

CURRICULUM VITAE

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Place of Birth: Kiev, Ukraine

Citizenship: Austria, United States Permanent Resident

EDUCATION:

1986 B.S./M.S. The State University "Schewtchenko", Kiev, Ukraine
1993 M.S. Degree legalization, Graz, Austria
1997 Ph.D. University of Graz, Austria.

POSTDOCTORAL TRAINING:

Research Fellowships:

1997 - 1999 Research Associate, University of Southern California School of Pharmacy, Los Angeles, CA
1999 – 2003 Research Associate, Cardiovascular Division, Brigham and Women's Hospital, Boston, MA

ACADEMIC APPOINTMENTS:

1999 - 2003 Research Fellow, Harvard Medical School, Boston, MA
2003 - 2007 Instructor in Medicine, Cardiovascular Division, Brigham and Women's Hospital, Boston, MA
2007 – present Assistant Professor, Ohio State University

PROFESSIONAL SOCIETIES:

2007-present American Society for Nutrition
2003-present American Heart Association
1997-98 International Society of Free Radical Research (ISFRR)
1995-99 Österreichische Biochemische Gesellschaft

AWARDS AND HONORS:

1994 Hermes-Vitamin-Award 1994 for Publication: Winklhofer-Roob, Ziouzenkova, Puhl, Ellenmunter, Greiner, Müller, Van't Hof, Esterbauer, Shmerling.
Impaired resistance to oxidation of low density lipoproteins in cystic fibrosis: Improvement during vitamin E supplementation.
1998 Oxygen Club of California, Lester Packer Young Investigator Award
1998 "Cherry Award " (the top application), American Heart Association Fellowship

- 1998 Young Investigator Award, IX Biennial Meeting, International Society for Free Radical Research
- 2002 Young Investigator Award, XI Biennial Meeting, International Society for Free Radical Research
- 2002 Louis and Norman Katz Basic Science Award Winner, "Enzymatically-Active Lipoprotein Lipase Generates Endogenous PPAR- α Ligands", American Heart Association
- 2003 Travel Award, Hot Topics in Endocrinology, American Society for Endocrinology, San Diego
- 2004 Lerner Young Faculty Award at Brigham and Women's Hospital, Boston
- 2007 New Investigator Award, First Annual Meeting, Organization for the Study of Sex Differences, Washington DC

SELECTED INVITED NATIONAL AND INTERNATIONAL PRESENTATIONS:

National:

- 1998 Lecturer, "Formation of an Atherogenic LDL Subfraction in Blood: How Hemoglobin Overcomes Plasma Antioxidants During Hemodialysis" Seminar, National Institute of Environmental Health Sciences, Research Triangle, Durham, North Carolina
- 1999 Lecturer, "Formation Of An Atherogenic LDL Subfraction In Blood: A Probable Consequence Of Inflammation", Cardiovascular Seminar, Brigham and Women's Hospital, Harvard Medical School, Boston, MA
- 2005 Lecturer, "Vitamin A metabolites regulate PPAR and RXR function", Seminar, Karl-Franzens University, Graz, Austria
- 2006 Lecturer, "Anti-inflammatory Effects of PPARs", Research Symposium on "Advanced Glycation End Products and Diabetic Complications: Insights into New Mechanisms and New Therapeutic Targets, Cambridge, Massachusetts, March 17-19.
- 2007 Lecturer, "Asymmetric cleavage of beta-carotene yields a transcriptional PPAR and RXR repressor", Seminar, University of California Los Angeles, Los Angeles, January 12.
- 2007 Presenter, "Retinaldehyde Suppresses Obesity and Insulin Resistance Resulting from High-Fat Feeding" Cardiovascular, Diabetes, and Metabolic Disorders Research Center retreat, Boston, February 13.

