

CURRICULUM VITAE

15 June 2010

NAME: Karen L. Uray (formerly Davis)

PRESENT TITLE: Assistant Professor of Surgery

UNDERGRADUATE EDUCATION:

1982-1984 Pennsylvania State University
State College, PA
Animal Science Major

1984-1987 Texas A&M University
College Station, TX
B.S. Animal Science

GRADUATE EDUCATION:

1991-1997 University of Texas Graduate School of Biomedical Sciences
Houston, TX
Pharmacology Program
Advisor: Steve Allen, M.D.
Ph.D. Biomedical Sciences

POSTGRADUATE TRAINING:

1982-1984 Undergraduate Research Assistant
Pennsylvania State University
Department of Biochemistry
University Park, PA 16802

1985-1986 Undergraduate Fellows Program
Texas A&M University
Department of Veterinary Physiology
College Station, TX 77840
Advisor: D.C. Kraemer, Ph.D.

1988-1990 Research Technician
Texas A&M University Medical School
Department of Medical Physiology
College Station, TX 77840

- 1990-1991 Research Technician
Baylor College of Medicine
Department of Molecular Physiology and Biophysics
Houston, TX 77030
Supervisor: John Drewe, Ph.
- 1991-1997 Graduate Research Training
University of Texas Graduate School of Biomedical Sciences
Houston, TX 77030
Advisor: Steve Allen
Thesis: The effects of Myocardial Edema on the Development of Fibrosis
in the Heart
- 1997-2002 Postdoctoral Fellow
University of Texas Medical School – Houston
Houston, TX 77030
Advisor: Ferid Murad

ACADEMIC APPOINTMENTS:

- 2002-2004 Instructor
University of Texas Medical School – Houston
Dept. Integrative Biology and Pharmacology
Houston, TX 77030
- 2004-2006 Instructor
University of Texas Medical School – Houston
Dept. Pediatric Surgery
Houston, TX 77030
- 2006-Present Assistant Professor
University of Texas Medical School – Houston
Dept. Pediatric Surgery
Houston, TX 77030
- 2006-Present Faculty, Michael E. DeBakey Institute,
Texas A&M University
- 2008-Present Faculty
University of TX Graduate School of Biomedical Sciences
Houston, TX 77030

2009-Present Adjunct Faculty
University of Texas Medical School – Houston
Dept. Integrative Biology and Pharmacology
Houston, TX 77030

PROFESSIONAL ORGANIZATIONS/COMMITTEES:

LOCAL:

1991-1996 Member, Student Organization for
Animal Research Newsletter Writer

NATIONAL:

1989-1990 Member, American Association of
Laboratory Animal Scientists Laboratory Animal Technician
Certification

1991-1996 Member, Association of Women in Science

1996-1998 Member, American Physiology Society
2005-Present

2005-Present Member American Gastroenterological Association

2005-Present American Society of Cell Biologists

HONORS AND AWARDS:

1995 Life Technologies Training Center Workshop Award

1999-2002 National Research Service Award Postdoctoral Fellowship National
Heart, Lung and Blood Institute

**SERVICE ON THE UNIVERSITY OF TEXAS HEALTH SCIENCE CENTER AT
HOUSTON COMMITTEES:**

2002-Present Faculty Senate University of Texas Medical School at Houston

2008-Present Member, Graduate Student Education University of Texas Medical
School at Houston

2009-Present Animal Welfare Committee University of Texas Medical School at
Houston

CURRENT TEACHING RESPONSIBILITIES:

2008-Present Lecturer, Mammalian Physiology University of Texas Medical School at
Houston
Houston, TX

2008-Present Lecturer, Cell and Systems Physiology University of Texas Graduate
School of Biomedical Sciences
Houston, TX

2009-Present Lecturer, Principles in Pathology University of Texas Graduate School of
Biomedical Sciences
Houston, TX

CURRENT GRANT SUPPORT:

1. 2006-2011 NIH KO1 Award, National Institute of Diabetes and
Digestive and Kidney Diseases
Title: "Effects of Edema on Cadherins in Small Intestine"
Amount: \$75,000
PI: Karen Uray, PhD
2. 2009-2010 University of Texas Medical School at Houston Interim Grant
Assistance Program
Title: "The Effects of NF-kappaB Signaling On Intestinal Smooth Muscle
Function"
Amount: \$10,000
PI: Karen Uray, PhD
3. 2009-2011 Kinetic Concepts, Inc.
Title: "Off-site Flow Cytometry Analysis for Septic Shock Swine Study"
Amount: \$32,557
PI: Karen Uray, PhD

