WAKE FOREST
SCHOOL OF MEDICINE

CURRICULUM VITAE

NAME: Leanne Groban, M.D.

CURRENT ACADEMIC TITLE: Professor

ADDRESS:

BUSINESS: Department of Anesthesiology
Wake Forest School of Medicine
Medical Center Boulevard
Winston-Salem, North Carolina 27157-1009
Telephone: (336) 716-4498
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EDUCATION:

1982 University of Wisconsin at Madison
Madison, Wisconsin
B.S. (Nutritional Science)

1988 University of Wisconsin at Milwaukee
Milwaukee, Wisconsin
Master of Science (Biological Science)
Thesis Title: Hemodynamic, Renal and Hormonal Responses to Incremental Atrial Natriuretic Factor (ANF) Infusion in Humans

1992 Medical College of Wisconsin
Milwaukee, Wisconsin
M.D.

POSTDOCTORAL TRAINING:

1992-1993 Transitional Year Resident
St. Luke's Hospital
Milwaukee, Wisconsin

1993-1996 Resident
Department of Anesthesiology
Bowman Gray School of Medicine
Winston-Salem, North Carolina

1996-1998 FAER Research Fellow/Cardiothoracic Anesthesia
Department of Anesthesiology
Bowman Gray School of Medicine
Winston-Salem, North Carolina

PROFESSIONAL LICENSURE:

July 1996 North Carolina #96-00931

December 2002 Washington #025209 (Inactive)

September 2003 California #G87017 (Inactive)

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SPECIALTY CERTIFICATION:

September 1997	Diplomate, American Board of Anesthesiology
January 2003	Advanced Cardiac Life Support Instructor
May 2005	Diplomate, National Board of Echocardiography (NBE) Perioperative Transesophageal Echocardiography

EMPLOYMENT:

2012-Present	Professor Department of Anesthesiology Wake Forest School of Medicine Winston-Salem, North Carolina
2008-Present	Associate Professor Department of Physiology and Pharmacology Wake Forest School of Medicine Winston-Salem, North Carolina
2004-2012	Associate Professor Department of Anesthesiology Wake Forest School of Medicine Winston-Salem, North Carolina
1998-2004	Assistant Professor Department of Anesthesiology Wake Forest University School of Medicine Winston-Salem, North Carolina
1986-1988	Teaching Assistant Undergraduate Anatomy and Physiology University of Wisconsin - Milwaukee Milwaukee, Wisconsin
1983-1988	Research Technologist Department of Physiology Medical College of Wisconsin Milwaukee, Wisconsin

PROFESSIONAL APPOINTMENTS AND ACTIVITIES:

ADJUNCT APPOINTMENTS

2012-Present	Research Affiliate Women's Health Center of Excellence Wake Forest School of Medicine
2009-Present	Affiliate Faculty The Hypertension and Vascular Research Center Wake Forest School of Medicine Winston-Salem, North Carolina

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PROFESSIONAL APPOINTMENTS AND ACTIVITIES: (Continued)

ADJUNCT APPOINTMENTS

2009-Present	Affiliate Faculty Sticht Center on Aging Wake Forest School of Medicine Winston-Salem, North Carolina
2007-Present	Member, Graduate Faculty Molecular Medicine Program Wake Forest Baptist Medical Center Winston-Salem, North Carolina

STUDY SECTIONS AND OTHER GRANT AND ABSTRACT REVIEW COMMITTEES

2008-Present	Grant Reviewer, National Scientific Advisory Council (NSAC), American Federation for Aging Research
2011	Study Section NIH-NIA GEMSTARR
2003, 2005	Abstract Reviewer, International Anesthesia Research Society

NATIONAL COMMITTEE, BOARD MEMBERSHIPS, CONSULTANCIES

October 2006	Board Member, Society for the Advancement of Geriatric Anesthesia
January 2007	Member, Public Policy Committee for Society of Geriatric Cardiology
February 2007	Invited Member, NIA Workshop and Translational Research on Aging
October 2007-2008	Adjunct Member, Committee on Geriatric Anesthesia American Society of Anesthesiologists
January 2008	Content Chairperson for Module on Surgical Management Curriculum Initiative sponsored by John A. Hartford Foundation, Donald Reynolds Foundation, Society of Geriatric Cardiology, and Association of Specialty Professors
January 2010-2013	Board of Directors, The Consortium for Southeastern Hypertension Control (COSEHC)

EDITORIAL SERVICE

April 2001-2005	Self Education and Evaluation Question Writer American Society of Anesthesiologists
2002	*Drug Safety*
2003-Present	*Anesthesia Analgesia*
2004-Present	*Anesthesiology*
2005-Present	*Journal of Clinical Anesthesia*
2005-Present	*Hypertension*
2006-Present	*Journal of Anesthesia and Pain Management*
2007-Present	*Cardiovascular Diabetology*
2008-Present	*Echocardiography*

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INSTITUTIONAL SERVICE:

MEDICAL CENTER

August 1998	Women and Minorities Committee
2010-Present	Translational Science Institute: Education Work Group Member
2012- Present	Core Education Faculty Wake Forest School of Medicine
2012-2013	Mentoring Academy, Wake Forest School of Medicine

DEPARTMENTAL

August 1998-2009	Clinical Competence Committee
December 2001-2002	Program Committee; Advances in Physiology and Pharmacology in Anesthesia and Critical Care, The Greenbrier, White Sulfur Springs, WV
2005	Question Writer for Resident's Study Guide, Web-based Program Cardiovascular and Geriatric Chapters from Morgan and Mikhail

PROFESSIONAL MEMBERSHIPS:

