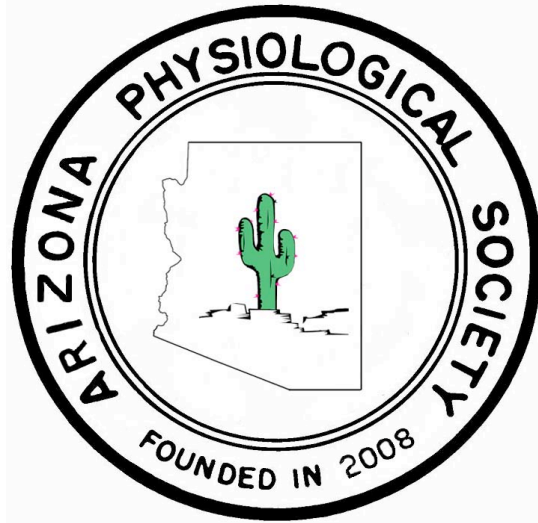


THE ARIZONA PHYSIOLOGICAL SOCIETY

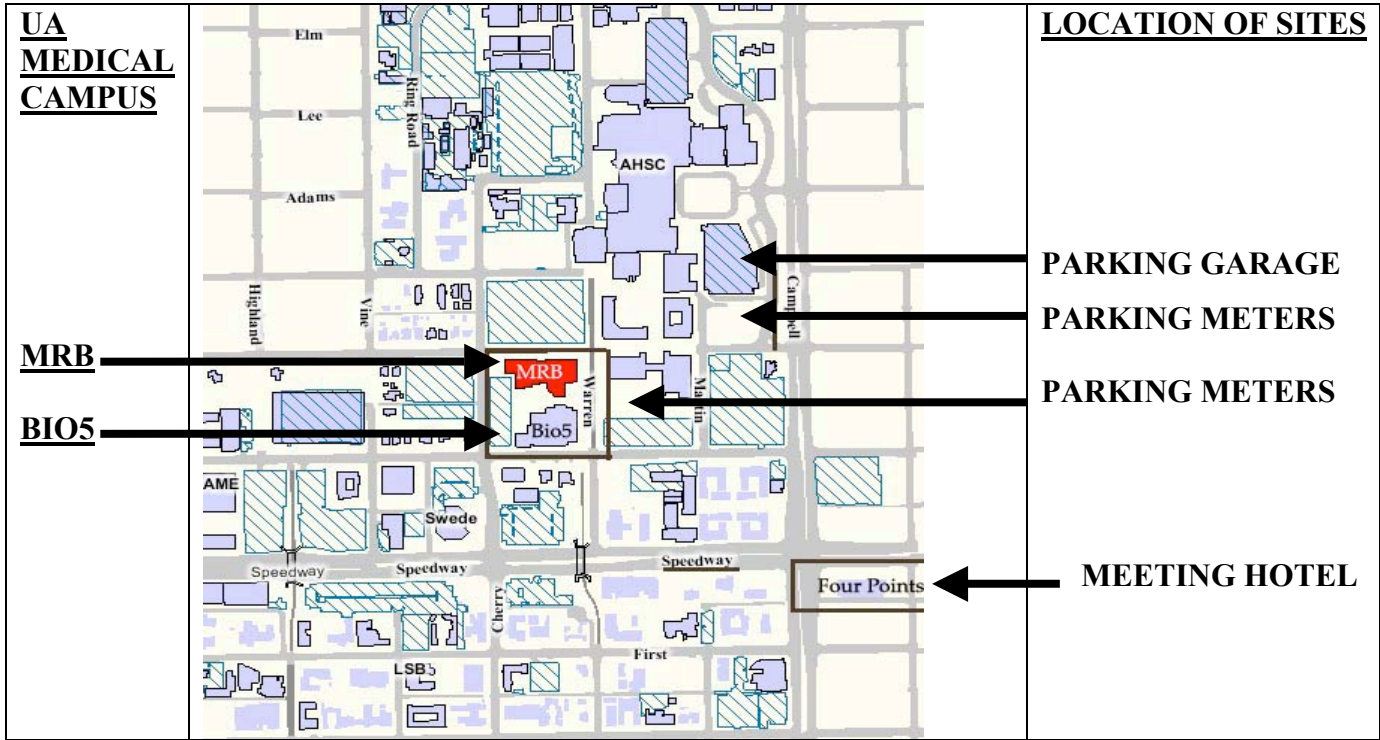


November 11-12, 2011
Medical Campus
The University of Arizona
Tucson, Arizona

Jointly sponsored by:

**The American Physiological Society,
University of Arizona Department of Physiology
University of Arizona Physiological Sciences Graduate Interdepartmental Program
The Cardiovascular Training Grant, University of Arizona
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CAMPUS MAP

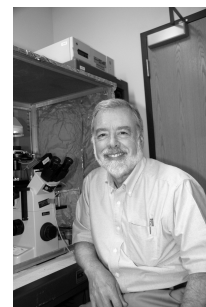


BIO 5
ORAL PRESENTATIONS

MRB
POSTER SESSION

FRIDAY'S PROGRAM

- 11:00 - 5:00 Registration in Lobby of Keating Bio5 Building
- 11:00 - 1:00 Set-up posters in Room 102 MRB
- 1:00 **Welcome to the Meeting - Scott Boitano, President, AzPS**
- 1:10 - 2:45 **SESSION I: "Non-Academic Uses of a Physiology Degree"**
Chair: Scott Boitano (Keating Bio5 Room 103)
- Lisa M. Williams, Ph.D.**, Cellular Analysis Sales Specialist, Roche Diagnostics Corporation,
"Memoirs of an Aspiring Scientist: from Bench to Business"
- Andrea N. Flynn, Ph.D.**, Member, Board of Directors, Cystic Fibrosis Foundation,
"Making a Difference Outside the Lab: Roles for Scientists in Non-Profit"
- Dana Crouse, M.S.**, Life Science Specialist, Sigma-Aldrich Life Science,
"You Are Where You've Been; Who You'll be is Where You Are Going"
- 2:45 - 3:05 Refreshment Break Bio 5 Lobby
- 3:10 - 4:30 **SESSION II: "An Animal Approach to Physiology"**
Co-Chairs: (Keating Bio5 Room 103)
- Rayna Gonzales, Ph.D.**, "Protective role for dihydrotestosterone in modulating vascular function following induction of inflammation in the cerebrovasculature"
- Surabhi Chandra, Ph.D.**, "Gender differences in the urinary concentrating mechanism following water restriction"
- Kari Taylor**, "Vertical jumping among mouse *MDM* genotypes"
- Heidy Contrares, Ph.D.**, "Conflicts between two competing systems in the Hawkmoth *Manduca Sexta*"
- Layla Al-Nakkash, Ph.D.**, "Effects of genistein and exercise on rat cardiac tissue"
- 4:30 - 4:50 Break
- 4:50 - 6:05 **The AzPS Keynote Lecture**
Introduction by Stephen Wright (Keating Bio5 Room 103)
- "The phosphatidylinositol phosphate regulation of ENaC: lipid rafts, cytoskeleton, and MARCKS protein"**
Dr. Douglas C. Eaton
Department of Physiology and the Center for Cell and Molecular Signaling
Emory University School of Medicine
- 6:05 Chapter Reception Begins
- 6:25 - 6:45 **Minute Poster Discussion** Keating Bio5 103
- 6:50 - 8:00 Buffet Dinner Begins
- 7:45 - 8:30 **Posters in Session**, MRB 102 - Odd numbered posters attended
- 8:30 - 9:15 **Posters in Session**, MRB 102 - Even numbered posters attended



SATURDAY'S PROGRAM

7:00 - 8:00 Poster Set Up in Room 102 MRB

7:00 - 8:00 **Continental Breakfast Served**

8:00 - 9:15 **SESSION III: Topics on Teaching Physiology**
Introduction by Ralph Fregosi (Keating Bio5 Room 103)
“Protein Structure in Physiology Teaching”
Dr. William R. Montfort
Department of Biochemistry
University of Arizona