PAST GRANT SUPPORT:

1. 1999-2002 NHLBI- NRSA
Title: "Formation, Metabolism, and Function of Nitrotyrosine"
Amount: \$111,232
PI: Karen Uray, PhD
2. 2008-2010 Texas Medical Center Digestive Diseases Center Pilot/Feasibility
Award, National Institute of Diabetes and Digestive and Kidney Diseases
Title: "The Role of STAT3 in Regulating Intestinal Contractile Activity"
Amount: \$25,000
PI: Karen Uray, PhD

PUBLICATIONS:

A. Abstracts

1. **Uray KS**, Shah S, Cox, CS. Edema-induced alterations in the regulation of myosin light chain phosphorylation in intestinal smooth muscle. *FASEB J.* 2010.
2. **Uray KS**, Kislitsyna K, Cox CS. Effects of Cellular Stretch on NFkB and STAT3 Activation in Human Intestinal Smooth Muscle Cells. American Society for Cell Biologists. 2009.
3. **Uray KS**, Hummel JA, Shah S, Cox CS. The effects of increasing cyclical stretch on human intestinal smooth muscle cell signaling. Keystone Symposia. Mechanotransduction in Physiology and Disease. 2009.
4. **Uray KS**, Cox CS, Laine GA. Analysis of intestinal smooth muscle genes induced by intestinal edema for common regulatory elements Shock Society 2009.
5. **Uray KS**, Weisbrodt NW, Cox CS. Inhibition of the Na/H Exchanger Attenuates Edema-Induced Intestinal Dysfunction. Society for Critical Care Medicine 2008
6. Wright, ZW; **Uray, KS**; Radhakrishnan, RS; Laine, GA; Cox, CS. The Role of Nuclear Factor-kappa B in Edema-Induced Intestinal Dysfunction. DDW 2007.
7. **Uray KS**, Laine GA, Allen SJ, Cox CS. Edema-induced intestinal dysfunction is mediated by Stat3 activation. *FASEB J.* 2006.
8. **K. Uray**, S. Allen, G. Laine, R. Stewart, R. Radhakrishnan, C. Cox. Intestinal edema decreases intestinal motility through decreased myosin light chain phosphorylation. *FASEB J.* 19 (4): A744, 2005.
9. **K. Uray**, C. S. Cox, S. J. Allen, G. A. Laine. Coordinated changes in cadherin expression and contractility due to edema development in intestinal smooth muscle. *Mol. Biol. Cell.* Supplement Vol. 15: Abstract 2329, 2004.
10. Geissler H, **Davis K**, Allen S, Buja L, Laine G, Mehlhorn U, de Vivie ER. High-dose beta-blockade during reperfusion only reduces ischemia-reperfusion injury. *Faseb J.* 12:A4124, 1998.
11. **Davis K**, Mehlhorn U, Schertel E, Geissler HJ, Laine GA, Allen S. The time constant of left ventricular isovolumic relaxation is dependent on catheter position. *Faseb J.* 10(3):A347, 1996.
12. Mehlhorn U, Adams D, **Davis K**, Gogola G, Laine G, Allen S. Beta-blockade results in myocardial edema during biventricular circulatory support. *Faseb J.* 9(3): A19, 1995.
13. **Davis K**, Mehlhorn U, Laine G, Allen S. Myocardial edema coincides with alterations in left ventricular collagen, prolyl 4-hydroxylase, and TGF-b. *Faseb J.* 9(3):A607, 1995.
14. Mehlhorn U, Adams D, Burke E, **Davis K**, Laine G, de Vivie ER, Allen S. Myocardial edema is enhanced by decreased lymph flow rate during cardioplegic arrest. *Thorac. Cardiovasc. Surg.* 42(suppl1): 94, 1994.
15. **Davis K**, Stewart R, Warters D, Laine G, Allen S. Pulmonary hypertension and left ventricular function. *Faseb J.* 7(4):A882, 1993.