Society of Cardiovascular Anesthesiologists
American Society of Anesthesiologists
North Carolina Society of Anesthesiologists
Society for the Advancement of Geriatric Anesthesia
Society of Geriatric Cardiology
American Heart Association
Heart Failure Society of America
American Aging Association
Association of University Anesthesiologists

HONORS AND AWARDS:

1979-1981	Dean's List Three-year Letter Winner UW Women's Varsity Tennis Team
1986-1988	UW-Milwaukee Graduate School Fellowship
1991	Alpha Omega Alpha
1992	American Medical Women's Association Janet A. Glasgow Memorial Scholastic Achievement Award
1997	Awarded first prize for presentation content at: Gulf Atlantic Resident Research Conference, New Orleans, LA "Thoracic epidural anesthesia reduces myocardial injury in ischemic-reperfused canine hearts"
1997	North Carolina Society of Anesthesiologists Research Fellow

HONORS AND AWARDS: (continued)

1998	Society of Cardiovascular Anesthesiologists/Ischemia Research and Education Foundation Starter Grant Awardee
2002	Summer Research Fellow, National Institute of Aging Arlie, Virginia, July 27-Aug 2, 2002
2003	Elected Fellow, Society of Geriatric Cardiology
2003	Society of Geriatric Cardiology's Merck Geriatric Cardiology Research Award in Basic Research Category
2004	Dennis W. Jahnigen Career Development Scholar Award, American Geriatrics Society
2004	"Golden Apple Award" for Anesthesia Residency Education, Department of Anesthesiology Wake Forest School of Medicine
2005	First Place Abstract, 13th Annual Congress on Women's Health "Estrogen Depletion Exacerbates Diastolic Dysfunction in the Salt-Sensitive Hypertensive Female mRen(2).Lewis Strain"
2005	Paul B. Beeson Research Scholar Award, NIH/NIA/AFAR
2007	AGS/Hartford Foundation Project Award: Geriatric for Specialists Initiative
2008	Elected Member, Association of University Anesthesiologists
2010	Elected to Board of Directors COSEHC (Consortium of Southeastern Hypertension Centers)

PROFESSIONAL INTERESTS:

RESEARCH	Mechanisms of Anesthetic Action Stereoselectivity and local anesthetic cardiotoxicity Myocardial protection: Ischemic preconditioning: Role of intrathecal morphine Substrate utilization: Role of glucose, insulin, potassium therapy Intracellular calcium handling: Role of cardiac ryanodine receptor during hypothermia The aged cardiovascular system: Diastolic dysfunction; Doppler imaging; Mechanisms; Postmenopausal cardiac phenotype
CLINICAL	Cardiac Anesthesia; Perioperative Echocardiography; Clinical implications of diastolic dysfunction; Optimization of the Older Surgical Patient

GRANTS: CURRENT AND PENDING:

2012-2013	Translational Science Center and Center for Integrative Medicine Pilot Grant, $20K Principal Investigator Title: Preoperative Assessment of Nutritional Status, Mobility, and Frailty in Geriatric Patients
2009-2013	National Institute of Aging, R01, $800K 1R01AG033727-01A1 Principal Investigator Title: Estrogen, Ang-1-7, Diastolic Function
2010-2011	Pepper Pilot, 35K Co-PI (02/01/10-02/01/11) Title: Brain Transmitters as Markers of Autonomic Profiling in the Elderly
2011-2012	Dubie H. Holleman Cancer and Heart Fund, 20K Intramural Pilot Grant Principal Investigator Title: Modeling diastolic dysfunction in Women using GPR30 Conditional Knockout Mice
09/15/12-08/31/14	National Institute of Aging, R03, 100K R03 AG042758 Groban (PI) Principal Investigator Title: The conditional GPR30 knockout mouse: a model of female-specific cardiac aging
01/01/13-12/30/14	APSF/ASA Endowed Research Award Groban (PI) 150K + 5K Does Preoperative Assessment of Nutritional Status, Mobility and Frailty Among Geriatric Patients Predict Early Postoperative Morbid Events?

GRANTS: PAST GRANT HISTORY:

2005-2010	Paul B. Beeson Career Development Award in Aging, 800K RFA: AG-005-001 Principal Investigator (06/01/05-06/30/10 +no cost extension) Title: Growth Hormone, Angiotensin II, and Cardiac Aging
2004-2009	Dennis W. Jahnigen Career Development Scholars Award, 200K Principal Investigator (07/01/04-02/30/09) Title: The role of GH/IGF-1 in diastolic heart failure of aging
2007-2009	Hartford Foundation Project, American Geriatrics Society, $40K Principal Investigator (07/01/07-06/30/09) Geriatrics for Specialists Initiative
2007-2008	Nestle Healthcare Nutrition, $80K Co-Investigator (07/30/08-01/31/09) Title: Nutritional Modulation of Age-Associated Cognitive Decline

GRANTS: PAST GRANT HISTORY: (continued)

