

## **CURRICULUM VITAE**



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### **EDUCATION**

**Ph.D. in Biological Sciences (Biophysics and Cell Physiology)**  
1999 Institute of Cell Biophysics, Russian Academy of Sciences  
Institutskaya St., Pushchino, Moscow Region 142292, Russia

**B.S. and M.S. in Veterinary Medicine and Biochemistry**  
1991 Moscow State Academy of Veterinary Medicine and Biotechnology  
23 Skryabin St., Moscow 109472, Russia

### **RESEARCH EXPERIENCE**

02/2008 –present Assistant Professor, Dept. Molecular Biophysics and Physiology,  
Rush University Medical Center, Chicago, IL, USA

07/2006-01/2008 Research Assistant Professor, Department of Physiology  
Loyola University Chicago  
Maywood, IL 60153

11/1999-06/2006 Research Associate, Department of Physiology  
Loyola University Chicago  
Maywood, IL 60153

11/1994-10/1999 Junior Research Scientist (pre-doctoral position)  
Laboratory of Intracellular Signaling  
Institute of Cell Biophysics, Russian Academy of Sciences,  
Pushchino, Moscow Region 142292, Russia

09/1991-10/1994 Candidate for researcher's career,  
Laboratory of Molecular Radiobiology  
Institute of Cell Biophysics, Russian Academy of Sciences,  
Pushchino, Moscow Region 142292, Russia

## **RESEARCH INTERESTS**

(1) **Role of Mitochondria and Cell Metabolism in Health and Disease.** Study of the mechanisms governing mitochondrial membrane potential, mitochondrial ion channels, and the role of mitochondria for cellular calcium homeostasis and cell death. Study of mitochondrial NO synthase function and regulation. Study of changes in the mitochondrial function in conditions of heart failure. Mechanisms of the cardioprotective effects of trimetazidine in heart failure. Study of the roles of inorganic polyphosphate in regulation of the mitochondrial function and cardioprotection. These studies involve optical measurements of the mitochondrial membrane potential, pH, calcium, sodium, and mitochondrial permeability transition pore activity in single isolated mitochondria as well as in mitochondria of permeabilized and intact cells. Monitoring of cell metabolism using Seahorse XF Analyzer.

(2) **Cardiac Physiology.** Study of mechanisms of excitation-contraction coupling and calcium regulation in cardiac (ventricular and atrial) muscle with the combined use of confocal imaging techniques and epi-fluorescence methods to monitor changes in intracellular  $Ca^{2+}$ , cell and sarcomere length. Study of NO-dependent signaling pathways in cardiac cells. Role of cytoskeleton in regulation of NO production in cardiac myocytes.

(3) **Vascular Physiology.** Investigation of cellular and molecular mechanisms of  $[Ca^{2+}]_i$  regulation in vascular endothelial cells with high temporal and spatial resolution, using digital video fluorescence microscopy and laser scanning confocal microscopy. Study of the spatio-temporal regulation of capacitative calcium entry in vascular endothelial cells. Investigation of cellular mechanisms of the regulation of nitric oxide (NO) production and release from vascular endothelial cells. Study of the role of NO for  $[Ca^{2+}]_i$  regulation in vascular endothelial cells.

## **RESEACH SUPPORT**

### **ACTIVE RESEARCH SUPPORT**

**1) RUMC Pilot Grant on Research on Diabetes** 09/01/2012-01/31/2014  
 **$\beta$ -hydroxybutyrate and its polymers in diabetic hearts: implications in cardiomyopathy.**  
The goal of this project is to determine the role of poly- $\beta$ -hydroxybutyrate (PHB), the polymerized form of ketone bodies, in diabetes-mediated cardiomyopathy and cardiac cell death.  
Project Role: Principal Investigator

**2) National Institutes of Health (NIH), R01 HL101235-04** 05/01/2010-03/31/2014  
**Mitochondrial dysfunction in cardiac hypertrophy and failure.**  
The goal of this project is to study mitochondrial disbalance in cardiac hypertrophy and failure  
Multiple Principal Investigators:  
Lothar A. Blatter (Rush University)  
Brian O'Rourke, Jennifer Van Eyk, Natalia Trayanova (Johns Hopkins University)  
Donald M. Bers (UC Davis)  
Project Role: Co-Investigator/Collaborator

**3) NIH, Program Project Grant P01 HL080101-08 1** 2/01/2005-5/31/2016  
**CaMKII and  $IP_3$ -mediated signaling in cardiac myocytes**  
Principal Investigator: Donald M. Bers  
Project 2