16. **Davis K**, Rohn D, Warters D, Dreyer J, Adams D, Laine G, Allen S. Myocardial edema compromises left ventricular function following cardiopulmonary bypass. *Faseb J.* 7(4): A562, 1993.
17. **Davis K**, Zawieja D. The rat mesenteric lymphatic preparation. Texas Branch AALAS Meeting, 1990.
18. Zawieja D, **Davis K**, Granger H. Effects of gap junction blockers on the coordination of lymphatic contractions. *Faseb J.* 4:A590, 1990.
19. Davis M, Sikes P, **Davis K**, Granger H, Zawieja D. Venular vasomotion enhances lymphatic pump function. IUPS, 1989.
20. Zawieja D, **Davis K**, Granger H. Coordination of lymphangion contractile activity. *Faseb J.* 3:A271, 1989.

B. Refereed Original Articles in Journals

1. Shah SK, Moore-Olufemi SD, **Uray KS**, Jimenez F, Walker PA, Xue H, Stewart RH, Laine GA, Cox CS. A murine model for the study of edema induced intestinal contractile dysfunction. *Neurogastroenterol Motil.* (In Press) 2010
2. **Uray KS**, Shah SK, Radhakrishnan RS, Jimenez F, Walker PA, Stewart RH, Laine GA, Cox CS. Sodium hydrogen exchanger as a mediator of hydrostatic edema induced intestinal contractile dysfunction. *Surgery*, 2010. In Press
3. Shah SK, Jimenez F, Walker PA, Aroom KR, Xue H, Feeley TD, **Uray KS**, Norbury KC, Stewart RH, Laine GA, Cox CS. A novel mechanism for neutrophil priming in trauma: potential role of peritoneal fluid. *Surgery* (In press) 2010.
4. Shah SK, Xue H, Jimenez F, Kots AY, Choi B, **Uray KS**, Walker PA, Moore-Olufemi SD, Velez N, Stewart RH, Laine GA, Cox CS Jr. Evaluating the potential role of nitric oxide as a mediator of hydrostatic edema mediated intestinal contractile dysfunction. *Journal of Surgical Research* (In Press) 2010.
5. Shah SK, Fogle LN, Aroom KR, Gill BS, Moore-Olufemi SD, Jimenez F, **Uray KS**, Walker PA, Stewart RH, Laine GA, Cox CS. Hydrostatic intestinal edema induced signaling pathways: potential role of mechanical forces. *Surgery* 147 (6): 772-9, 2010. PMID: 20097396
6. Shah SK, Jimenez F, Walker PA, Xue H, Fischer UM, Aroom KR, **Uray KS**, Laine GA, Stewart RH, Cox CS. A novel physiological model for the study of abdominal compartment syndrome. *J. Trauma* 68(3): 682-689, 2010.
7. **Uray KS**, Wright Z, Kislitsyna K, Xue H, Cox CS. NF-kappaB Activation by Edema Inhibits Intestinal Contractile Activity. *Crit Care Med.* 38(3): 861-870, 2010. PMID: 20168148
8. Radhakrishnan RS, Shah SK, Lance LH, Radhakrishnan HR, Xue H, Radhakrishnan GL, Ramaswamy US, Walker PA, **Uray KS**, Lane GA, Stewart RN, Cox CS. Hypertonic saline alters hydraulic conductivity and upregulates mucosal/submucosal aquaporin 4 in resuscitation induced intestinal edema. *Crit Care Med.* 37(11): 2846-2952, 2009. PMID 19770732
9. Fischer UM, Radhakrishnan RS, **Uray KS**, Xue H, Cox CS Jr. Myocardial Function After Gut Ischemia/Reperfusion: Does NFkappaB Play a Role? *J Surg Res.* May 5, 2008.