2004-2009	Program Project Grant, National Institute of Health, $1.2M Co-Investigator (04/01/04-03/31/08) Title: ACE2 and Angiotensin (1-7) in Blood Pressure Regulation
2003	1 R03 AG022598-01, National Institute on Aging, 50K Principal Investigator (08/01/03-07/30/05) Title: Role of IGF-1 on diastolic dysfunction of aging
2003	Merck Geriatric Cardiology Pilot Research Grant, 10K Principal Investigator (04/01/03-03/30/04) Title: Age-simulated growth hormone and IGF-1 deficiency in cardiovascular aging
1999	ASTRA Pain Control AB, 185K Principal Investigator Title: The cardiotoxicity profile of ropivacaine compared with that of levobupivacaine and bupivacaine: does stereo-selectivity and the presence of N-n-propyl increase the margin of safety?
1998	Society of Cardiovascular Anesthesiologists–Ischemia Research and Education Foundation Starter Grant, 10K Principal Investigator Title: The cardioprotective benefit of intrathecal opioids: Is the mechanism coupled to K^+ATP channels?
1997	Southern Medical Association, 2.5K Principal Investigator Title: Does intrathecal morphine mimic the cardioprotective effect of ischemic preconditioning in the rat heart?
1997	FAER Research Grant, 30K Principal Investigator Title: The effects of thoracic epidural anesthesia on myocardial viability and function in a canine model of ischemic reperfusion injury.
1996	FAER Research Grant, 30K Principal Investigator Title: The effects of cloricromene on myocardial function in ischemically injured canine hearts.
1990	Friends of MCW, Summer Medical Research Fellow Title: The Renal and Hormonal Effects of ANP Infusion in Humans with Fixed Cardiac Preload
1989	Wisconsin Heart Association, Summer Medical Research Fellow Title: Atrial Natriuretic Peptide (ANP) Augments Forearm Capillary Filtration in Humans

BIBLIOGRAPHY:

TEXTBOOKS: (2)

Groban L, Butterworth J. TEE Pocket Manual with PDA Access. Philadelphia: Saunders (Elsevier) 2007. (ALL Units Sold/2500: *Reprint edition 2011*)

Burch TM, **Groban L**, Zvara DA. Conquer the PTEeXAM. Philadelphia: Saunders (Elsevier) 2007.

BOOK CHAPTERS: (15)

Dolinski S, **Groban L**, Butterworth J. Procedures in the ICU. In: Murray, Coursin, Pearl, Prough, eds. *Critical Care Medicine: Perioperative Management*. Philadelphia: Lippincott Williams & Wilkins, 2000.

Groban L, Butterworth J. Performing an arterial cannulation. In: Hutton P, Cooper GM, James III FM, Butterworth J, eds. *Fundamental Principles and Practice of Anaesthesia*. London: Martin Dunitz Ltd., 2002, pp. 1003-1007.

Groban L, Butterworth J. Establishing central venous access. In: Hutton P, Cooper GM, James III FM, Butterworth J, eds. *Fundamental Principles and Practice of Anaesthesia*. London: Martin Dunitz Ltd., 2002, pp. 1009-1012.

Groban L, Butterworth J. Pulmonary artery catheter introduction and interpretation. In: Hutton P, Cooper GM, James III FM, Butterworth J, eds. *Fundamental Principles and Practice of Anaesthesia*. London: Martin Dunitz Ltd., 2002, pp. 1013-1017.

Royster RL, Butterworth J, **Groban L**, Slaughter TF, Zvara DA. Cardiovascular Physiology. In: Kaplan JA, Reich DL, Lake CL, Konstadt SN, eds. *Kaplan's Cardiac Anesthesia 5th Edition*. Philadelphia: Elsevier Saunders 2006, Chapter 10, pp. 213-280.

Groban L, Butterworth J. Local anesthetic systemic toxicity. In: Neal JM, Rathmell JP (eds.) *Complications in Regional Anesthesia and Pain Management*. Philadelphia: Elsevier 2006.

Groban L. Systolic vs. Diastolic Heart Failure. In: Butterworth J (ed.) *Chronic Heart Failure*. [Monograph on CDRom] Philadelphia: Wolters Kluwer/Lippincott Williams & Wilkins 2007.

Butterworth J, **Groban L**. Management of chronic heart failure. In: Butterworth J (ed.) *Chronic Heart Failure*. [Monograph on CDRom] Philadelphia: Wolters Kluwer/Lippincott Williams & Wilkins 2007.

Groban L, Dolinski SY. Vascular procedures. In: Silverstein JH, Rooke GA, Reves JG, McLeskey CH (eds.) *Geriatric Anesthesiology*, 2nd Edition. New York: Springer 2007, pp. 398-415.

Royster RL, Butterworth J, **Groban L**, Slaughter TF, Zvara DA. Cardiovascular Pharmacology. In: Kaplan JA, Reich DL, Lake CL, Konstadt SN, eds. *Essentials of Cardiac Anesthesia*. Philadelphia: Elsevier Saunders 2008, Chapter 8, pp. 118-163.

Kitzman DW, **Groban L**. Exercise Intolerance. In: Vannan M, Pitt B. *Heart Failure Clinics, Diastolic Dysfunction and Heart Failure*. Philadelphia: W.B. Saunders 2008, pp. 99-116.

Whelan DM, **Groban L**. Arterial cannulation. In: *Protocolos en Cuidados Críticos*. Villar SR (ed.) Madrid: Editorial Marban Libros, 2011.

Whelan D, **Groban L**.. Central venous cannulation. In: *Protocolos en Cuidados Críticos*. Villar SR (ed.) Madrid: Editorial Marban Libros, 2011.

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Whelan DM, **Groban L**. Pulmonary artery cannulation. In: *Protocolos en Cuidados Críticos*. Villar SR (ed.) Madrid: Editorial Marban Libros, 2011.

Royster RL, **Groban L**, Grosshans D, Jones-Haywood M, Slaughter TF. Cardiovascular Pharmacology. In: Kaplan JA, Reich DL, Lake CL, Konstadt SN, eds. *Kaplan's Cardiac Anesthesia: The Echo Era 6th Edition*. Philadelphia: Elsevier Saunders 2011, Chapter 10, p 235.