International:

- 1998 Lecturer, "Modification of LDL During Hemodialysis", EDTA meeting, Madrid, Spain
- 1998 Lecturer, Awardee presentation: "Cross-Linking Of ApoB And Hemoglobin Caus LDL Modification In Plasma", IX Biennial Meeting, International Society for Free Radical Research, Sao Paulo, Brazil
- 2000 Lecturer, Electronegative LDL (LDL-) Increases Plasminogen Activator Inhibitor 1 (PAI-1) Through Peroxisome Proliferator Activated Receptor (PPAR γ) Mechanisms, American Heart Association, Orlando, FL
- 2001 Lecturer, "Modulation Of Peroxidase-Dependent PPAR γ Signaling By Antioxidants", Oxygen Club of California, Santa Barbara, CA
- 2002 Lecturer, "Enzymatically-Active Lipoprotein Lipase Generates Endogenous PPAR α Ligands, American Heart Association, Chicago, IL
- 2003 Lecturer, "Electronegative LDL decreases VCAM-1 expression in a PPAR α -dependent fashion: synergistic action of oxidation and lipolysis", Hot topics in endocrinology", San Diego, CA
- 2005 Lecturer, "Endogenous pathways regulate activation and inhibition of PPAR function", Third International Symposium on "PPARs EFFICACY AND SAFETY From Basic Science To Clinical Applications", Monte Carlo, Monaco, March 19-23.
- 2007 Lecturer, "Asymmetric cleavage of beta-carotene yields a transcriptional PPAR and RXR repressor", Gordon Conference on Carotenoids, Ventura, California, January 7-12.
- 2007 Lecturer, Hermann Esterbauer Memorial Meeting: Ten Years After: "Reactive Oxygen Species and Antioxidants: From Biochemistry to Human Disease", Graz, Austria, October 15.

2007 Lecturer, 3rd International Symposium of the Human Nutrition & Metabolism Research and Training Center Graz "Bridging the Gap between Lifespan & Healthspan Nutrition and Healthy Ageing" Graz, Austria, October 15-18.

Current Funding Report:

2005-2009 American Heart Association, Scientist Development Award, PI
"Endogenous PPAR and RXR regulation through retinoic acid precursors"

Report of Current Research Activities: Basic Science

- Endogenous Mechanisms for Nuclear Receptor Regulation

Current work identifies two endogenous aldehydes in the vitamin A pathway inhibiting PPAR γ and RXR α responses. Physiologic effects of inhibitors include suppression of adipocyte differentiation through PPAR:RXR mechanisms and increased inflammatory responses due to marked NFkappaB activation.

-Regulation of Metabolic Pathways by Vitamin A metabolizing Enzymes in vivo Including:

- Fat distribution: retinaldehyde dehydrogenase-1 (RALDH1) deficiency or inhibition protects against visceral obesity induced by a high-fat diet.

- Metabolic dimorphism: vitamin A diet specifically regulates adipogenesis in male and female RALDH1 knockout mice

- Systemic inflammation: RALDH1 deficiency leads to the significantly decreased levels of inflammatory mediators in plasma

- Endogenous Mechanisms for PPAR Activation

My work elucidates endogenous mechanisms of PPAR activation and the nature of PPAR ligands that link catabolism of lipoproteins to transcriptional regulation.

