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RESEARCH INTERESTS

Molecular mechanisms that underlie diseases.
Regulation of the mammalian cellular iron homeostasis by the iron exporter Ferroportin.
Intracellular membrane trafficking - regulation of protein targeting and degradation.

EDUCATION

Ph.D. Biology (2006-2011), University of Utah, Department of Biology. Dissertation: “Functional and biochemical studies of the Vps4 ATPase in *Saccharomyces cerevisiae*”

M. S. Biology (2004-2006), University of Arkansas for Medical Sciences, Department of Physiology and Biophysics. Theses: “Role of the COG complex in the membrane trafficking”

M.S. Microbiology (2003-2004), Shupyka L.P. Postgraduate Medical Academy of Ukraine, Department of Virology. Theses: “Definition of an adsorption activity of rota- and enteroviruses on the bentonite clay”

M.D. Preventive Medicine (1997-2003), National Medical University (NMUU) of Ukraine, Kiev. Major: Preventive medicine.

RESEARCH EXPERIENCE

Postdoctoral fellow University of Utah, Department of Pathology, Laboratory of Dr. Jerry Kaplan (2011-now). Identifying novel mechanisms that regulate function of the mammalian iron exporter Ferroportin. Regulation of iron homeostasis is vital to the cellular function and Ferroportin is the only known iron exporter. I am currently working on identifying novel protein partners that regulate Ferroportin and amino acid/s that mediate iron binding and export. I use budding yeast as a platform to identify novel protein interactions and tissue cell culture and zebrafish model to identify function of Ferroportin in vivo.

Research associate, University of Utah, Department of Biology, Laboratory of Dr. Markus Babst (2006-2011). Cell surface receptors are targeted for degradation in vacuole via MVBs. ESCRT (Endosomal Sorting Complex Required for Transport)-0, I, II and III act sequentially on the endosomal membrane where they concentrate cargo and drive intraluminal vesicle formation. Vps4 ATPase interaction with ESCRT-III solubilizes ESCRT-III and allows multiple rounds of vesicle formation. We study precise sites of interaction of Vps4 with ESCRT-III and ESCRT-III-associated proteins.

Research associate, University of Arkansas for Medical Sciences, Department of Physiology and Biophysics, Laboratory of Dr. Vladimir Lupashin (2004-2006). "*The Conserved Oligomeric Golgi (COG) complex – mediated recycling of Golgi enzymes*".

LABORATORY TECHNIQUES

Basic molecular biology and genetics procedures, including recombinant DNA techniques, recombination proteins – design and purification. Yeast cell culture - general genetic, biochemical and fluorescence microscopy techniques. Mammalian tissue cell culture - transfection, general biochemical and fluorescence microscopy techniques. Protein analysis – immunoblotting, immunoprecipitation, chromatography (size exclusion, affinity, ion-exchange). Organelle separation and analysis.

PUBLICATIONS

Shestakova A, Curtiss M, Davies BA, Katzmann DJ, Babst M. Role of the linker region in the assembly and function of the Vps4 AAA ATPase. Manuscript in preparation.

Davies BA, Azmi IF, Payne J, Shestakova A, Horazdovsky BF, Babst M, Katzmann DJ. Coordination of substrate binding and ATP hydrolysis in Vps4-mediated ESCRT-III disassembly. Mol Biol Cell. 2010 Oct;21(19):3396-408.

Shestakova A, Hanono A, Drosner S, Curtiss M, Davies BA, Katzmann DJ, Babst M. Assembly of the AAA ATPase Vps4 on ESCRT-III. Mol Biol Cell. 2010 Mar;21(6):1059-71.

Shestakova A, Suvorova E, Pavliv O, Khaidakova G, Lupashin V. Interaction of the conserved oligomeric Golgi complex with t-SNARE Syntaxin5a/Sed5 enhances intra-Golgi SNARE complex stability. J Cell Biol. 2007 Dec 17;179(6)1179-92.

Sun Y, Shestakova A, Hunt L, Sehgal S, Lupashin V, Storrie B. Rab6 regulates both ZW10/RINT-1 and conserved oligomeric Golgi complex-dependent Golgi trafficking and homeostasis. Mol Biol Cell. 2007 Oct;18(10):4129-42.

Shestakova, S. Zolov and V. Lupashin. COG complex-mediated recycling of Golgi glycosyltransferases is essential for normal protein glycosylation. Traffic. 2006 Feb;7(2):191-204.

JOURNAL EDITOR

Central European Journal of Biology

JOURNAL REFEREE

Bioscience Trends journal Central European Journal of Biology
The Cell Biology International journal
Cellular and Molecular Bioengineering Journal
Cell Journal
Central European Journal of Biology
Journal of Biological Chemistry

Genetics and Molecular Biology
Molecular Genetics, Microbiology and Virology journal
Biocell journal
Biological Research journal
Brazilian Journal of Medical and
Biological Research

TEACHING EXPERIENCE

2010 - "Molecular Biology of DNA", teaching assistant, senior undergraduate laboratory course, University of Utah, Department of Biology.
2008 - "Introductory Cell Biology Course", teaching assistant, senior undergraduate level, University of Utah, Department of Biology.

AWARDS

2010 - Graduate travel award from the Graduate School, University of Utah.
2008 - Graduate travel award from the Department of Biology, University of Utah.
2005 - Travel award from American Society of Cell Biology (ASCB).
2004 - Travel award from the UAMS Student Research Days.
2002 - Best scientific project award at the *57-th* international student medical conference.

CONFERENCE PRESENTATIONS AND INVITED TALKS

2010 - "Role of the linker in the function of Vps4 ATPase" at the American Society of Cell Biology (ASCB) annual meeting, Philadelphia, December 11-15, 2010.
2010 - "Role of the linker in the function of Vps4 ATPase" at the American Society for Biochemistry and Molecular Biology (ASBMB) meeting " The Biochemistry and Cell Biology of ESCRTs in Health and Disease". Snowbird, UT, October 11-14.
2008 - "Role of the Vps4 ATPase in the MVB sorting pathway" at the American Society of Cell Biology (ASCB) annual meeting, San Francisco, December 13-17, 2008
2005 - "The COG complex-mediated recycling of Golgi glycosyltransferases" at the American Society of Cell Biology (ASCB) annual meeting, San Francisco, December 9-15, 2005.
2005 - 7th Young Scientists Meeting German Society for Cell Biology, Jena, Germany, September 22-24, 2005. "Role of the COG complex in the recycling of Golgi glycosyltransferases".

REFERENCES

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