JOURNAL ARTICLES: (56)

Barney JA, Ebert TJ, **Groban L**, Farrell PA, Hughes CV, Smith JJ. Carotid baroreflex responsiveness in high-fit and sedentary young men. J Appl Physiol 1988;65(5):2190-2194.

Groban L, Ebert TJ, Kreis DU, Skelton MM, Van Wynsberghe DM, Cowley AW Jr. Hemodynamic, renal, and hormonal responses to incremental ANF infusions in humans. Am J Physiol 1989;256:F780-6.

Groban L, Cowley AW Jr, Ebert TJ. Atrial natriuretic peptide augments forearm capillary filtration in humans. Am J Physiol 1990;259:H258-H263.

Ebert TJ, **Groban L**, Hanson M, Cowley AW Jr. ANP-mediated volume depletion attenuates renal responses in humans. Am J Physiol 1992;263:R1303-R1308.

Groban L, Zvara DA, Deal DD, Xia-Liang M, Vernon JC, Flye CW, Vinten-Johansen J. Cloricromene reduces infarct size and alters postischemic blood flow defects in the dog myocardium. Clin Exp Pharmacol Physiol 1998;25:417-423.

Dolinski SY, Meek E, **Groban L**. An unusual case of subcutaneous emphysema. Anesth Analg 1999;89:150-151.

Groban L, Zvara DA, Deal DD, Vernon JC, Carpenter RL. Thoracic epidural anesthesia reduces infarct size in a canine model of myocardial ischemia reperfusion injury. J Cardiothorac Vasc Anesth 1999;13(5):579-585.

Zvara DA, **Groban L**, Rogers AT, Prielipp RC, Murphy B, Hines M, Hammon JW, Kon ND, Royster RL. Prophylactic nitroglycerin did not reduce myocardial ischemia during accelerated recovery management of coronary artery bypass graft surgery patients. J Cardiothorac Vasc Anesth 2000;14:571-575.

Groban L, Deal DD, Vernon JC, James RL, Butterworth JB. Ventricular arrhythmias with or without programmed electrical stimulation after incremental overdosage with lidocaine, bupivacaine, levobupivacaine, and ropivacaine. Anesth Analg 2000;91:1103-1111.

Groban L, Dolinski SY, Zvara DA, Oaks T. Thoracic epidural analgesia: its role in post-thoracotomy atrial arrhythmias. J Cardiothorac Vasc Anesth 2000;14:662-665.

Groban L, Deal DD, Vernon JC, James RL, Butterworth J. Cardiac resuscitation after incremental overdosage with lidocaine, bupivacaine, levobupivacaine, and ropivacaine in anesthetized dogs. Anesth Analg 2001;92:37-43.

Groban L, Dolinski SY. Differences in cardiac toxicity among ropivacaine, levobupivacaine, bupivacaine, and lidocaine. Tech Reg Anesth Pain Manag 2001;5:48-55.

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JOURNAL ARTICLES:

Prielipp RC, Wall MH, **Groban L**, Tobin JR, Fahey FH, Harkness BA, Stump DA, James RL, Cannon MA, Bennett J, Butterworth J. Reduced regional and global cerebral blood flow during fenoldopam-induced hypotension in volunteers. Anesth Analg 2001;93:45-52.

Groban L, Zapata-Sudo G, Lin M, Nelson TE. Effects of moderate and deep hypothermia on Ca^{2+} signaling in rat ventricular myocytes. Cell Physiol Biochem 2002;12(3):101-110.

Groban L, Butterworth J, Legault C, Rogers AT, Kon ND, Hammon JW. Attempted glucose control through Intraoperative insulin therapy does not reduce the need for inotropic or antiarrhythmic therapy after cardiopulmonary bypass. J Cardiothorac Vasc Anesth 2002;16:405-412.

Groban L, Deal DD, Vernon JC, James RL, Butterworth J. Does local anesthetic stereoselectivity or structure predict myocardial depression in anesthetized canines? Reg Anesth Pain Med 2002;27:460-468.

Prielipp RC, Wall MH, Tobin JR, **Groban L**, Cannon MA, Fahey FH, Stump DA, James RL, Bennett J, Butterworth J. Dexmedetomidine-induced sedation in volunteers decreases regional and global cerebral blood flow. Anesth Analg 2002; 95:1052-9.

Groban L. Central nervous system and cardiac effects from long-acting amide local anesthetic toxicity in the intact animal model. Reg Anesth Pain Med 2003;28:3-11.

Murphy BA, **Groban L**, Kon ND. Diagnosis of a unicuspid aortic valve using transesophageal echocardiography. J Cardiothorac Vasc Anesth 2003;17:82-83.

Groban L, Butterworth J. Lipid reversal of bupivacaine toxicity: has the silver bullet been identified? Reg Anesth Pain Med 2003;28:167-169.

Groban L, Vernon JC, Butterworth J. Intrathecal morphine reduces infarct size in rat model of ischemia-reperfusion injury. Anesth Analg 2004;98:903-909.

Groban L. Diastolic dysfunction in the older heart. (Review Article) J Cardiothorac Vasc Anesth 2005;19:228-236.

Groban L, Dolinski SY. Transesophageal echocardiographic evaluation of diastolic function. Chest 2005;128:3652-3663.

Groban L, Pailes NA, Bennett CDL, Carter CS, Chappell MC, Kitzman DW, Sonntag WE. Growth hormone replacement attenuates diastolic dysfunction and cardiac angiotensin II expression in senescent rats. J Gerontol A Biol Sci Med Sci 2006;61:28-35.