BIBLIOGRAPHY

ORIGINAL ARTICLES

1. Winklhofer-Roob BM, **Ziouzenkova O**, Puhl H, Ellenmunter H, Greiner P, Müller G, Van't Hof MA, Esterbauer H, Shmerling DH. Impaired resistance to oxidation of low density lipoproteins in cystic fibrosis. Improvement during vitamin E supplementation. *Free Radic Biol Med.* 1995;19:725-733.
2. **Ziouzenkova O**, Giese SP, Ramos P, Esterbauer H. Factors affecting resistance of low density lipoproteins to oxidation. *Lipids.* 1996; 31:s-71-6.
3. **Ziouzenkova O**, Winklhofer-Roob BM, Puhl H, Roob JM, Esterbauer H. Lack of a correlation between the alpha-tocopherol content of plasma and LDL, but high correlations for gamma-tocopherol and carotenoids. *J Lipid Res.* 1996; 37:1936-46.
4. Meraji S, **Ziouzenkova O**, Resch U, Khoschsorur A, Tatzber F, Esterbauer H. Enhanced plasma level of lipid peroxidation in Iranian could be improved by antioxidants supplementation. *Eur J Clin Nutr.* 1997; 51(5): 318-25.
5. **Ziouzenkova O**, Sevanian A, Abuja PM, Ramos P, Esterbauer H. Copper can promote oxidation of LDL by markedly different mechanisms. *Free Radic Biol Med.* 1998; 24:607-23.
6. **Ziouzenkova O**, Asatryan L, Sevanian A. Oxidative stress resulting from hemolysis and formation of catalytically active hemoglobin: Protective strategies. *Int J Clin Pharmacol Ther.* 1999; 37:125-32.
7. **Ziouzenkova O**, Asatryan L, Akmal M, Tetta C, Wratten ML, Jurgens G, Loseto-Wich J, Heinecke JW, Sevanian A. Oxidative Cross-linking of ApoB and Hemoglobin results in Low Density Lipoprotein Modification: Relevance to Atherogenesis caused by Hemodialysis. *J Biol Chem.* 1999;274:18916-18924.
8. **Ziouzenkova O**, Asatryan L, Wratten ML, Hwang J, Tetta C, Sevanian A. Oxidative stress during ex-vivo hemodialysis of blood is decreased by a novel hemolipodialysis procedure utilizing antioxidants. *Free Radic Biol Med.* 2002;33:248-258.
9. Sethi S, **Ziouzenkova O**, Ni H, Wagner DD, Plutzky J, Mayadas TN. Oxidized omega-3 fatty acids in fish oil inhibit leucocyte-endothelial interactions through activation of PPAR alpha. *Blood.* 2002; 100:1340-1346.
10. **Ziouzenkova O**, Perrey S, Asatryan L, Hwang J, MacNaul KL, Moller DE, Rader DJ, Sevanian A, Zechner R, Hoefler G, Plutzky J. Lipolysis of triglyceride-rich lipoproteins limits inflammatory responses through PPAR-alpha activation. *Proc Nat Acad Sc.i* 2003; (5):2730-2735.
11. Asatryan L, **Ziouzenkova O**, Dunkan R, Sevanian A. Heme and lipid peroxides in hemoglobin-modified low density lipoprotein mediate cell survival and adaptation to oxidative stress. *Blood.* 2003; 102:1732-1739.
12. **Ziouzenkova O**, Asatryan L, Sahady D, Orasanu G, Perrey S, Cutak B, Hassell T, Sevanian A, Plutzky J. Electronegative LDL decreases VCAM-1 expression in a PPARalpha-dependent fashion: synergistic action of oxidation and lipolysis. *J Biol Chem.* 2003;(278):39874-39881.
13. Ahmed W, Orasanu G, Nehra V, Asatryan L, Rader DJ, **Ziouzenkova O**, Plutzky J HDL hydrolysis by endothelial lipase activates PPARalpha: A candidate mechanism for HDL-mediated repression of leukocyte adhesion. *Circulation Research.* 2006;(98):490-498.
14. **Ziouzenkova O**, Orasanu G, Sukhova G, Lau E, Berger JP, Tang G, Krinsky NI, Dolnikowski GG, Plutzky J Asymmetric cleavage of beta-carotene yields a transcriptional repressor of RXR and PPAR. *Mol. Endocrinology.* 2007;(21):77-88.
15. **Ziouzenkova O**, Orasanu G, Sharlach M, Akiyama TE, Berger JP, Viereck J, Hamilton JA, Tang G, Dolnikowski GG, Plutzky J. Retinaldehyde represses adipogenesis and diet-induced obesity. *Nature Medicine.* 2007;13:695-702.

B. REVIEWS

1. Esterbauer H, Giese SP, Giessauf A, **Ziouzenkova O**, Ramos P. Free radicals and oxidative modification of LDL: role of natural antioxidants. In: Woodford FP, Davignon J, Sniderman A. *Atherosclerosis X.* 1995: 203-8.