Principal Investigator: Lothar A. Blatter  
Ca and InsP<sub>3</sub> receptor signaling in cardiac myocytes  
Project Role: Co-Investigator/Senior Investigator

**4) National Institutes of Health (NIH), R01 HL62231-15** 9/01/1999-5/31/2014  
**E-C coupling and Ca<sup>2+</sup> regulation in atrial myocytes**

The goal is to investigate the mechanisms of excitation-contraction coupling and Ca release from the sarcoplasmic reticulum in atrial myocytes and the disturbances of Ca signaling that lead to arrhythmogenic Ca release and cardiac alternans.  
Principal Investigator: Lothar A. Blatter  
Project Role: Faculty

### **PENDING RESEARCH SUPPORT**

**1) National Institutes of Health (NIH), R01 HL62231-16** (competitive renewal)  
**E-C coupling and Ca<sup>2+</sup> regulation in atrial myocytes** (submitted July 2013)

The goal is to investigate the mechanisms of excitation-contraction coupling and Ca release from the sarcoplasmic reticulum in atrial myocytes and the disturbances of Ca signaling that lead to arrhythmogenic Ca release and cardiac alternans.  
Principal Investigator: Lothar A. Blatter  
Project Role: Co-Investigator/Senior Investigator

### **COMPLETED RESEARCH SUPPORT**

**1) RUMC Grant-in Aid 31196** Dedkova (PI) 12/01/2010-11/30/2012  
**Depletion of mitochondrial polyphosphate as a novel protection strategy against ischemia-reperfusion induced cell death.**

The goal of this project is to study the role of the inorganic polyphosphate in protection against ischemia-reperfusion induced cell death.  
Project Role: Principal Investigator

**2) SDG 0735071N** Dedkova (PI) 07/01/2007-06/30/2012  
**American Heart Association (AHA)/National Affiliate**  
**Mechanisms of mitochondria-mediated cardioprotection by trimetazidine in ventricular myocytes.**

The goal of this project is to study the mechanisms of mitochondria-mediated cardioprotection by trimetazidine during heart failure.  
Project Role: Principal Investigator

**3) AHA fellowship 0425761Z** Dedkova (PI) 07/01/2004-06/30/2006  
**AHA/Greater Midwest**

**Contractile activity stimulates nitric oxide production in cat ventricular myocytes through cytoskeletal-dependent mechanisms.**  
The goal of this study was to evaluate whether contractile activity modulates nitric oxide production in cardiomyocytes and to determine the underlying mechanisms.  
Project Role: Principal Investigator

## **HONORS AND ACADEMIC SERVICES**

1996-1998      Jorge Soros Award for Advanced Postgraduate Students, Moscow  
1999              FEBS Award for Participation in FEBS Advanced Course:  
Free Radicals, Nitric Oxide and Antioxidants in Health and Disease  
2004-2006      AHA Greater Midwest Affiliate, Postdoctoral Fellowship  
2007              AHA Greater Midwest Scientist Development Grant,  
Mechanisms of mitochondria-mediated cardioprotection by trimetazidine in  
ventricular myocytes - declined in a favor of AHA National SDG award  
2011-present    Faculty Council Member, Rush University Medical Center  
2012-present    University Council Member, Rush University Chicago  
2013-present    Elected Council Member for the Bioenergetic Subgroup of the Biophysical  
Society.

## **GRANT REVIEW PANELS**

2011              Rush Translational Sciences Consortium Grant Review Committee  
2013              Ataxia UK Research Grant reviewer  
2013              Rush Translational Sciences Consortium Grant Review Committee

## **EDITORIAL BOARDS**

2010-present    Review Editor for Frontiers in Cardiac Muscle Physiology  
2011-present    Review Editor for Frontiers in Mitochondrial Research

## **REFFERAL AND EDITORIAL WORK**

Cardiovascular Research  
Cellular & Molecular Biology, Humana Press (Book proposal review)  
Circulation Research  
Dove Medical Press  
Frontiers in Mitochondrial Physiology  
Frontiers in Cardiac Muscle Physiology  
Journal of Applied Physiology  
Journal of Molecular and Cellular Cardiology  
Journal of Muscle Research and Cell Motility  
PLOS One  
Trends in Cardiovascular Medicine

## **TEACHING EXPERIENCE**

2008-present    Lectures and Journal Club Director at Section of Calcium Signaling,  
Department of Molecular Biophysics and Physiology, Rush University Medical  
Center, Chicago, IL