Groban L, Corcoran W. Local anesthetic systemic toxicity. Curr Rev Clin Anesth 2006;26:181-196.

Groban L, Butterworth J. Perioperative management of chronic heart failure. Anesth Analg 2006;103:557-575.

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JOURNAL ARTICLES

Corcoran W, Butterworth J, Weller RS, Beck JC, Gerancher JC, Houle TT, **Groban L**. Local anesthetic-induced cardiac toxicity: a survey of contemporary practice strategies among academic anesthesiology departments. Anesth Analg 2006;103:1322-1326.

Yamaleyeva LM, Pendergrass KD, Pirro NT, Gallagher PE, **Groban L**, Chappell MG. Ovariectomy is protective against renal injury in the high salt fed older mRen2.Lewis rat. Am J Physiol Heart Circ Physiol 2007;293:H2064-71.

Groban L, Yamaleyeva LM, Westwood BM, Houle TT, Lin M, Kitzman DW, Chappell MC. Progressive diastolic dysfunction in the female mRen(2).Lewis rat: Influence of salt and ovarian hormones. J Gerontol A Biol Sci Med Sci 2008;63:3-11.

Carter CS, **Groban L**. Role of the renin-angiotensin system in age-related sarcopenia and diastolic dysfunction. Future Medicine Ltd., Aging Health 2008;4(1):37-46.

Marzetti E, **Groban L**, Wohlgemuth SE, Lees HA, Lin M, Jobe H, Giovannini S, Leeuwenburgh C, Carter CS. Effects of short-term GH supplementation and treadmill exercise training on physical performance and skeletal muscle apoptosis in old rats. Am J Physiol Regul Integr Comp Physiol 2008;294:R558-R567.

Kitzman DW, **Groban L**. Exercise intolerance. Heart Failure Clinics 2008;4(1):99-115.

Diz DI, Varagic J, **Groban L**. Aging and the brain renin-angiotensin system: relevance to age-related decline in cardiac function. Future Cardiol 2008;4(3):237-245.

Groban L, Jobe HH, Lin M, Houle T, Kitzman DA, Sonntag W. Effects of short term exercise training or growth hormone supplementation on diastolic function and exercise tolerance in old rats. J Gerontol A Biol Sci Med Sci 2008; 63(9):911-920. ***(cited 21 times)***

Dudley M, **Groban L.** Cardiovascular changes in the elderly and their anesthetic implications. Curr Rev Clin Anesth 2009;29(22):261-276.

Groban L, Butterworth J. Fentanyl: Destiny or Devil. Anesth Analg 2009;109(2):301-302. (Editorial).

Jessup JA, Westwood BM, Chappell MC, **Groban L**. Dual ACE-inhibition and AT_1 receptor antagonism improves ventricular lusitropy without affecting cardiac fibrosis in the congenic mRen2.Lewis rat. Ther Adv Cardiovasc Dis 2009;3:245-257.

Sanders D, Dudley M, **Groban L**. Diastolic dysfunction, cardiovascular aging, and the anesthesiologist. Anesthesiol Clin 2009;27(3):497-517. [PMC In process - 132190].

König M, Lin M, Nelson TE, **Groban L**. Sevoflurane modulation of Ca^2+ regulation in Skeletal Muscle Sarcoplasmic Reticulum Vesicles from Young and Mature Rabbits. Paediatr Anaesth 2009;19(12):1166-74.

Varagic J, Ahmad S, Brosnihan KB, **Groban L**, Chappell MC, Tallant EA, Gallagher PE, Ferrario CM. Decreased cardiac Ang-(1-7) is associated with salt-induced cardiac remodeling and dysfunction. Ther Adv Cardiovasc Dis 2009;Feb;4(1):17-25.

BIBLIOGRAPHY: (Continued)

JOURNAL ARTICLES:

Trask A, **Groban L**, Westwood B, Varagic J, Ganten D, Gallagher PE, Chappell MC, Ferrario CM. Inhibition of angiotensin converting enzyme 2 exacerbates cardiac hypertrophy and fibrosis in Ren-2 hypertensive rats. Am J Hypertens 2010;23(6):687-693.

Groban L, Sanders D, Houle T, Antonio B, Ntuen E, Zvara D, Kon N, Kincaid E**.** Doppler E/e′ estimations of left ventricular filling pressure predict length of stay after cardiac surgery. Echocardiography 2010;27:131-138.

Groban L, Kitzman DW. Diastolic function. A barometer for cardiovascular risk? Anesthesiology 2010;112(6):1303-1306. (Editorial)

Delo DM, Guan X, Wang Z, **Groban L**, Callahan M, Smith T, Sane D, Payne RM, Atala A, Soker S. Calcification after myocardial infarction is independent of amniotic fluid stem cell injection. Cardiovasc Pathol. 2011 Mar-Apr;20(2):e69-78.

Brock, M, Grace B, Morely B, **Groban L.** "Timing" of Lidocaine for prevention of pain upon induction with Proprofol or Etomidate. J Clin Anesth. 2010 Nov;22(7):505-9.

Jessup J, Lindsey SH, Wang H, Chappell MC, **Groban L**. Attenuation of salt-induced cardiac remodeling and diastolic dysfunction by GPER activation in female mRen2.Lewis rats. PLoS One. 2010 Nov 3;5(11):e15433.

Jessup JA, Zhang L, Chen AF, Presley TD, Kim-Shapiro DB, Chappell MC, Wang H, **Groban L**. Neuronal nitric oxide synthase inhibition improves diastolic function and reduces oxidative stress in ovariectomized mRen2.Lewis rats. Menopause 2011;18(6):698-708.

