases the Sensitivity of Mouse Embryonic Fibroblasts to Adaphostin-induced Apoptosis. *Charleston Conference on Mitochondrial Physiology & Pathobiology 2009*
8. Metabolites of ethanol oxidation close voltage-dependent anion channels (VDAC) and limit transport of ADP/ATP across the outer membrane. *2008 RSA/ISBRA Joint Meeting*
9. Ethanol Suppresses Respiration Stimulated by Ureagenic Substrates in Cultured Rat Hepatocytes: Partial Reversal by Inhibition of Alcohol Dehydrogenase and Cytochrome P450 but not by acetaldehyde dehydrogenase. *Annual Biophysical Meeting 2008*
10. Ethanol Suppression of Ureagenesis by Hepatocytes: Partial Reversal by Inhibitors of Alcohol Dehydrogenase (ADH) and Cytochrome P450 (2E1). *2008 RSA/ISBRA Meeting*
11. VDAC closure sensitizes rat liver mitochondria toward Ca^{2+} -induced permeability transition. *Annual Biophysical Meeting 2008*
12. Voltage-dependent anion channel (VDAC) closure-mediated suppression of mitochondrial metabolism after ethanol treatment of rat hepatocytes. *Annual Biophysical Meeting 2006*
13. Deletion of mtDNA and Encoded Proteins Disrupts Mitochondrial Morphology and Function, but not the Number of Mitochondrial Scaffolds. Mitochondrial Proteomics. National Institute of Standards and Technology, Washington, DC. Sep 2002.
14. Effect of diazoxide on succinate dehydrogenase and ATPase: Implications for cardioprotection. Keystone Symposia: Mitochondria and Pathogenesis. Copper Mountain, CO. Apr 2002.
15. Novel anti-proliferative strategy: targeting mitochondria-dependent ICRAC. 46th Annual Meeting of the Biophysical Society, San Francisco, CA. Feb 2002.
16. Anti-proliferative property of diazoxide through mitochondrial targeting. 2002 ASCPT Annual Meeting, Atlanta, GA. Mar 2002.
17. Mitochondrial potassium channel opener protects senescent cardiac mitochondria from calcium-mediated injury. XVII World Congress, International Society for Heart Research, Winnipeg, Canada. Jul 2001.
18. Rescue of Ca^{2+} -inhibited oxidative phosphorylation by mitochondrial Ca^{2+} unloading. XVII World Congress, International Society for Heart Research, Winnipeg, Canada. Jul 2001.
19. Diazoxide preserves oxidative phosphorylation and the structural integrity of cardiac mitochondria from anoxic injury. 50th Annual Scientific Session, American College of Cardiology, Orlando, Florida. Mar 2001.
20. Potassium channel openers and mitochondrial function. 2nd Colloquium on Mitochondria and Myopathies. Halle/Saale, Germany. Mar 2000.
21. Are subsarcolemmal mitochondria the primary target of mitochondrial KATP channel opener action? 72nd Scientific Sessions, American Heart Association, Dallas, Texas. Nov 1999.
22. The ATP/ADP-induced calcium channels in Chang human liver cell line. 34th Annual Meeting of the Biophysical Society, San Francisco, CA Feb 1994.
23. Inhibition of mitochondrial activities in rabbit monkey and human hepatocytes by a quinoxalinone anxiolytic and its carboxylic acid metabolite. Annual Meeting of the Society of Toxicology, Dallas, TX 1994.
24. Intracellular localization of calcium indicators. 34th Annual Meeting of the Biophysical Society, San Francisco, CA Feb 1993.
25. Interference with hepatocellular metabolism by fatty acid analogies: Factors contributing towards cell death. ASCB Annual Meeting, San Francisco, CA. Feb 1993.
26. Mitochondrial Ca^{2+} -induced Ca^{2+} release (MCICR) Threshold dependence, reversibility and decoding of periodic Ca^{2+} signals. 2nd IUBMB Conference, Padua, Italy. Sep 1993.
27. Excitability of mitochondrial membrane: Reversible Ca^{2+} -induced Ca^{2+} efflux from mitochondria. 1st International Symposium "Molecular Organization of Biological Structures, Moscow, Russia. Jun 1989.
28. Effect of divalent cations on the inner membrane permeability of mitochondria. IV European Conference on Bioenergetics, Prague, Czechoslovakia. Aug 1986.