- 2007 Nitric Oxide Signaling lectures as a part of Signal Transduction Course (Fall Semester 2007) for Physiology 471 Graduate Program at Loyola University Medical Center, Maywood, IL. Course director: Mitchel F. Denning, PhD, Associate Professor of Pathology, Loyola University Medical Center, Maywood, IL
- 1999 Practical course for postgraduate students of Pushchino State University, Russia: "Fluorescence techniques for the measurement of intracellular Ca<sup>2+</sup> and pH in living cells". Course director: Valery P. Zinchenko, PhD, Professor of Physiology, Pushchino State University, Pushchino, Russia

### **STUDENTS AND POSTDOCTORAL FELLOWS SUPERVISED**

- 2013 Isaac Philip, research volunteer, who contributed significantly to the project devoted to study of the role of  $\beta$ -hydroxybutyrate and its polymer poly-hydroxybutyrate in the development of diabetic cardiomyopathy.
- 2011-2012 Vanessa V. Juettner, research assistant, who performed cell death experiments related to the project "Ca<sup>2+</sup>-dependent ROS generation during ischemia triggers mPTP-dependent cell death during reperfusion" resulting in one abstract and one peer-reviewed publication.
- 2009-2011 Lea K. Seidlmayer, post-doctoral fellow who was the main driving force for the project "Inorganic polyphosphate is a potent activator of the mitochondrial permeability transition pore in cardiac myocytes" invited for publication in special Issue of J. Gen. Physiology, 2012, 139 (5): 321-31 with Editorial Comment published in J Gen Physiol. 2012 June; 139(6): 391–393. Invited addendum was published in Channels 2012, 6: 463-7. PMID: PMC3536732

### **PROFESSIONAL MEMBERSHIPS**

- 1999-present Member, Biophysical Society
- 2004-present Member, American Heart Association (AHA)
- 2013-present Elected Council Member, Bioenergetics Subgroup of the Biophysical Society

### **PEER-REVIEWED PUBLICATIONS**

1. **Dedkova E.N.\***, Blatter L.A. (2014) Role of  $\beta$ -hydroxybutyrate and inorganic polyphosphate in cardiovascular health and disease. *Frontiers in Mitochondrial Research* (*\*Invited Review. This article is part of a Special Issue entitled "Mitochondria: Hubs of cellular signaling, energetics and redox balance".*) *In preparation for submission*
2. Seidlmayer L.K., Juettner V.V., Pavlov E., Blatter L.A., **Dedkova E.N.** (2014) Distinct modes of mPTP activity during ischemia and reperfusion: contributions of calcium, ROS and inorganic polyphosphate *J Mol Cell Cardiology*. (*In preparation for submission*).
3. Seidlmayer L.K., Blatter L.A., **Dedkova E.N.** (2013) Mechanisms of the cardioprotective effects of trimetazidine in rabbit heart failure. *J Mol Cell Cardiology*, 59: 41-54. PMID: 23388837 (*Recommended by Faculty of 1000, F1000*).
4. **Dedkova E.N.**, Blatter L.A.\* (2013) Calcium signaling in cardiac mitochondria. *J Mol Cell Cardiol*. 58: 125-133 PMID: PMC3627826 (*\*Invited Review. This article is part of a*