Groban L, Lin M, Kassik KA, Ingram RL, Sonntag WE. Early-onset growth hormone deficiency results in diastolic dysfunction in adult-life and is prevented by growth hormone supplementation. Growth Horm IGF Res 2011;21(2):81-8.

Sergeant S, McQuail JA, Riddle DR, Chilton FH, Ortmeier SB, Jessup JA, **Groban L**, Nicolle MM. Dietary fish oil modestly attenuates the effect of age on diastolic function but has not effect on memory or brain inflammation in aged rats. J Gerontol A Biol Sci Med Sci. 2011;66(5):521-33.

Carter CS, Marzetti E, Leeuwenburgh C, Manini T, Foster TC, **Groban L**, Scarpace PJ, Morgan D. Usefulness of preclinical models for assessing the efficacy of late-life interventions for sarcopenia. J Gerontol A Biol Sci Med Sci. 2011 Aug 26 [Epub ahead of print].

Jessup JA, Zhang L, Presley TD, Kim-Shapiro DB, Wang H, Chen AF, **Groban L**. Tetrahydrobiopterin restores diastolic function and attenuates superoxide production in ovariectomized mRen2.Lewis rats. Endocrinology 2011;152(6):2428-36.

Schafer AM, Rains JC, Penzien DB, **Groban L**, Smitherman TA, Houle TT. Direct costs of preventive headache treatments: comparison of behavioral and pharmacologic approaches. Headache 2011 Jun;51(6):985-91.

Groban L, Lindsey S, Wang H, Lin M, Kassik K, Machado F, Carter C. Differential effect of late-life initiation of low-dose Enalapril and Losartan on diastolic function in Senescent Fischer 344 x Brown Norway Male Rats. Age (Dordr). 2012 Aug;34(4):831-43

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Kitzman DW, **Groban L**. Exercise intolerance. Cardiol Clin 2011 29(3):461-77.

Bharadwaj MS, Strawn WB, **Groban L**, Yamaleyeva LM, Chappell MC, Horta C, Atkins K, Firmes L, Gurley SB, Brosnihan KB. Angiotensin converting enzyme-2 deficiency is associated with impaired weight gain and fetal growth restriction. Hypertension 2011 Nov;58(5):852-8.

Wang H, Jessup JA, Lin MS, Chagas C, Lindsey S, **Groban L**. Activation of GPR30 attenuates diastolic dysfunction and left ventricle remodeling in oophorectomized mRen2.Lewis rats. Cardiovasc Res 2012;94(1):96-104.

. Jessup JA, Wang H, MacNamara L, Presley TD, Kim-Shapiro DB, Zhang L, Chen AF, **Groban L**. Estrogen replacement, independent of timing, improves cardiac structure and function in oophorectomized mRen2.Lewis rats. Menopause 2012 (in press)

ABSTRACTS

Smith JJ, Barney JA, Porth CJ, **Groban L**, Stadnicka A, Ebert TJ. Transient hemodynamic responses to circulatory stress in normal male subjects of different ages. Physiologist 1984;27:210.

Porth CJ, Smith JJ, Hughes CV, Ptacin MJ, **Groban L**, Barney JA. Effect of age and sex on heart rate and impedance-derived estimates of stroke volume index and thoracic blood volume during Valsalva Maneuver. Physiologist 1984;27:252.

Porth CJ, **Groban L**, Smith JJ. Carotid-cardiac baroreflex responses decrease with early aging in women. Physiologist 1985;28:350.

Barney JA, Ebert TJ, **Groban L**, Smith JJ. Vagal-cardiac activity and carotid to cardiac baroreflex responses in trained and untrained men. Fed Proc 1985;44:818.

Smith JJ, Barney JA, **Groban L**, Stadnicka A, Ebert TJ. Carotid-cardiac baroreflex responses decrease with early aging in man. Fed Proc 1985;44:1987.

Tristani FE, Sheldahl LM, Barney JA, **Groban L**, Christie J, Levandoski SG, Wenxler RB, Smith JJ. Abnormalities to head-up tilt in myocardial infarction patients with low ventricular ejection fraction. American Heart Association Meeting, Dallas, Texas, November 17, 1986.

Smith JJ, Barney JA, **Groban L**, Sheldahl LM, Tristani FE, Levandoski SG. Effect of physical training on the Valsalva response in normal males. Physiologist 1986;29:110.

Sheldahl LM, Tristani FE, Barney JA, **Groban L**, Levandoski SG, Smith JJ. Effect of endurance exercise training on hemodynamic response to postural stress. Fed Proc 1986;45:282.

Groban L, Barney JA, Stadnicka A, Smith JJ. Enhanced vagal cardiac activity during face immersion in endurance trained subjects. Med Sci Sport Exercise 1987;19:541.

Groban L, Ebert TJ, Kreis DU, Skelton MM, Cowley AW Jr, Smith JJ. Cardiovascular effects of atrial natriuretic factor (ANF) in conscious man. Fed Proc 1987;46:1249.

Smith JJ, Sheldahl JM, Barney JA, Tristani FE, **Groban L**, Levandoski SG. Age and endurance training effect on supine exercise response. Fed Proc 1987;46:168.

Ebert TJ, Kircher JJ, Kreis DU, **Groban L**, Kampine JP. Atrial natriuretic factor (ANF) may augment baroreflex-mediated sympathetic activation in humans. Circulation 1988;78:113

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Groban L, Cheng EY, Mazzeo A, Muzi M, Ebert T. Stroke volume responses during iced injectate thermodilution in critically ill patients. Anesthesiology 1992;77(3A):273.