10. Cox CS Jr, Radhakrishnan R, Villarrubia L, Xue H, **Uray K**, Gill BS, Stewart RH, Laine GA. Hypertonic saline modulation of intestinal tissue stress and fluid balance. *Shock*. 29(5):598-602, 2008.
11. Mi T, Abbassi S, Zhang A, **Uray K**, Chunn JL, Xia LW, Molina JG, Weisbrdt NW, Kellems RE, Blackburn MR, Xia Y. Excess adenosine penile erectile tissues contributes to priapism via A2b adenosine receptor signaling. *J Clin Invest*. 118(4):1491-1501, 2008.
12. Stewart RH, **Uray K**, Cox CS, Laine GA. Myocardial fluid balance in dogs with naturally acquired heartworm infection. *Am J Vet Res* 69 (3): 356-361, 2008.
13. **Uray KS**, Laine GA, Xue H, Allen SJ, Cox CS. Edema-induced intestinal dysfunction is mediated by Stat3 activation. *Shock*, 28(2):239-44, 2007.
14. **Uray KS**, Laine GA, Xue H, Allen SJ, Cox CS. Intestinal edema decreases intestinal contractile activity via decreased myosin light chain phosphorylation. *Crit. Care Med*. 34(10):2630-7, 2006.
15. Sharina IG, Martin E, Thomas A, **Uray KL**, Murad F. CCAAT-binding factor regulates expression of the beta1 subunit of soluble guanylyl cyclase gene in the BE2 human neuroblastoma cell line. *Proc Natl Acad Sci U S A*. 2003 Sep 30;100(20):11523-8.
16. Geissler HJ, **Davis (Uray) KL**, Buja LM, Laine GA, Brennan ML, Mehlhorn U, Allen SJ. Esmolol and cardiopulmonary bypass during reperfusion reduce myocardial infarct size in dogs. *Ann Thorac Surg*. 72(6):1964-9, 2001.
17. **Davis (Uray) KL**, Geissler HJ, Mehlhorn U, Brennan M, Laine GA, Allen SJ. Effects of myocardial edema on the development of myocardial interstitial fibrosis. *Microcirculation*. 7(4):269-80, 2000.
18. Geissler HJ, **Davis (Uray) KL**, Laine GA, Ostrin EJ, Mehlhorn U, Hekmat K, Allen SJ. Myocardial protection with high-dose beta-blockade in acute myocardial ischemia. *Eur J Cardiothorac Surg*. 17(1):63-70, 2000.
19. Geissler HJ, **Davis (Uray) K**, Laine GA, Brennan ML, Mehlhorn U, Allen SJ. Contamination of lymph from the major prenodal cardiac lymphatic in dogs. *Am J Physiol*. 276(5 Pt 2):H1795-800, 1999.
20. **Davis (Uray) K**, Mehlhorn U, Schertel E, Geissler H, Laine G, Allen S. Variation in tau, the time constant for isovolumic relaxation, along the left ventricular base-to-apex axis. *Basic Res. Cardiol*. 94(1):41-8, 1999.
21. Bian K, **Davis (Uray) K**, Kuret J, Binder L, Murad F. Nitrotyrosine formation with endotoxin-induced kidney injury detected by immunohistochemistry. *Am J Physiol*. 1999 Jul;277(1 Pt 2):F33-40.
22. Kamisaki Y, Wada K, Bian K, Balabanli B, **Davis K**, Martin E, Behbod F, Lee YC, Murad F. An activity in rat tissues that modifies nitrotyrosine-containing proteins. *Proc Natl Acad Sci U S A*. 1998 Sep 29;95(20):11584-9.
23. Warters RD, Allen S, **Davis (Uray) K**, Geissler H, Mutschler E, Mehlhorn U, Beta-blockade as an alternative to cardioplegic arrest. *Annals Thoracic Surg*. 65: 961-966, 1998.