*Special Issue entitled "Calcium Signaling in Heart".)*

5. Seidlmayer L.K., Blatter L.A., Pavlov E., **Dedkova E.N\***. Inorganic polyphosphate – an unusual suspect of the mitochondrial permeability transition mystery. 2012, Channels (Austin). 6: 463-7. PMID: PMC3536732 (*\*Invited Addendum to 2012, J. Gen. Physiology, 139 (5): 321-31.*)
6. Seidlmayer L.K., Blatter L.A., Pavlov E., **Dedkova E.N.** Inorganic polyphosphate is a potent activator of the mitochondrial permeability transition pore in cardiac myocytes. 2012, J. Gen. Physiology, 139 (5): 321-31. PMID: PMC3343371 (*Editorial Comment in J Gen Physiol. 2012 June; 139(6): 391–393.*)
7. **Dedkova EN**, Blatter LA\*. Measuring mitochondrial function in intact cardiac myocytes. J. Mol. Cell. Cardiology 2012, 52(1), 48-61. PMID: PMC3246130 (*\*Invited Review*).
8. **Dedkova E.N.**, Blatter L.A. Characteristics and function of cardiac mitochondrial nitric oxide synthase. *J. Physiol.*, **2009**, 587, 851-872. Epub 2008 Dec 22.
9. **Dedkova E.N.**,\* Blatter L.A. Mitochondrial Ca<sup>2+</sup> and the heart. *Cell Calcium* 2008, 44 (1), 77-91. Epub 2008 Feb 21. PMID: 18178248 (*\*Invited Review*).
10. **Dedkova E.N.**, Wang Y.G., Ji X., Blatter L.A., Samarel A.M., Lipsius S.L. Signaling mechanisms in contraction-mediated stimulation of intracellular NO production in cat ventricular myocytes. *J. Physiol.* 2007, 580 (1): 327-345. Epub 2007 Jan 18.
11. Sedova M.,\* **Dedkova E.N.**,\* Blatter L.A. Integration of rapid cytosolic Ca<sup>2+</sup> signals by mitochondria in cat ventricular myocytes. *Am. J. Physiol. Cell Physiol.*, Nov; 291(5):C840-50. Epub 2006 May 24 (*\*Authors contributed equally to this publication*).
12. **Dedkova E.N.**, Blatter L.A. Modulation of Mitochondrial Calcium by Nitric Oxide in Cultured Bovine Vascular Endothelial Cells. *Am. J. Physiol. Cell Physiol.*, **2005** Oct; 289(4): C836-845. Epub 2005 May 18. (*Editorial comment in Am J Physiol Cell Physiol. 2005, 289 (4):C775-7.*)
13. Wang Y.G., **Dedkova E.N.**, Ji X., Blatter L.A., Lipsius S.L. Phenylephrine acts via IP<sub>3</sub>-dependent intracellular NO release to stimulate L-type Ca<sup>2+</sup> current in cat atrial myocytes. *J. Physiol.*, **2005** Aug 15; 567(Pt 1): 143-157. Epub 2005 Jun 9. (*Recommended by Faculty of 1000, F1000*). PMID: PMC1474159
14. **Dedkova E.N.**, Ji X., Lipsius S.L., Blatter L.A. Mitochondrial calcium uptake stimulates nitric oxide production in mitochondria of bovine vascular endothelial cells. *Am. J. Physiol. Cell Physiol.*, **2004**, 286, C406-415.
15. **Dedkova E.N.**, Ji X., Wang Y.G., Blatter L.A., Lipsius S.L. Signaling mechanisms that mediate NO production induced by ACh exposure and withdrawal in cat atrial myocytes. *Circ. Res.*, **2003**, 93, 1233-1240.
16. Wang Y.G., **Dedkova E.N.**, Fiening J. P., Ojamaa K., Blatter L. A., Lipsius S.L. Acute exposure to thyroid hormone increases Na<sup>+</sup> current and intracellular Ca<sup>2+</sup> in cat atrial myocytes. *J. Physiol.*, **2003**, 546, 491-499.
17. **Dedkova E.N.**, Wang Y.G., Blatter L.A., Lipsius S.L. Nitric oxide signalling by selective β<sub>2</sub>-adrenoceptor stimulation prevents ACh-induced inhibition of β<sub>2</sub>-stimulated Ca<sup>2+</sup>-current in cat atrial myocytes. *J. Physiol.*, **2002**, 542, 711-723. PMID: PMC2290448
18. **Dedkova E.N.**, Blatter L.A. Nitric oxide inhibits capacitative Ca<sup>2+</sup> entry and enhances endoplasmic reticulum Ca<sup>2+</sup> uptake in bovine vascular endothelial cells. *J. Physiol.*, **2002**, 539, 77-91. PMID: PMC2290138 (*One of the top 10 downloaded articles of the month*).
19. Wang Y.G., **Dedkova E.N.**, Steinberg S.F., Blatter L.A., Lipsius S.L. Beta 2-adrenergic receptor signaling acts via NO release to mediate ACh-induced activation of ATP-sensitive K<sup>+</sup> current in cat atrial myocytes. *J. Gen. Physiol.*, **2002**, 119, 69-82.
20. **Dedkova E.N.**, Sigova A.A., Zinchenko V.P. Mechanism of action of calcium ionophores on intact cells: ionophore-resistant cells. *Membr Cell Biol.*, **2000**, 13, 357-368.
21. Sigova A.A, **Dedkova E.N.**, Zinchenko V.P., Litvinov I.S. Reduction of Ca<sup>2+</sup>-transporting systems in memory T cells. *Membr Cell Biol.*, **2000**, 14, 97-107.