2. Esterbauer H, Giese SP, Giessauf A, **Ziouzenkova O**, Ramos P. Role of natural antioxidants in inhibiting Cu²⁺ mediated oxidation of LDL. In: Bellomo G, Finardi G, Maggi E, Rice-Evans C. Free radicals, lipoprotein oxidation and atherosclerosis. Richelieu Press, London, 1995: 11-26.
3. Sevanian A, Asatryan L, **Ziouzenkova O**. Low Density Lipoprotein (LDL) modification: Basic Concepts and Relationship to Atherosclerosis. *Blood Purif.* 1999;17(2-3): 66-78.
4. Sevanian A, Asatryan L, **Ziouzenkova O**. Low Density Lipoprotein (LDL) modification: Basic Concepts and Relationship to Atherosclerosis. In: Lameire N, Tetta C, Ronco C, Haemodialysis and oxidant stress. Karger AG, Basel, 66-78.
5. **Ziouzenkova O**, Sevanian A Oxidative Modification of Low Density Lipoprotein (LDL) in HD Patients: Role in electronegative LDL formation. In Botella J, Klinkman H, La Greca G, Zucchelli P. Chronic Inflammation in hemodialysis. Karger AG, Basel, 2000: 169-176.
6. **Ziouzenkova O**, Sevanian A Oxidative Modification of Low Density Lipoprotein (LDL) in HD Patients: Role in electronegative LDL formation. *Blood Purif.* 2000; 18(3):169-76.
7. **Ziouzenkova O**, Perrey S, Bacqueville D Marx N, Plutzky J. Peroxisome Proliferator-activated Receptors. *Curr Atheroscler Rep.* 2002; 4 (1):59-64.
8. **Ziouzenkova O**, Plutzky J. Exogenous and endogenous mechanisms of PPAR activation: implications for inflammation and atherosclerosis. In: Matsuzawa Y, Kita T, Nagai R, Teramoto T, B.) editors. Proceedings of the 13th International Atherosclerosis Symposium, Kyoto, Japan, 9/28 - 10/2/2003. Elsevier, ScienceDirect: International Congress Series 2004; 1262: 147-151.
9. **Ziouzenkova O**, Plutzky J. Lipolytic PPAR activation: new insights into the intersection of triglycerides and inflammation? *Curr. Opin.Cin.Nutr.Metab. Care* 2004; 7:369-375.
10. Devchand PR, **Ziouzenkova O**, Plutzky J. oxidative stress and peroxisome proliferators-activated receptors:reversing the curse? *Circulation Res.* 2004; 95:1137-1139.
11. Orasanu G, **Ziouzenkova O**, Plutzky J. Peroxisome Proliferator-Activated Receptors (PPARs)- Potential targets for Diabetic Atherosclerosis. In: Cheta D. Vascular Involvement in Diabetes: Clinical, Experimental and Beyond. Karger AG, 2005:35-50.
12. **Ziouzenkova O**, Orasanu G. Lipoproteins and PPAR Signaling in Diabetes. In: Cheta D. Vascular Involvement in Diabetes: Clinical, Experimental and Beyond. Karger AG, 2005:51-62.
13. **Ziouzenkova O**, Marx N, Libby P, Plutzky J. PPARs in atherosclerosis. In: De Caterina R, Libby P. Endothelial Dysfunctions and Vascular Disease, 2007, 337-349.
14. Ahmed W, **Ziouzenkova O**, Brown J, Devchand PR, Frances S, Kadakia M, Kanda T, Orasanu G, Sharlach M, Plutzky J. PPARs and their metabolic modulation: new mechanisms for transcriptional regulation? *Journal of Internal Medicine.* 2007 262:184-198.
15. **Ziouzenkova O** and Plutzky J. P. Retinoid metabolism and Nuclear Receptor Responses: New Insights into coordinated regulation of the PPAR-RXR Complex, *FEBS Lett.* 2008 582:32-38.

C. PATENTS

1. Plutzky J, **Ziouzenkova O**. Oxidized forms of retinoic acid as ligands for peroxisome proliferator activated receptor gamma. U.S. Patent Application Nos. 60/228,763 and 60/246,067. Filed August 29, 2001.
2. Plutzky J, **Ziouzenkova O**. Lipoprotein Lipase and Lipoprotein Lipase Activators in the Treatment of Inflammatory Conditions, U.S. Patent Application Nos. 60/331,124. Filed November 8, 2001.