24. Mehlhorn U, Allen SJ, **Davis (Uray) KL**, Geissler HJ, Laine GA, Laine GA, Warters RD, de Vivie ER, Increasing colloid osmotic pressure of normothermic blood cardioplegia decreases myocardial edema and increases cardiac function. *Cardiovascular Surg.* 6: 274-281, 1998.
25. Allen SJ, Geissler HJ, **Davis (Uray) KL**, Gogola GR, Warters RD, de Vivie ER, Mehlhorn U. Augmenting cardiac contractility hastens myocardial edema resolution following cardiopulmonary bypass and cardioplegic arrest. *Anesth. Analgesia* 85: 987-992, 1997.
26. Geissler H, Allen S, Mehlhorn U, **Davis (Uray) K**, Morris W, Butler B. Effect of body repositioning after venous air embolism: an echocardiographic study. *Anesthesiology*, 86: 710-717, 1997.
27. Geissler H, Allen S, Mehlhorn U, **Davis (Uray) K**, de Vivie E, Kurusz, M, Butler BD. Cooling gradients and formation of gaseous microemboli with cardiopulmonary bypass: an echocardiography study. *Annals Thoracic Surg.*, 64: 100-104, 1997.
28. Mehlhorn U, **Davis (Uray) K**, Laine G, Allen S. Myocardial fluid balance in acute hypertension. *Microcirc.* 3: 371-378, 1996.
29. Mehlhorn U, Allen S, Adams D, **Davis (Uray) K**, Gogola G, and Water, R. Cardiac surgical conditions induced by β -blockade effect on myocardial fluid balance. *Annals Thoracic Surg.* 62: 143-150, 1996.
30. Stewart R, Rohn D, Mehlhorn U, **Davis (Uray) K**, Allen SJ, Laine GA. Regulation of microvascular filtration in the myocardium by interstitial fluid pressure. *Am. J. Physiol.* 271: R1465-1469, 1996.
31. Rohn D, **Davis (Uray) K**, Mehlhorn U, Allen S, Laine G. Myocardial edema and compromised left ventricular function attributable to dirofilariasis and cardiopulmonary bypass in dogs. *Am. J. Vet. Res.* 56: 221-226, 1995.
32. Mehlhorn U, **Davis (Uray) K**, Burke E, Adams D, Laine G, Allen S. Impact of cardiopulmonary bypass and cardioplegic arrest on myocardial lymphatic function. *Am. J. Physiol.* 268: H178-H183, 1995.
33. **Davis (Uray) K**, Mehlhorn U, Laine G, Allen S. Myocardial edema left ventricular function and pulmonary hypertension. *J. Applied Physiol.* 78: 132-137, 1995.
34. Mehlhorn U, Allen S, Adams D, **Davis (Uray) K**, de Vivie E, Laine G, Normothermic continuous antegrade blood cardioplegia does not prevent myocardial edema and cardiac dysfunction. *Circ.* 92: 1940-1946, 1995.
35. Mehlhorn U, Burke E, Butler B, **Davis (Uray) K**, Katz J, Melamed E, Morris W, and Allen S. Body position does not affect the hemodynamic response to venous air embolism in dogs. *Anesth. Analgesia* 79: 734-739, 1994.
36. Zawieja DC, **Davis (Uray) KL**. Inhibition of the active lymph pump in rat mesenteric lymphatics by hydrogen peroxide. *Lymphology*, 26: 135-142, 1993.
37. Zawieja D, **Davis (Uray) K**, Schuster R, Hinds W, and Granger H. Distribution, propagation and coordination of contractile activity in rat mesenteric lymphatics. *Am. J. Physiol.*, 264: H1283-H1291, 1993.

38. Zawieja D, Greiner S, **Davis (Uray) K**, Hinds W, and Granger H. Reactive oxygen metabolites inhibit spontaneous lymphatic contractions. *Am. J. Physiol.*, 260: H1935-H1943, 1991.

C. Chapters

1. Shah SK, **Uray KS**, Stewart RH, Laine GA, Cox CS. Resuscitation-Induced Intestinal Edema and Related Dysfunction: State of the Science. *J. Surg. Res.* : 1-11, 2009. **PMID 19959186**
2. **Davis KL**, Martin E, Turko IV, Murad F. Novel effects of nitric oxide. *Annu Rev Pharmacol Toxicol.* 41:203-36, 2001.
3. Martin E, **Davis K**, Bian K, Lee Y, Murad F. Cellular signaling with nitric oxide and cyclic guanosine monophosphate. *Semin Perinatol.* 24(1):2-6, 2000.
4. Laine G, Mehlhorn U, **Davis K**, Allen S. Myocardial interstitium and lymphatics: pathophysiology and effects on cardiac function. In: RK Reed, NG McHale, JL Bert, CP Winlove, and GA Laine (eds): *Interstitium, Connective Tissue and Lymphatics*. London, Portland Press, 1995.
5. Greiner S, **Davis K**, Zawieja D. Effects of reactive oxygen metabolites on lymphatic pumping function. In: RK Reed, NG McHale, JL Bert, CP Winlove, and GA Laine (eds): *Interstitium, Connective Tissue and Lymphatics*. London, Portland Press, 1995.