9:15 - 9:35 **Break**

9:35 - 10:45 **The Distinguished Arizona Lecture**
Introduction by Henk Granzier (Keating Bio5 Room 103)
What is the role of titin in active muscle?
Dr. Kiisa C. Nishikawa
Department of Biological Sciences
Northern Arizona University



10:45 - 11:00 **Break** - Refreshments Served

11:00 - 12:00 **SESSION IV: A Cellular Approach to Physiology**
Co-Chairs: Cara Sherwood, Kirk Hutchinson (Keating Bio5 Room 103)
Carlos Hidalgo, Ph.D. “Titin Spring elements as a substrate for serine/threonine kinases”
Stoyan Angelov, “Is calcium involved in endothelial cell-induced mural cell differentiation?”
Nathaniel Hart, “Modulation of a pancreatic β -cell signaling using a heterobivalent GLP1/Glibenclamide ligand”
Sarah Kuzmiak, “Electron conductance in rat and sparrow skeletal muscle mitochondrial” electron transport chain”
Mohammad Shahidullah, Ph.D., “TRPV4 in porcine lens epithelium regulates hyposmotic stress-induced ATP release and Na,K-ATPase activity”

12:00 - 12:15 **Break** - Bag lunch served

12:15 - 12:35 **Minute Poster Session**, Keating Bio5 103

12:35 - 1:20 **Posters in Session**, MRB 102 - Odd numbered posters attended

1:20 - 2:05 **Posters in Session**, MRB 102 - Even numbered posters attended

2:15 **Business Meeting/Awards**, Keating Bio5 103

Directory of Abstracts

- A. **The phosphatidylinositol phosphate regulation of ENaC: lipid rafts, cytoskeleton, and MARCKS protein.** Abdel A. Alli, Hui-Fang Bao, Alia A. Alli, He-Ping Ma, Ling Yu, Otor Al-Khalili and Douglas C. Eaton. Department of Physiology and the Center for Cell and Molecular Signaling, Emory University School of Medicine, Atlanta, Georgia 30322
- B. **What is the role of titin in active muscle?** Kiisa Nishikawa, Department of Biological Sciences, Northern Arizona University