22. **Dedkova E.N.**, Alovskaya A.A., Gabdulhakova A.G., Safronova V.S., Zinchenko V.P. Priming effect of calcium ionophores on phorbol ester-induced respiratory burst in mouse peritoneal neutrophils. *Biochemistry (Mosc.)*, **1999**, 64(7):788-794.
23. Sigova A.A., **Dedkova E.N.**, Zinchenko V.P., Litvinov I.S. A comparative study of calcium system in memory T cells and naive T cells. *FEBS Lett.*, **1999**, 447, 34-38.
24. Alovskaya A.A., Gabdulhakova A.G., Gapeev A.B., **Dedkova E.N.**, Safronova V.G., Fesenko E.E., Chemeris N.K. Biological effects by EHF EMF depends on functional status of neutrophils. *News of medical technology*, **1998**, 1, 36-40 (Russian).
25. Zinchenko V.P., Mysiakin E.B., Dolgachev V.A., **Dedkova E.N.**, Safronova V.G., Gapeev A.B., Shebzukhov Iu.V., Vaisbud M.Iu. Effect of structural analogs of platelet activating factor on the intracellular signal transduction in murine peritoneal neutrophils and macrophages of P388D1 line. *Biofizika*, **1997**, 42, 1097-1105. (Russian)
26. Abdrasilov B.S., Kim Yu.A., Nurieva R.I., **Dedkova E.N.**, Leonteva G.A., Hwa-Jin Park, Zinchenko V.P. The effect of total saponins from Panax Ginseng C.A. Meyer on the intracellular signalling system in Ehrlich ascites tumor cells. *Biochemistry and Molecular Biology International*, **1996**, 38, 3, 519-526.
27. Nurieva R.I., **Dedkova E.N.**, Leont'eva G.A., Abdrasilov B.S., Pak Kh.D., Kim Yu.A., Zinchenko V.P. Mechanism of activation of Ehrlich ascites carcinoma cells using the total fraction of saponins from Korean ginseng. *Antibiot Khimioter.*, **1995**, 40, 25-28.
28. Kuzin A.M., Yurov S.S., Shchelkaeva N.V., **Dedkova E.N.** Mutability of *Sporobolomyces Alborubescence Derx* exposed to long-term chronic  $\gamma$ -irradiation at low dose-rates. *Radiobiology*, **1994**, 3, 419-423 (Russian).

#### **ABSTRACTS:**

1. Seidlmayer L.K., Juettner V.V., Blatter L.A., **Dedkova E.N.** Ca<sup>2+</sup>-dependent ROS generation during ischemia triggers mPTP-dependent cell death during reperfusion. 57th Annual Meeting of Biophysical Society, February 2-13, **2013**, Philadelphia, Pennsylvania // *Biophysical Journal*, 2013, 104 (2, Supplement 1): p. 216a.
2. Elustondo P.A., Cohen A.M., Kawalec M., Michalak M., **Dedkova E.N.**, Kurchok P., Pavlov E. Polyhydroxybutyrate Derivative Induces Cyclosporin a Sensitive Mitochondrial Depolarization in Mammalian Cultured Cells. 57th Annual Meeting of Biophysical Society, February 2-13, **2013**, Philadelphia, Pennsylvania // *Biophysical Journal*, 2013,104(2, Supplement 1): p.660a. DOI: <http://dx.doi.org/10.1016/j.bpj.2012.11.3640>
3. Seidlmayer L.K., Blatter L.A., **Dedkova E.N.** Increased activity of mitochondrial complex II in rabbit heart failure is associated with reactive oxygen species generation and impaired excitation-contraction coupling. 56th Annual Meeting of Biophysical Society, February 25-29, **2012**, San Diego, California // *Biophysical Journal*, 2012, Vol. 102, Issue 3, p. 165a.
4. Lea Seidlmayer, Lothar A. Blatter, Evgeny Pavlov, **Elena N. Dedkova** Changes in mitochondrial calcium and ROS during ischemia-reperfusion in polyphosphate-depleted cardiomyocytes. 56th Annual Meeting of Biophysical Society, February 25-29, **2012**, San Diego, California // *Biophysical Journal*, 2012, Vol. 102, Issue 3, p. 165a.
5. Seidlmayer L., Blatter L.A., **Dedkova E.N.** Increased activity of mitochondrial complex II in rabbit heart failure is associated with reactive oxygen species generation and impaired excitation-contraction coupling. The British Society for Cardiovascular Research, BSCR Autumn Meeting 2011, Mitochondria in Cardiovascular Disease: Emerging Concepts and Novel Therapeutic Targets, September 5-6, 2011 // *Heart (British Cardiac Society)*. 12/2011; 97(24):e8.
6. Seidlmayer L., Blatter L.A., **Dedkova E.N.** Increased activity of mitochondrial complex II in

rabbit heart failure is associated with reactive oxygen species generation and impaired excitation-contraction coupling. The British Society for Cardiovascular Research , BSCR Autumn Meeting 2011, Mitochondria in Cardiovascular Disease: Emerging Concepts and Novel Therapeutic Targets, September 5-6, 2011 // Heart (British Cardiac Society). 12/2011; 97(24):e8.