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Groban L, Deal DD, Vernon JC, Butterworth JF. Cardiac resuscitation after graded local anesthetic (LA) infusions in anesthetized dogs: a comparative study. Anesth Analg 2000;90:S415.

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Groban L, Deal DD, Vernon JC, Butterworth JF. Do doppler diastolic filling indices differentiate among local anesthetic cardiac toxicities? Anesthesiology 2000;93:A826.

Shah AJ, **Groban L**, Dolinski SY, Wall MH, Shouse MN, Prielipp RC, Roberts PR. Carnosine increases cardiac output in a phase I trial in healthy volunteers. Crit Care Med 2000;28:61.

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Antonio B, Houle T, Kincaid T, **Groban L**. Cardiac surgical intensive care unit readmissions: Does preoperative diastolic dysfunction have a role? Crit Care Med 2006;34:12(Suppl):No. 221.

Groban L, Ferrario CM, Ganten D, Diz DI. Transgenic Rats with low brain renin-angiotensin system activity due to glial deficiency are protected against heart failure late in life. J Card Fail 2007;S83:030.

Delo D, Neshat S, Christ G, **Groban L**, Olson J, Zhu JM, Atala A, Shoker S. Amniotic fluid derived stem cells for cardiac therapeutics. FASEB J 2007; 21(5):A229.

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Kasper SO, Gilliam-Davis S, **Groban L**, Carter CS, Sonntag WE, Chappell MC, Diz DI. Effects of Aging and Renin-Angiotensin System (RAS) Blockade on the Intra-renal RAS in Older Fischer 344 X Brown Norway Rats. FASEB J. 2008;22:735.11

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Jessup JA, Westwood BM, Chappell MC, **Groban L**. Combination Renin Angiotensin System Improves Ventricular Lusitropy Without Affecting Cardiac Fibrosis or Cardiac RAS in the Hypertensive mRen2.Lewis Rat. Circulation Research 2008;103(5):e48.

Delo DM, Wang Z, Shaffer R, Guan X, Neshat S, Smith T, Callahan M, **Groban L**, Atala A, Soker S. Effects of human amniotic fluid derived stem cells on cardiac function after myocardial infarction. Tissue Eng Part A. 10/15/2008 14(5) : 844

Trask AJ, **Groban L**, Varagic J, Ferrario CM. Inhibition of Angiotensin-Coverting Enzyme 2 Aggravates Cardiac Hypertrophy in Ren-2 Hypertensive Rats. Hypertension 2008;52(4):e126.

Sanders D, Houle T, Kon N, Zvara D, **Groban L**. Diastolic dysfunction predicts adverse outcome after cardiac surgery. Anesthesiology 2008;A1592. Available at: http://www.asaabstracts.com/strands/asaabstracts/search.htm;jsessionid=83BB5823A121D58C48723E3DA7F40463

Petersen RP, Heflin MT, **Groban L**, Lagoo-Deenadayalan SA. Surgery residents desire more training in geriatrics. J Am Geriatr Soc. 2009; 57(Suppl 1): S111-S112.

Jessup J, Lindsey S, Chappell M, **Groban L**. GPR30 receptor activation improves cardiac function in intact female mRen2.Lewis rats. J Card Fail. 2009; 15(6 Suppl 1):S75.

Groban L, Lin MR, Jessup JA, Chappell MC, Brunso-Bechtold JK. GH repletion increases intracardiac Ang-1-7/ACE2 and restores diastolic function in aged male BNF344 rats. J Card Fail. 2009; 15(6 Suppl 1):S33-S34.

Groban L, Jessup J, Register T. Early estrogen replacement prevents lusitropic impairment following ovariectomy in middle-aged cynomolgus monkeys. J Am Coll Cardiol 2010;55(10):Suppl A.

Chagas C, Ortmeier S, Lin M, Wang D, Sergeant S, Chilton FH, Nicolle MM, Gerdes AM, **Groban L.** Dietary Fish Oil Supplementation late in life attenuates diastolic dysfunction in Aged Brown Norway X Fisher 344 Rats. J Nutr Health Aging 2010;14(6).

Diz D, Garcia-Espinosa MA, Shaltout HA, Olson J, Bourland JD, **Groban L**. Correlation of the Brain Medullary Metabolites N-acetyl Aspartic Acid and N-acetyl Aspartyl Glutamate With the Age Related Decline in Sensitivity for Baroreflex Control of Heart Rate in Humans. Hypertension 2011; 59(5):E116.

MISCELLANEOUS: (12)

Groban L, Cheng EY, Mazzeo A, Muzi M. Change in stroke volume by iced temperature injectate for thermodilution cardiac output determination. Anesthesiology 1993;79:1444-1445. (Letter to the Editor)

Groban L. *Anesthesiology Pocket Guide* by Thomas N. Pajewski. Anesthesiology 2000;92:294. (Book Review)

Dolinski SY, **Groban L**. Look before you leap. Anesth Analg 2000;91:1563-4. (Letter to the Editor)

Groban L. Experts voice concern over LA toxicity and hypothermia. CME Article: Caution to Anesthesia Providers and Plastic Surgeons: Hypothermia Can Make Additive Effect of Lidocaine/Bupivacaine Fatally Toxic. *Anesthesia Malpractice Prevention* 2002;7:83. (Editorial Comment)

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Butterworth J, **Groban L**. Perioperative myocardial failure. IARS 2005 Review Course Lectures. Anesth Analg 2005;(March Suppl).