FRIDAY'S ABSTRACTS

1. **Characterization of myocardial passive stiffness in a mouse model of volume overload heart failure.** Hutchinson KR, Chung CS, Saripalli C Hidalgo C, Granzier H
2. **TITIN BASED VISCOSITY IN VENTRICULAR PHYSIOLOGY: AN INTEGRATIVE INVESTIGATION OF PEVK-ACTIN INTERACTIONS.** Charles S Chung¹; Methajit Methawasin¹; O Lynne Nelson²; Michael H Radke³; Alexander Gasch⁴; Carlos G Hidalgo¹; Siegfried Labeit⁴; Michael Gotthardt³; and Henk L Granzier¹
3. **TITIN SPRING ELEMENTS AS A SUBSTRATE FOR SERINE/THREONINE KINASES.** Hidalgo CG¹, Hudson B¹, Bogomolovas J², Gasch A², Labeit S², and Granzier H¹. ¹Dept. of Physiology, University of Arizona, Tucson, AZ. ²Universitätsmedizin Mannheim, Mannheim, Germany.
4. **VERTICAL JUMPING AMONG MOUSE *MDM* GENOTYPES.** KR Taylor, CM Pace, SA Mortimer, KC Nishikawa, Northern Arizona University, Flagstaff, AZ
5. **Propulsive force calculations of a frog jumping from the water's surface.** Kit C. Wilkinson, Kiisa C. Nishikawa, Theodore A. Uyeno, David Lee; Northern Arizona University, Flagstaff, AZ and University of Nevada , Las Vegas, NV
6. **STRUCTURAL CHARACTERISTICS OF TITIN'S N2A REGION SHED LIGHT ON TITIN FUNCTION AND MUSCULAR DYSTROPHY.** H. Tiffany, M.J. Gage, Ph.D. Northern Arizona University, Flagstaff, AZ
7. **EFFECTS OF GENISTEIN AND EXERCISE ON RAT CARDIAC TISSUE.** Al-Nakkash, L., K. Peterson and T.L. Broderick, Midwestern University, 19555 N. 59th Ave, Glendale, AZ. 85308
8. **Implications of hind limb scaling across mouse *mdm* genotypes.** SA Mortimer, CM Pace, KC Nishikawa, Northern Arizona University, Flagstaff, AZ
9. **FORCE ENHANCEMENT OF SOLEUS MUSCLES FROM *MDM* MICE.** Fuqua, RD, Monroy, JA, Nishikawa, KC Northern Arizona University, Flagstaff, AZ
10. **MOUSE INTACT AND SKINNED CARDIAC MYOCYTE MECHANICS: CROSSBRIDGE AND TITIN-BASED STRESS IN UNACTIVATED CELLS.** Mei Methawasin¹, Nicholas M.P. King¹, Joshua Nedrud¹, Charles S. Chung¹, Michiel Helmes², Henk L. Granzier¹. ¹University of Arizona, Tucson, AZ, USA, ²University of Oxford, Oxford, United Kingdom
11. **The impact of micro-RNA-195 on the LKB1/AMPK signaling axis and hypertrophic cardiomyopathy.** Chen H, Mckee L, Perez J, Untiveros G and Konhilas J. University of Arizona, 1656 E Mabel St, Tucson AZ 85724
12. **Electron Conductance in Rat and Sparrow Skeletal Muscle Mitochondrial Electron Transport Chain.** Sarah Kuzmiak and Wayne T. Willis, Arizona State University, Tempe, AZ
13. **ACETYLCHOLINE-MEDIATED VASODILATION IS DEPENDENT ON THE ACTIVATION OF POTASSIUM CHANNELS IN MOURNING DOVES (*ZENAIIDA MACROURA*).** Jarrett C, Mateja L, Smith C, Sweazea KL. Arizona State University, Tempe, AZ
14. **PROTECTION AGAINST L-NAME-INDUCED CARDIAC DYSFUNCTION PERSISTS EVEN AFTER CESSATION OF ACE-INHIBITOR TREATMENT.** Biwer LA¹, Xu H², Broderick TL³, Hale TM¹; University of Arizona College of Medicine – Phoenix, AZ¹; University of Rochester Medical Center, NY²; Midwestern University, AZ³
15. **ANTI-INFLAMMATORY EFFECTS OF ACE INHIBITION PERSIST FOLLOWING WITHDRAWAL OF TREATMENT.** Tu D, Biwer LA, Shahid W, Leberer M, Hale TM; University of Arizona, College of Medicine – Phoenix, AZ
16. **PROTECTIVE ROLE FOR DIHYDROTESTOSTERONE IN MODULATING VASCULAR FUNCTION FOLLOWING INDUCTION OF INFLAMMATION IN THE CEREBROVASCULATURE.** Gonzales RJ, Techapinyawat RA, O'Connor D, and Zuloaga KL, Basic Medical Sciences Department, University of Arizona College of Medicine, Phoenix, AZ
17. **CONFLICTS BETWEEN TWO COMPETING SYSTEMS IN THE HAWKMOTH *MANDUCA SEXTA*.** Contreras, H.L. and Davidowitz, G. University of Arizona, Tucson, AZ
18. **MICROVASCULAR ENDOTHELIAL CELL ISOLATION AND GROWTH REGULATION OF CX37.** Oulton JR, Burt JM, University of Arizona, Tucson, Arizona
19. **Characterizing The Coagulopathy Associated With The Early Recovery Period Following Cardiac Arrest And Resuscitation.** Thomas M. Glenn, Grace Davis-Gorman, and Paul F. McDonagh. Department of Surgery and the Sarver Heart Center
20. **COMBINED FOXC2/CX37 KNOCKOUT MICE EXHIBIT MORE SEVERE LYMPHATIC DEFECTS THAN MICE WITH SEPARATE DELETIONS.** Kanady JD, Munger SJ, Witte MH, Simon AM. University of Arizona, Tucson, Arizona, 85724.
21. **Relationship of Three-Dimensional Architecture of Thin Limbs of Henle's Loops to the Renal Inner Medullary Urine Concentrating Mechanism.** Kristen Y. Westrick, William H. Dantzer, Thomas L. Pannabecker, University of Arizona, Tucson, AZ