7. Seidlmayer L., L A Blatter, E Pavlov, **Dedkova E.N.** Role of inorganic polyphosphate for cardiac mitochondria function in ischemia-reperfusion. 65<sup>th</sup> Annual Meeting and Symposium, Society of General Physiologists, Marine Biological Laboratory, Woods Hole, Massachusetts, September 7-11, 2011.
8. Seidlmayer L., Blatter L.A., Pavlov E., **Dedkova E.N.** Role of inorganic polyphosphate for cardiac mitochondrial function in ischemia/reperfusion. 55th Annual Meeting of Biophysical Society, March 5-9, **2011**, Baltimore, Maryland // *Biophysical Journal*, 2011, 100(3) pp. 45a.
9. Seidlmayer L.K., Blatter L.A., Pavlov E., **Dedkova E.N.** Decreased levels of inorganic polyphosphates prevent opening of the mitochondrial permeability transition pore in ischemia-reperfusion injury. Annual Meeting of the American Heart Association, Scientific Sessions 2010, November 13-17, **2010**, Chicago, Illinois // *Circulation*, 2010, Vol. 122: A17373
10. Seidlmayer L.K., Winkfein B., Blatter L.A., Pavlov E., **Dedkova E.N.** Modulation of the mitochondrial permeability transition pore of cardiac myocytes by inorganic polyphosphate. 54th Annual Meeting of Biophysical Society, February 2-6, **2010**, San Francisco, California // *Biophysical Journal*, 2010, Vol. 98, Issue 3, 379a-379a.
11. **Dedkova E.N.**, Blatter L.A. L-arginine and tetrahydrobiopterin inhibit mitochondrial permeability transition pore by preventing ROS formation by mitochondrial nitric oxide synthase. 53rd Annual Meeting of Biophysical Society, February 2-6, **2009**, Boston, Massachusetts // *Biophysical Journal*, 2009, Vol. 96, Issue 3, S1, 2747-Pos.
12. **Dedkova E.N.**, Blatter L.A. Trimetazidine effects on the mitochondrial metabolism during rabbit heart failure. 53rd Annual Meeting of Biophysical Society, February 2-6, **2009**, Boston, Massachusetts // *Biophysical Journal*, 2009, Vol. 96, Issue 3, S1, 1247-Pos, p.243a.
13. **Dedkova E.N.**, Blatter L.A. Trimetazidine rescues calcium transient and mechanical alternans in cardiac myocytes from the failing heart. 52st Annual Meeting of Biophysical Society, February 2-6, **2008**, Long Beach, California // *Biophysical Journal*, 2008, Vol. 94, 1537-Pos.
14. **Dedkova E.N.**, Blatter L.A. Cardioprotection by trimetazidine is mediated by inhibition of mitochondrial permeability transition pore (PTP) through decreasing fatty acid-induced oxidative stress. 51st Annual Meeting of Biophysical Society, March 3-7, **2007**, Baltimore, Maryland // *Biophysical Journal*, 2007, Vol. 93, 2812-Pos, B177.
15. **Dedkova E.N.**, Blatter L.A. Mitochondrial calcium uptake stimulates nitric oxide and ROS production by mitochondria-specific nitric oxide synthase in cat ventricular myocytes. 50th Annual Meeting of Biophysical Society, February 18-22, **2006**, Salt Lake City, Utah // *Biophysical Journal*, 2006, Vol. 91, 2538-Pos, B205.
16. **Dedkova E.N.**, Blatter L.A., Lipsius S.L. Acetylcholine (ACh) withdrawal induces rebound stimulation of intracellular calcium release mediated by NO and IP<sub>3</sub>-dependent signaling. 49th Annual Meeting of Biophysical Society, February 12-16, **2005**, Long Beach, California // *Biophysical Journal*, 2005, Vol. 88, N. 1, 2142-Pos, P. 438a.
17. **Dedkova E.N.**, Ji X., Lipsius S.L., Blatter L.A. Mitochondrial Calcium Uptake Stimulates Nitric Oxide Production in Mitochondria-specific nitric oxide synthase in Bovine Vascular Endothelial Cells. 48th Annual Meeting of Biophysical Society, February 14-18, **2004**, Baltimore, Maryland // *Biophysical Journal*, 2004, Vol. 86, N. 1, 560-Pos, P. 105a.
18. **Dedkova E.N.**, Wang Y.G., Blatter L.A., Lipsius S.L. Contractile activity stimulates nitric oxide production in cat ventricular myocytes via PI-(3)K-cytoskeletal signaling. 48th Annual Meeting of Biophysical Society, February 14-18, **2004**, Baltimore, Maryland // *Biophysical Journal*, 2004, Vol. 86, N. 1, 2071-Pos, P. 399a.
19. **Dedkova E.N.**, Wang Y.G., Blatter L.A., Lipsius S.L. Contractile activity acts via cytoskeletal signaling to stimulate NO production in cat ventricular myocytes. Annual Scientific Session of