29. Ionophore-induced ion fluxes oscillation in erythrocytes. IV European Conference on Bioenergetics, Prague, Czechoslovakia. Aug 1986.

SELECTED LIST OF PEER-REVIEWED PUBLICATIONS

1. Emelyanova L, Preston C, Gupta A, Viqar M, Negmadjanov U, Edwards S, Kraft K, Devana K, Holmuhamedov E, O'Hair D, Tajik AJ, Jahangir A. Effect of Aging on Mitochondrial Energetics in the Human Atria. *J Gerontol Biol Sci* 2017 (accepted).
2. Chulkina MM, Lebedeva ES, Holmuhamedov EL, Ataulakhanov RI. Ezrin hinge region peptide TEKKRRETVEREKE activates NIH/3T3 fibroblasts to myofibroblasts differentiation. *Immunology* 2017 38(1): 4-11.
3. Chulkina M, Negmadjanov U, Lebedeva E, Pichugin A, Mazurov D, Ataulakhanov R, Holmuhamedov E. The synthetic peptide TEKKRRETVEREKE from the hinge region of ezrin induces differentiation of NIH/3T3 mouse fibroblasts. *Eur J Pharmacol* 2017 Jun 28. pii: S0014-2999(17)30441-7. doi: 10.1016/j.ejphar.2017.06.033.PMID: 28668507
4. Ross GR, Bajwa T, Jr, Edwards S, Kraft K, Emelyanova L, Rizvi F, Holmuhamedov EL, Werner P, Downey FX, Tajik AJ, Jahangir A. Enhanced store-operated Ca²⁺ influx and ORAI1 expression in ventricular fibroblasts from human failing heart. *Biol Open*. 2017 Mar 15;6(3):326-332. doi: 10.1242/bio.022632.
5. Negmadjanov U, Holmuhamedov A, Emelyanova L, Hu X, Rizvi F, Ross G, Tajik J, Shi Y, Holmuhamedov EL, Jahangir A. TGF- β 1 increases resistance of NIH/3T3 fibroblasts toward apoptosis through activation of Smad2/3 and Erk1/2 pathways. *Journal of Patient-Centered Research and Reviews* 2016, 3(4): 187-198.
6. Rizvi F, DeFranco A, Siddiqui R, Negmadjanov U, Emelyanova L, Holmuhamedov A, Ross G, Shi Y, Holmuhamedov EL, Kress DC, Tajik AJ, Jahangir A. Chamber-specific differences in human cardiac fibroblast proliferation and responsiveness toward simvastatin. *Am J Physiol Cell Physiol*. 2016 Jun 22;ajpcell.00056.2016. doi: 10.1152/ajpcell.00056.2016. [Epub ahead of print]
7. Emelyanova L, Ashary Z, Cosic M, Negmadjanov U, Ross G, Rizvi F, Olet S, Kress D, Sra J, Tajik AJ, Holmuhamedov EL, Shi Y, Jahangir A. Selective downregulation of mitochondrial electron transport chain activity and increased oxidative stress in human atrial fibrillation. *Am J Physiol Heart Circ Physiol*. 2016 Jul 1;311(1):H54-63. doi: 10.1152/ajpheart.00699.2015.
8. Negmadjanov U, Godic Z, Rizvi F, Emelyanova L, Ross G, Richards J, Holmuhamedov EL, Jahangir A. Transforming growth factor- β 1 mediated differentiation of fibroblasts is associated with increased mitochondrial content and cellular respiration." *PLOS ONE*. 2015 Apr 7; 10(4):e0123046. doi: 10.1371/journal.pone.0123046.
9. Nemutlu E, Gupta A, Song Z, Viqarsyed M, Holmuhamedov EL, Terzic A, Jahangir A, Dzeja PP. Decline of Phosphotransfer and Substrate Supply Metabolic Circuits Hinders ATP Cycling in Aging Myocardium. *PLoS One*. 2015 Sep 17;10(9):e0136556. doi: 10.1371.
10. Holmuhamedov EL, Umland M, Negmadjanov U, Rizvi F, Ross G, Emelyanova L, Jahangir A. Effect of alcohol exposure on mechanical performance of the heart, cardiac structure, function and mitochondrial dysfunction (in press).