SATURDAY'S ABSTRACTS

- TRPV4 IN PORCINE LENS EPITHELIUM REGULATES HYPOSMOTIC STRESS-INDUCED ATP RELEASE AND Na,K-ATPASE ACTIVITY.** Shahidullah M, Mandal A, and Delamere NA, Dept. of Physiology, University of Arizona, 1501 N Campbell Avenue, Tucson, AZ, 85724, USA
- HYPOSMOTIC STRESS-INDUCED CYTOPLASMIC CALCIUM INCREASE INVOLVES TRPV4 AND Src FAMILY KINASE ACTIVATION.** Mandal A, Shahidullah M and Delamere N.A.* Department of Physiology and *Ophthalmology & Vision Science, College of Medicine, University of Arizona, Tucson, AZ 85724
- TIME-SENSITIVE IMMUNOFLUORESCENCE ASSAY USING 2-FUROYL-LIGRLO-DTPA-NH₂: A NOVEL SCREENING METHOD TO ASSESS PAR₂ PEPTIDOMIMETIC BINDING.** Justin Hoffman^{1,3,4}, Andrea N Flynn^{1,3,4}, Dipti V. Tillu², Josef Vagner³, Theodore J. Price^{2,3}, and Scott Boitano^{1,3,4} University of Arizona Departments of Physiology¹ and Pharmacology², Bio5 Collaborative Research Institute³ and Arizona Respiratory Center⁴
- MOLECULAR BAR CODING AND CELL SPECIFIC SIGNALING WITH MULTIVALENT TETHERED LIGANDS.** CS Weber, J Vagner, V Hruby, R Gillies and RM Lynch. Departments of Physiology, Chemistry and Radiology, University of Arizona, Tucson, AZ and the Moffitt Cancer Center, Tampa, FL.
- SYNTHETIC TETHERING INCREASES THE POTENCY OF PAR₂ AGONISTS IN VITRO AND IN VIVO.** Flynn A.N.^{1,3,4}, Tillu D.V.², Hoffman J.^{1,3,4}, Zhang Z.³, Vagner J.³, Price T.J.^{2,3}, Boitano S.^{1,3,4}
- CX37-C61,65A MUTANT DOES NOT SUPPRESS RIN CELL GROWTH.** Good, M.E., Nelson, T.K., Burt, J.M. Department of Physiology, University of Arizona, Tucson, AZ
- INTERNALIZATION OF HETEROBIVALENT LIGANDS USING FLOURESCENT MARKERS.** Justin Smith, Josef Vagner, Victor Hruby, Craig Weber and Ronald Lynch. Departments of Physiology, Chemistry and the BIO5 Institute, University of Arizona, Tucson, AZ.
- Is Calcium Involved In Endothelial Cell-induced Mural Cell Differentiation?** Stoyan N. Angelov, David T. Kurjiaka, Karen K. Hirschi, Scott Boitano, Janis M. Burt. *Department of Physiology, University of Arizona*
- TARGETING DIABETES: HIGH SPECIFICITY BINDING OF A YOIMBINE LINKED GLP-1 DIVALENT LIGAND TO PANCREATIC β -CELLS.** Kameswari Ananthakrishnan¹, Craig S. Weber¹, Nathaniel Hart¹, Josef Vagner³, Sean Limesand² and Ronald M. Lynch^{1,3} Departments of Physiology¹, Animal Sciences² and the Bio5 Institute³, University of Arizona, Tucson, 85721
- LIGHT ADAPTATION MODULATES GLYCINERGIC INHIBITION IN THE RETINA.** Mazade, RE and Eggers, ED, University of Arizona, Tucson AZ
- GENISTEIN-STIMULATED INCREASES IN INTESTINAL CLORIDE SECRETION ARE MEDIATED BY ADENYLATE CYCLASE IN FEMALE MICE ONLY.** Al-Nakkash, L. Department of Physiology, Midwestern University, Glendale, Arizona