- American Heart Association, November 9-12, **2003**, Orlando, Florida // *Circulation*, 108, N. 17, 404-Abs, p. IV-86
20. Lipsius S.L., Wang Y.G., Ji X., Blatter L.A., **Dedkova E.N.** Alpha-1 adrenoreceptor stimulation by Phenylephrine stimulates L-type calcium current via nitric oxide production in cat atrial myocytes. Annual Scientific Session of American Heart Association, November 9-12, **2003**, Orlando, Florida // *Circulation*, 108, N. 17, 1385-Abs, p. IV-292
  21. **Dedkova E.N.**, Blatter L.A., Lipsius S.L. ACh acts via G<sub>i</sub>-Protein-PI(3)K signaling to stimulate nitric oxide (NO) production in cat atrial myocytes. 47th Annual Meeting of Biophysical Society, March 1-5, **2003**, San Antonio, Texas // *Biophysical Journal*, 82, N.2, 1920-Pos, P. 394a
  22. **Dedkova E.N.**, Blatter L.A. Modulation of mitochondrial calcium by nitric oxide in vascular endothelial cells. 46th Annual Meeting of Biophysical Society, February 23-27, **2002**, San Francisco, California // *Biophysical Journal*, 82, N.1, 556-Pos
  23. **Dedkova E.N.**, Y. G. Wang, S. F. Steinberg, L.A. Blatter, S.L. Lipsius β<sub>2</sub>-adrenergic receptors act via PI(3)K signaling to mediate nitric oxide (NO) release in atrial myocytes. 46th Annual Meeting of Biophysical Society, February 23-27, **2002**, San Francisco, California // *Biophysical Journal*, 82, N.1, 1316-Pos
  24. **Dedkova E.N.**, Blatter L.A. Nitric oxide inhibits capacitance Ca<sup>2+</sup> entry in vascular endothelial cells. 45th Annual Meeting of Biophysical Society, February 17-21, **2001**, Boston, Massachusetts // *Biophysical Journal*, 80, N.1, 2786-Pos.
  25. **Dedkova E.N.**, Zinchenko V.P. Arachidonic acid inhibits the receptor-dependent and store-dependent capacitance Ca<sup>2+</sup> influx in Erlich ascites tumor cells. 44th Annual Meeting of Biophysical Society, February 12-16, **2000**, New Orleans, Louisiana // *Biophysical Journal*, 78, N.1, 1132-Pos.
  26. Safronova V.G., Alovskaya A.A., Gabdulhakova A.G., **Dedkova E.N.**, Zinchenko V.P., Chemeris N.K. Role extracellular calcium in priming of neutrophil respiratory burst by calcium ionophore. 42nd Annual Meeting of Biophysical Society, 22-26 February **1998**, Kansas City, Missouri // *Biophysical Journal*, 74, 2, part 2 of 2, 286-Pos.
  27. **Dedkova E.N.**, Gabdulhakova A.G., Alovskaya A.A., Safronova V.G., Zinchenko V.P. Calcium ionophores in cell activation and priming. // 25th Silver Jubilee FEBS Meeting, July 5-10, **1998**, The Bella Center, Copenhagen, Denmark, 6-51-Pos.
  28. Alovskaya A.A., **Dedkova E.N.**, Safronova V.G. Neutrophil respiratory burst: mechanism inactivation // 25th Silver Jubilee FEBS Meeting, July 5-10, **1998**, The Bella Center, Copenhagen, Denmark, 6-52-Pos.
  29. Safronova V.G., Gabdulhakova A.G., Alovskaya A.A., **Dedkova E.N.**, Gapeyev A.B., Chemeris N.K, Fesenko E.E. Biological effects of extremely high frequency electromagnetic field depends on functional status of neutrophils. // An Annual Meeting of Professional Research Scientists, April 18-22, **1998**, Moscone Convention Center, San Francisco, California, A-Pos95.
  30. Safronova V.G., Alovskaya A.A., Gabdulhakova A.G., **Dedkova E.N.**, Zinchenko V.P., Chemeris N.K. Priming mechanism of calcium ionophores in activation of neutrophil respiratory burst. 41st Annual Meeting of Biophysical Society, March 2-6, **1997**, New Orleans, Louisiana // *Biophysical Journal*, 72, 274-Pos.
  31. Zinchenko V.P., Mysyakin E.V., Dolgachev V.A., Barrat G., **Dedkova E.N.**, Safronova V.G., Gapeyev A.B., Shebzuhov Yu.V., Vaisbud M.Yu. The effect of platelet activating factor structural analogues on signal transduction in mouse peritoneal neutrophils and macrophages line P388D1. // 12 Conference of the European Macrophage Study Group, September 17-19, **1998**, Institut Pasteur, Paris, France.
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### **INVITED SEMINARS AND TALKS**