11. Gupta A, Preston C, Yousufuddin M, Sultan S, Mirza M, Holmuhamedov EL, Jahangir A. Effect of Aging on Mitochondrial Energetics in the Human Atria. *Mech. Ageing Develop*. 2015
12. **Schwartz J, Holmuhamedov EL, Zhang X, Lovelace GL, Smith CD, Lemasters JJ. Minocycline and doxycycline, but not other tetracycline-derived compounds, protect liver cells from chemical hypoxia and ischemia/reperfusion injury by inhibition of the mitochondrial calcium uniporter. *Toxicol Appl Pharmacol*. 2013 273:172-179.**
13. Azarashvili T, Krestinina O, Teplova V; Jahangir A, Holmuhamedov E. Acute ethanol exposure increases phosphorylation of mitochondrial proteins by mitochondria associated glycogen synthase kinase -3 β (GSK-3 β). *Innovat J Med Health Sci* 2013 3:163-170.
14. Emelyanova L, Gracious R, Ashary Z, Mirza M, Rizvi F, Holmuhamedov EL, Jahangir A. Selective downregulation of electron transport chain activity in human persistent atrial fibrillation. *Cardiovasc Res* 2014 (submitted).

15. Nemutlu E, Gupta A, Zhang S, Viqar M, Holmuamedov E, Terzic A, Jahangir A, Dzeja P. Dynamic metabolic profiling of atrial energetics: age-dependent depression of phosphotransfer and substrate supply circuits hinders ATP cycling. *Circ Res* 2014
16. Jahangir A. Preston CC, Gupta A, Yousufuddin M, Sultan S, Mirza M, Holmuamedov E. Effect of Aging on Mitochondrial Energetics in the Human Atria. *Mech Ageing Develop* 2012
17. Holmuamedov EL, Czerny C, Beeson CC, Lemasters JJ. ***Ethanol suppresses ureagenesis in rat hepatocytes: role of acetaldehyde.*** *J Biol Chem*, 2012, 287(10):7692-76700
18. Lemasters JJ, Holmuamedov EL, Czerny C, Zhong Z, Maldonado EN. ***Regulation of mitochondrial function by voltage dependent anion channels in ethanol metabolism and the Warburg effect.*** *Biochim Biophys Acta*, 2012, 1818(6):1536-1544.
19. Holmuamedov EL, Oberlin A, Short K, Terzic A, Jahangir A. Cardiac Subsarcolemmal and Interfibrillar Mitochondria Display Distinct Responsiveness to Protection by Diazoxide. *PLoS One*, 2012, e44667. Epub 2012 Sept 5.
20. Johnson CB, Tikunov AP, Lee H, Wolak JE, Pediatitakis P, Romney DA, Holmuamedov E, Gamcsik MP, Macdonald JM. ¹³C Magnetic resonance spectroscopy detection of changes in serine isotopomers reflects changes in mitochondrial redox status. *Magn Reson Med*, 2011 Dec 21. Doi:10.1002/mrm.2396.
21. Tikunov A, Johnson CB, Pediatitakis P, Markevich N, Macdonald JM, Lemasters JJ, Holmuamedov EL. ***Closure of VDAC Causes Oxidative Stress and Accelerates the Ca²⁺-induced Mitochondrial Permeability Transition in Rat Liver Mitochondria.*** *Arch Biochem Biophys.* 2010 Jan 21. [Epub ahead of print]
22. Holmuamedov, E.L., C. Czerny, G. L. Lovelace, G., C.C. Beeson, T. Baker, C.B. Johnson, P. Pediatitakis, V.V. Teplova, A. Tikunov, J. MacDonald and J.J. Lemasters (2010) ***The role of the voltage-dependent anion channels in the outer membrane of mitochondria in the regulation of cellular metabolism.*** *Biofizika* 55, 822-833.
23. Holmuamedov, E.L., and J.J. Lemasters (2009) ***Ethanol exposure decreases mitochondrial outer membrane permeability in cultured rat hepatocytes.*** *Arch. Biochem. Biophys.* 481, 226-233. PMID: PMC2656607.
24. Lemasters, J.J., and E.L. Holmuamedov (2006) ***Voltage-dependent anion channel (VDAC) as mitochondrial governor – thinking outside the box.*** *Biochim. Biophys. Acta* 1762, 181-190.