- EFFECTS OF GENISTEIN DIET ON JEJUNUM FROM R117H CYSTIC FIBROSIS MICE.** Al-Nakkash, L.¹, M.L. Drumm² and S. Polito¹, ¹Midwestern University, 19555 N. 59th Ave, Glendale, AZ.85308. ²Case Western Reserve University, Euclid Ave, Cleveland, OH.
- Effects of voluntary and forced running on the stress response, food intake, and weight gain in the db/db mouse.** Broderick TL, Parrott CR, Ghosh P. Department of Physiology, Laboratory of Diabetes and Exercise Metabolism, Midwestern University, Glendale
- The Effects of Pioglitazone on Mitochondria Electron Transport Chain Function in Human Muscle.** ¹Cassandra Wolf, ^{1,2}Sarah Kuzmiak, ¹Xitao Xie, ¹Christian Meyer ¹Center for Metabolic Biology ²School of Life Sciences, Biology Department Arizona State University, Tempe, Arizona
- Insulin Signaling and Caveolae: Role of saturated fatty acids in the development of insulin resistance in 3T3-L1 adipocytes.** Boyack D., Gunn A., Anand V., and Vallejo J., Department of Physiology, Midwestern University, Glendale, AZ
- The effects of TNF- α on GM3-synthase levels and its subsequent activation of the insulin receptor in C2C12 myocytes.** Gordon, C., Miraglia, G., Kalin, M., and Vallejo J., Department of Physiology, Midwestern University, Glendale, AZ
- Fetal Adrenal Demedullation at 0.7 Gestation Alters Glucose-Insulin Homeostasis Near Term in Growth-Restricted Fetal Sheep.** Antoni R Macko, MS, Dustin T Yates, PhD, Xiaochuan Chen, MS, Miranda J Anderson, MS, Amy C Kelly, BS and Sean W Limesand, PhD. Animal Science, The University of Arizona, Tucson, AZ, 85719.
- ANG (1-7) ATTENUATES ANG II-INDUCED INSULIN RESISTANCE IN RAT SKELETAL MUSCLE *IN VITRO*.** M. Prasannarong^{1,2}, F. R. Santos¹, and E. J. Henriksen¹. ¹ Muscle Metabolism Laboratory, Department of Physiology, University of Arizona College of Medicine, Tucson, AZ 85724, and ² Exercise Physiology Laboratory, Department of Physiology, Faculty of Science, Mahidol University, Bangkok 10400, Thailand
- THE SERINE KINASE C-JUN N-TERMINAL KINASE (JNK) CONTRIBUTES TO OXIDANT-INDUCED INSULIN RESISTANCE IN RAT SKELETAL MUSCLE,** F. R. Santos, M. K. Diamond-Stanic, M. Prasannarong, and E. J. Henriksen, Department of Physiology, The University of Arizona, Tucson, AZ 85724
- MODULATION OF PANCREATIC β -CELL SIGNALING USING A HETEROBIVALENT GLPI/GLIBENCLAMIDE LIGAND.** Nathaniel Hart¹, Josef Vagner², Woo Jin Chung², Craig Weber¹, Sean Limesand³, Channa De Silva², Ronald Lynch^{1,4}. ¹Physiological Sciences, ²Bio5 Institute, ³Animal Sciences, ⁴Pharmacology, University of Arizona, Tucson, AZ
- Gender Differences in the Urinary Concentrating Mechanism following Water Restriction.** Surabhi Chandra, Qi Cai, Melissa Jill Romero-Aleshire and Heddwen L. Brooks, Department of Physiology, University of Arizona, 1656 E. Mabel Street, PO Box 245218, Tucson, AZ-85724