



Conditions Treated:

Research Areas:

- *Pulmonary Fibrosis*

Programs & Services:

- *Department of Medicine*
- *Division of Pulmonary, Critical Care and Sleep Medicine (Adult)*

Our laboratory is specialized on mass spectrometric approaches to study the involvement of lipid signaling molecules in the development of different pulmonary diseases. Our main current focus is at sphingolipid signaling molecules as the inducers and modulators of COPD and pulmonary fibrosis. In particular, we have established an important link between sphingolipid de novo biosynthesis and the development of emphysema. We also investigate how natural, synthetic, and endogenous ligands for cannabinoid receptors affect fibrotic processes in the lung. Another focus area for our group is the involvement of polyunsaturated molecular species of lysophosphatidic acids in the allergic responses in the lung. We try to understand metabolic pathways involved and sources of lysophosphatidic acid production in the lung and to link lysophosphatidic acid generation to the severity and subtypes of asthma.

Education

Far East State University (Vladivostok, Russia), PhD

Fellowship

Pacific Institute of Bioorganic Chemistry (Vladivostok, Russia) ,
Hormel Institute, University of Minnesota (Austin, MN),

Teaching or Professional Positions

2013: Member of the HL 13-023 “Career Development Program for Omics of Lung Diseases”
Special Emphasis Panel Review Committee

2006: Chairman of the Supelco-Nicolas Pelick AOCs Award Committee

2004-2005: Member of the Supelco-Nicolas Pelick AOCs Award Committee

Professional Memberships

Member of the American Society for Mass Spectrometry (ASMS)

Member of the International Cannabinoid Research Society (ICRS)

Member of the American Society for Biochemistry and Molecular Biology (ASBMB)

Publications

Park GY, Lee YG, Berdyshev E, Nyenhuis S, Du J, Fu P, Gorshkova IA, Li Y, Chung S, Karpurapu M, Deng J, Ranjan R, Xiao L, Jaffe HA, Corbridge SJ, Kelly EA, Jarjour NN, Chun J, Prestwich GD, Kaffe E, Ninou I, Aidinis V, Morris AJ, Smyth SS, Ackerman SJ, Natarajan V, Christman JW. (2013) Autotaxin production of lysophosphatidic Acid mediates allergic asthmatic inflammation. *Am J Respir Crit Care Med.* 188(8):928-40.

Gorshkova IA, Wang H, Orbelyan GA, Goya J, Natarajan V, Beiser DG, Vanden Hoek TL, Berdyshev EV. (2013) Inhibition of sphingosine-1-phosphate lyase rescues sphingosine kinase-1-knockout phenotype following murine cardiac arrest. *Life Sci.*, 93(9-11):359-66.

Gorshkova I., Zhou T., Mathew B., Jacobson J.R., Takekoshi D., Bhattacharya P., Smith B., Aydogan B., Weichselbaum R.R., Natarajan V., Garcia J.G., Berdyshev E.V. (2012) Inhibition of serine palmitoyltransferase delays the onset of radiation-induced pulmonary fibrosis through the negative regulation of sphingosine kinase-1 expression. *J. Lipid Res.* 53(8):1553-1568.

Berdyshev, E.V., Gorshkova, I.A., Usatyuk, P., Zhao, Y., Saatian, B., Hubbard, W., Natarajan, V. (2006) De novo biosynthesis of dihydrosphingosine-1-phosphate by sphingosine kinase 1 in mammalian cells. *Cell. Signaling*, 18(10), 1779-1792.

Petrache I., Natarajan V., Zhen L., Medler T.R., Richter A., Cho C., Hubbard W.C., Berdyshev E.V., Tudor R.B. (2005) Ceramide upregulation causes pulmonary cell apoptosis and emphysema-like disease in mice. *Nature Med.* 11(5), 491-498.

Doctor's Contact Information

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