1. 11/15/2013, Invited speaker at the Cardiovascular Aging Research Laboratory, Center for Integrative Research on Cardiovascular Aging, Aurora Research Institute, Milwaukee, WI, "Mechanisms of mitochondria-mediated cardioprotection by trimetazidine in rabbit heart failure".
2. 09/10/2013, Invited speaker at the Comprehensive Heart Failure Center, University of Wurzburg, Wurzburg, Germany, "Mechanisms of mitochondria-mediated cardioprotection by trimetazidine in rabbit heart failure".
3. 09/07/2013, Talk presented at the 4<sup>th</sup> Retreat of the Foundation Lequcq Transatlantic Network of Excellence on "Redox and Nitrosative Regulation of Cardiac Remodeling: Novel Therapeutic Approaches for Heart Failure", Turin, Italy, " $Ca^{2+}$ -dependent ROS generation during ischemia triggers mPTP-dependent cell death during reperfusion".
4. 06/11/2012, Invited speaker at 2012 Gordon Research Conference, Cardiac Regulatory Mechanisms, New London, NH, June 10-15, "Mitochondrial Ca transients".
5. 06/11/2012, Invited Point-Counterpoint Presenter at 2012 Gordon Research Conference, Cardiac Regulatory Mechanisms, New London, NH, June 10-15: "Is there a mitochondrial localized NOS? "
6. 04/06/2012, Talk presented at the 3<sup>rd</sup> Retreat of the Foundation Lequcq Transatlantic Network of Excellence on "Redox and Nitrosative Regulation of Cardiac Remodeling: Novel Therapeutic Approaches for Heart Failure", Park City, UT, "Inorganic Polyphosphate is a Potent Activator of the Mitochondrial Permeability Transition Pore in Cardiac Myocytes".
7. 03/07/2012, Invited speaker at the Cardiovascular Research Conference, Rush University Medical Center, Chicago, IL, "Mechanisms of mitochondria-mediated cardioprotection by trimetazidine in rabbit heart failure".
8. 09/06/2011, Invited speaker at 2011 British Society for Cardiovascular Research Autumn Meeting, Mitochondria in Cardiovascular Disease: Emerging Concepts and Novel Therapeutic Targets, "Increased activity of mitochondrial complex II in rabbit heart failure is associated with reactive oxygen species generation and impaired excitation-contraction coupling".
9. 09/03/2011, Talk presented at the 2<sup>nd</sup> Retreat of the Foundation Lequcq Transatlantic Network of Excellence on "Redox and Nitrosative Regulation of Cardiac Remodeling: Novel

Therapeutic Approaches for Heart Failure”, Merton College, Oxford, UK, “Increased activity of the mitochondrial complex II in rabbit heart failure is associated with robust ROS generation and impaired excitation-contraction coupling”.

10. 03/04/2011, Invited Talk presented at the Institute of Molecular Cardiobiology, John Hopkins University, Baltimore, Maryland, “Inorganic Polyphosphate and Mitochondrial Function in Cardiac Myocytes: Role in mPTP opening and protection against ischemia-reperfusion injury.”
11. 12/12/2010, Talk presented at the 1<sup>st</sup> Retreat of the Foundation Lequcq Transatlantic Network of Excellence on “Redox and Nitrosative Regulation of Cardiac Remodeling: Novel Therapeutic Approaches for Heart Failure”, Baltimore, MD, “Mitochondrial impairment in heart failure and cardioprotective effect of trimetazidine”.
12. 07/26/2010, Invited seminar presented at the Hatter Cardiovascular Institute, Department of Cardiovascular Medicine, University College of London, “Mitochondrial calcium and nitric oxide signaling in the heart”.
13. 10/22/07, Invited seminar presented at the Department of Molecular Biophysics and Physiology, Rush University Medical Center “Mitochondrial calcium and nitric oxide in the heart”.
14. 08/31/05, Seminar presented at Physiology Department, Loyola University Chicago “Mitochondrial calcium –nitric oxide signaling in vascular endothelial cells”.
15. 05/24/02, Seminar presented at Physiology Department, Loyola University Chicago “Calcium signaling in vascular endothelial cells: capacitative  $Ca^{2+}$  entry and nitric oxide”.