

2010-2011
Summary of Scholarly Activities
Department of Cell Biology & Neuroscience

I. PUBLISHED JOURNAL ARTICLES, BOOK CHAPTERS, AND PATENTS

LeDoux SP, Guest JM. University of South Alabama College of Medicine. Acad Med. 2010;85(9 Suppl):S74-7.

Ochoa CD, Stevens T, Balczon R. Cold exposure reveals two populations of microtubules in pulmonary endothelia. Am J Physiol Lung Cell Mol Physiol. 2011 Jan;300(1):L132-8.

Parra-Bonilla G, Alvarez DF, Al-Mehdi AB, Alexeyev M, Stevens T. Critical role for lactate dehydrogenase A in aerobic glycolysis that sustains pulmonary microvascular endothelial cell proliferation. Am J Physiol Lung Cell Mol Physiol. 2010 Oct;299(4):L513-22.

Sayner SL. Emerging themes of cAMP regulation of the pulmonary endothelial barrier. Am J Physiol Lung Cell Mol Physiol. 2011 May;300(5):L667-78.

Sayner SL, Balczon R, Frank DW, Cooper DM, Stevens T. Filamin A is a phosphorylation target of membrane but not cytosolic adenylyl cyclase activity. Am J Physiol Lung Cell Mol Physiol. 2011 Jul;301(1):L117-24.

Wang W, Esbensen Y, Kunke D, Suganthan R, Rachek L, Bjoras M, Eide L. Mitochondrial DNA damage level determines neural stem cell differentiation fate. J Neurosci. 2011 Jun 29;31(26):9746-51.

Yuzefovych L, Wilson G, Rachek L. Different effects of oleate vs. palmitate on mitochondrial function, apoptosis, and insulin signaling in L6 skeletal muscle cells: role of oxidative stress. Am J Physiol Endocrinol Metab. 2010 Dec;299(6):E1096-105.

Zhao Y, Liu H, Liu Z, Ding Y, LeDoux SP, Wilson GL, Voellmy R, Lin Y, Lin W, Nahta R, Liu B, Fodstad O, Chen J, Wu Y, Price JE, Tan M. Overcoming trastuzumab resistance in breast cancer by targeting dysregulated glucose metabolism. Cancer Res. 2011 Jul 1;71(13):4585-97.

Zhao Y, Liu H, Riker AI, Fodstad O, LeDoux SP, Wilson GL, Tan M. Emerging metabolic targets in cancer therapy. Front Biosci. 2011 Jan 1;16:1844-60.

Zhu B, Zhang L, Creighton J, Alexeyev M, Strada SJ, Stevens T. Protein kinase A phosphorylation of tau-serine 214 reorganizes microtubules and disrupts the endothelial cell barrier. Am J Physiol Lung Cell Mol Physiol. 2010 Oct; 299(4):L493-501.

II. PUBLISHED ABSTRACTS

Balczon R, Prasain N, Prater J, Alexeyev M, Zhu B, Sayner S, Frank D, Stevens T. The *Pseudomonas aeruginosa* exotoxin Y impairs microtubule assembly in pulmonary microvascular endothelial cells. Am. J Resp Crit Care Med. 2011 May 1;183:A4180. Available from: http://ajrccm.atsjournals.org/content/vol183/1_MeetingAbstracts/aindex.dtl

Feinstein WP, Zhu B, Leavesley S, Sayner S, Rich TC. Assessment of the contributions of phosphodiesterase activity and cellular shape to the compartmentalization of cAMP signals - a computational study. Am J Respir Crit Care Med. 2011 May 1;183:A1945. Available from: http://ajrccm.atsjournals.org/content/vol183/1_MeetingAbstracts/aindex.dtl

Lin W. Activation of pancreatic endoplasmic reticulum kinase specifically in oligodendrocytes attenuates EAE-induced demyelination. Proceedings of the 42nd Annual American Society for Neurochemistry Meeting; 2011 Mar 19-23; St Louis, MO. p. 108. Abstract no. PSM08-05.

Sayner S, Kunstadt R, Daigle J. Bicarbonate disruption of the pulmonary endothelial cell barrier via activation of endogenous soluble adenylyl cyclase, AC10. Am J Respir Crit Care Med. 2011 May 1;183: A4178. Available from: http://ajrccm.atsjournals.org/content/vol183/1_MeetingAbstracts/aindex.dtl

Yuzefovych LV, LeDoux S, Wilson GL, Rachek LI. Role of palmitate induced mitochondrial DNA damage in insulin resistance in rat L6 skeletal muscle cells: consequences and mechanisms of action. Proceedings of the 71st American Diabetes Association Scientific Session; 2011 Jun 24-28; San Diego, CA. Abstract no.1502-P.

Yuzefovych L, Wilson G, Rachek L. Role of palmitate induced mitochondrial DNA damage in mitochondrial oxidative stress and insulin resistance in rat L6 skeletal muscle cells. J Diabetes. 2011 Apr;3(Suppl 1):34.

III. PUBLISHED BOOKS

Fields PA, LeDoux SP, Wilson GL. The "how to" dissector for human anatomy for medical students. 8th ed. Mobile, AL: USA Publications Department; 2011, 75 p.

Fields PA. The "how to" dissector for human anatomy for physician assistants. 3rd ed. Mobile, AL: USA Publications Department; 2011, 75 p.