25. Zhang X, Schwartz J, Ramshesh VK, Pediatitakis P, Holmuamedov EL, Zhong Z, Theruvath TP, Lemasters JJ. ***Minocycline protects against the mitochondria permeability transition after both warm and cold ischemia-reperfusion.*** *Hepatology* 2010 Jan;51(1):349-50.
26. Johnson TA, Stasko NA, Matthews JL, Cascio WE, Holmuamedov EL, Johnson CB, Schoenfisch MH. Reduced ischemia/reperfusion injury via glutathione-initiated nitric oxide-releasing dendrimers. *Nitric Oxide* 2009 Nov 13. [Epub ahead of print]
27. Holmuamedov E, Lemasters JJ. ***Ethanol exposure decreases mitochondrial outer membrane permeability in cultured rat hepatocytes.*** *Arch Biochem Biophys.* 2009 481:226-233.
28. Wolak J, Rahimi-Keshari K, Jeffries R, Poulou JM, Todd A, Pediatitakis P, Dewar BJ, Favorov O, Elston T, Graves LM, Kurhanewicz J, Gamcsik MP, Vigneron D, Holmuamedov E, Macdonald JM. "Non-Invasive Fluxomics in Mammals by Nuclear Magnetic Resonance Spectroscopy" In "Handbook of Metabolomics", Lane, A., Fan, T. W., Higashi R. M. (editors), Humana Press Inc., 2008 Totowa, NJ.
29. Preston CC, Oberlin AS, Holmuamedov EL, Gupta A, Sagar S, Khazi Syed RH, Siddiqui S, Raghavakaimal S, Terzic A, Jahangir A. Aging-Induced Alterations in Gene Transcripts and Functional Activity of Mitochondrial Oxidative Phosphorylation Complexes in the Heart, Mechanisms of Ageing and Development. 2008 129:304-312. Epub 2008 Mar 4.
30. Hetrick EM, Shin JH, Stasko NA, Johnson CB, Wespe DA, Holmuamedov E, Schoenfisch MH. Bactericidal Efficacy of Nitric Oxide-Releasing Silica Nanoparticles. *ACS Nano.* 2008 2:235-246.
31. Theruvath TP, Zhong Z, Pediatitakis P, Ramshesh VK, Currin RT, Tikunov A, Holmuamedov E, Lemasters JJ. ***Minocycline and N-methyl-4-isoleucine cyclosporin (NIM811) mitigate storage/reperfusion injury after rat liver transplantation through suppression of the mitochondrial permeability transition.*** *Hepatology.* 2008 47:236-246.

32. Stasko NA, Johnson CB, Schoenfish MH, Johnson TA, Holmuhamedov EL. Cytotoxicity of polypropylenimine dendrimer conjugates on cultured endothelial cells. *Biomacromolecules*. 2007 8:3853-3859. Epub 2007 Nov 16.
33. **Le SB, Hailer MK, Buhrow S, Wang Q, Flatten K, Pediaditakis P, Bible KC, Lewis LD, Sausville EA, Pang YP, Ames MM, Lemasters JJ, Holmuhamedov EL, Kaufmann SH. Inhibition of mitochondrial respiration as a source of adaphostin-induced reactive oxygen species and cytotoxicity. *J Biol Chem* 2007 282:8860-8872. Epub 2007 Jan 9.**
34. Pokhilko AV, Ataulakhanov FI, Holmuhamedov EL. Mathematical model of mitochondrial ionic homeostasis: Three modes of Ca²⁺ transport. *J Theor Biol* 2006, 243:152-169.
35. **Lemasters JJ, Holmuhamedov EL. Voltage-dependent anion channel (VDAC) as mitochondrial Governor – thinking outside the box. *Biochim Biophys Acta* 2006, 1762:181-190.**
36. Le SB, Holmuhamedov EL, Narayanan VL, Sausville EA, Kaufmann SH. Adaphostin and other anticancer drugs quench the fluorescence of mitochondrial potential probes. *Cell Death Differ*. 2006, 13:151-159.
37. He T, Peterson TE, Holmuhamedov EL, Terzic A, Caplice NM, Oberley LW, Katusic ZS. Human endothelial progenitor cells tolerate oxidative stress due to intrinsically high expression of manganese superoxide dismutase. *Arterioscler Thromb Vasc Biol*. 2004 24:2021-2027
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ABSTRACTS

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