IV. INVITED PRESENTATIONS

Zha X. Invited speaker. Maturation and trafficking of acid-sensing ion channel 1a. The 6th Gulf Coast Physiology Meeting; 2011 May 21; Jackson, MS.

V. NATIONAL PROFESSIONAL RECOGNITION

Dr. Mikhail Alexeyev served as grant reviewer for the Italian Ministry of Health. Reviewer for special NIH Study Section ZES1 LWJ-J (MI). Editorial Board Member for *World Journal of Experimental Medicine*. Associate Editor for *International Journal of Cell Biology* and *International Journal of Molecular Biology*. He also served as a reviewer for *Aging Cell*, *Mitochondrion*, *Biology of the Cell*, *The International Journal of Biochemistry & Cell Biology*, *Human Molecular Genetics*, *Journal of Scientific Research*; *Journal of Zhejiang University*.

Dr. Ronald Balczon served as Ad Hoc reviewer for the Lytmos Group LLC.

Dr. Phillip Fields served on the Society for the Study of Reproduction Awards Committee.

Dr. Anthony Gard served as an Ad Hoc reviewer for *Journal of Neuroscience*.

Dr. Steve Kayes served as a Member of the Business Advisory Committee in the American Society of Parasitologists; served as a Moderator for the Bionet Parasitology Listserve at the University of Indiana; served as a Reviewer for the Southeastern Society of Parasitologists Annual Meeting; served as a Member of the Board for the Alabama Department of Rehabilitation Services.

Dr. Susan LeDoux served as a Member of the NIEHS Environmental Health Sciences Review Committee; served on the Editorial Board, *DNA Repair*; served as President, Mitochondrial Research Society; served as a Member of the Physiology and Cell Biology Item Writing Committee of NBME; served as a Member of the Cancer Etiology Study Section.

Dr. Wensheng Lin served as an ad hoc reviewer for *Journal of Neuroscience Research*, *Acta Neuropathologica*, and *Journal of Cellular Biochemistry*

Dr. Lyudmila Rachek served as a Reviewer for the Italian Ministry of Health.

Dr. Sarah Sayner served as an ad hoc reviewer for *AJP Lung*; served as a Facilitator for the Poster Session at the American Thoracic Society International Conference; served on the Program Committee of the Pulmonary Circulation Assembly at the American Thoracic Society International Conference.

Dr. Glenn Wilson served on the Editorial Board of *Molecular Development and Aging*; served on the NIAAA Study Section; served on the NIEHS Study Section; served on the NIEHS Outstanding New Environmental Scientist (ONES) Study Section; served on the NIEHS Superfund Review.

VI. BRIEF SUMMARY OF ACTIVITIES AND PROGRESS

The Department places strong emphasis on both teaching and research. To enhance its research efforts, the Department sponsored visits from four distinguished scientists to meet with members in the Department and to present seminars on their research. Dr. Charles Roberts from Oregon Health and Science University presented a seminar titled "Hormonal Control of Lipid Metabolism in Primate Adipose Tissue" on September 16, 2010. Dr. Giovanni Manfredi from Cornell University presented a seminar titled "Regulation of Mitochondrial Energy Metabolism by Protein Phosphorylation" on March 17, 2011. Dr. Lawrence Mandarino from Arizona State University presented a seminar titled "Proteomics in the Study of Insulin Resistance" on April 14, 2011. Dr. Stephen Miller from Northwestern University presented a seminar titled "Combining Immunoregulatory and Myelin Repair Strategies for the Effective Therapy of the EAE Model of Multiple Sclerosis" on April 28, 2011.

In the area of education, the Department continued to provide over 30% of the instruction given to medical students in the first two years. The mean scores of our first year medical students on the mini board in both Gross and Developmental Anatomy and Cell Biology and Histology were over the 70th percentile. For second year medical students, the Department continued to play a leading role in the presentation of the Neuroscience course. The class average on the Neuroscience mini board was over the 90th percentile for the fourth straight year. These exceptional miniboard scores clearly demonstrate that the quality of instruction provided this Department is among the best in the Country. Also, faculty members from this Department taught Parasitology in the Medical Microbiology course and participated in the teaching of IDL 580 and IDL 581, the Methods course and the Seminar course for first year graduate students. Moreover, they taught in IDL 630 and 631 for more advanced graduate students. In the area of resident training, a course on Pelvic Anatomy was provided for Residents of the Department of Obstetrics and Gynecology. Additionally, Allied Health courses were presented on Gross Anatomy for both Physician's Assistant students and Physical Therapy students, Neuroanatomy for Physical Therapy Students, Histology and Cell Biology for Biomedical Science students, and Anatomy and Physiology for Biomedical Science students. Also, an Anatomy Laboratory was presented for Nursing Students. Finally, the Department presented two courses in the DREAM Program. In total, the Departmental faculty performed over 1360 hours of teaching.

In the area of community service, the Department expanded its efforts and provided health related education to over 750 High School and Middle School students. Additionally, we played an integral part in the SCRUBS Program to attract students into the Medical Profession.

Due to budgetary constraints the Department was unable to recruit any new faculty over the past year. However, it is still a goal to expand the Neuroscience focus when it is possible to identify new faculty in the future.