Groban L. Gerancher JC, Weller RS. Letter to Editor. Anesth Analg 2007;105:284. (In Response)

Groban L. American Federation for Aging Research. Heart Disease Information Center. At: http://websites.afar.org/site/PageServer?pagename=IA_d_heart_home. (Site Content Reviewer) 2007.

Groban L. Your worst nightmare: An urgent pericardial window in a morbidly obese patient with severe pulmonary hypertension and a large pericardial effusion. Problem-based Learning Discussions. Presented at the 58th Annual Meeting of the American Society of Anesthesiologists, Inc. October 2007.

Groban L. Understanding anesthesia and the impact of aging on the cardiovascular system. In:

Barnett SR, Jankowski CJ, Ahktar S (eds.) A Geriatric Anesthesiology Curriculum. Available at: http://www.asahq.org/clinical/GeriatricAnesthesiologyCurriculum_123007.pdf. (Contributor) 2008.

Groban L, Cherr G, Dolinski S, Rich M. Perioperative Care Module in Essentials of Cardiovascular Care in Older Adults (ECCOA). http://www.cardiosource.com/accis_index.asp (3/11/2009).

Pohoey Fan, **Leanne Groban**, David M. Sanders, Timothy T. Houle, Benjamin L. Antonio, Edi C. Ntuen, David A. Zvara, Neal D. Kon, Edward H. Kincaid. *Continuing Medical Education Program in Echocardiography.* Echocardiography. 2010;27:130.

INVITED LECTURES:

DEPARTMENTAL:

1998-present	Introductory Anesthesia Resident Lecture Series: “Monitoring”
2001-present	Faculty Lecture Series: “Diastolic Dysfunction”
2000-present	TEE Lecture Series: 1) “Doppler Exam and Diastolic Function” 2) “Aortic Valve Exam”
2003	Grand Rounds: “The Aging “Healthy” Heart and Anesthetic Implications”
2005	Grand Rounds: “Normal Cardiac Aging: Does it Matter to the Anesthesiologist?”
2006	Grand Rounds: “Anesthesia for the Very Old Cardiac Surgical Patient”
2007	Grand Rounds: “The “Nuts and Bolts” of CHF: From the Population to the Cell

INVITED LECTURES: (continued)

DEPARTMENTAL:

2008	Grand Rounds: Mortality and Morbidity, Urgent Pericardial Window in a Morbidly Obese Patient with Severe Pulmonary Hypertension
2009	CA-1 Orientation Lecture Series: "Geriatric Anesthesia"
2010	Grand Rounds: "Cardiovascular Aging – A Clinician-Scientist's Perspective"

Anesthesia Initiative on Aging Didactic Lectures and Geriatric M&M series

2007-present	Diastolic Function and Cardiac Aging
2008-present	Systolic Hypertension and Vascular Aging
2008	Geriatric Anesthesia, Mortality and Morbidity Resident Conference

Anesthesia Initiative on Aging Didactic Lectures and Geriatric M&M series

2009	Geriatric Anesthesia, Mortality and Morbidity Resident Conference
2009	Cardiac Surgery for the Octogenarian
2009	Geriatric Anesthesia, Postoperative Atrial Arrhythmias
2010	Update on Chronic Heart Failure
2011	Perioperative Implications of Diastolic Dysfunction

INSTITUTIONAL:

2nd year Medical Student CV Physiology Lecture Series

2000-2002	"Central and Peripheral Control of Circulation" (2hr)
2004-2006	"Diastolic Function" (1hr) "Aging and the Circulatory System" (1hr)

OB/GYN Resident Lecture Series

July 28, 2005	"LA Systemic Toxicity"

Department of Internal Medicine, Section on Gerontology

April 26, 2006	"The Role of Growth Hormone and IGF-1 in Diastolic Dysfunction of Aging"
February 14, 2007	"Progressive Diastolic Dysfunction in the Female mRen(2) Lewis Rat: Influence of Salt and Ovarian Hormones"
February 27, 2010	"Demographics of Cardiac Surgery for the Older patient"

INSTITUTIONAL:

Hypertension and Vascular Research Center-Medical Center

January 10, 2008	Research Progress in "Women's Cardiovascular Issues"
January 13, 2010	"Update on Chronic Heart Failure"
April 7, 2010	Research in Progress, "Postmenopausal Diastolic Dysfunction: Mechanistic insights from the mRen2.Lewis Female Rat"

Graduate Class – Comparative Medicine Students

April 27, 2010	"Basics of Echocardiograph" lecture for Special Topics Class – Imaging Applications in Translational Animal Research & Diagnostics

NATIONAL:

July 2000	"Local Anesthetic Cardiotoxicity" Astra Zeneca Regional Anesthesia Advisory Board Meeting Asheville, North Carolina
November 2000	"Local Anesthetic Cardiotoxicity: Are the Newer Agents Safer?" 6th Annual Advances in Physiology and Pharmacology in Anesthesia and Critical Care. The Greenbrier White Sulfur Springs, West Virginia
June 2001	"Local Anesthetic Toxicity" Grand Rounds: Duke University, Department of Anesthesia Durham, North Carolina
November 2001	"CNS and Cardiac Toxicity in the Intact Animal Model" ASRA Conference on Local Anesthetic Toxicity Miami Beach, Florida
April 26, 2004	"Diastolic Dysfunction in the Older Heart" Society of Cardiovascular Anesthesiologists Annual Meeting (on behalf of Society for Advancement of Geriatric Anesthesia) Honolulu, Hawaii
April 28, 2004	"Echocardiographic Evaluation of Diastolic Function" Society of Cardiovascular Anesthesiologists 26th Annual Meeting and Workshops Honolulu, Hawaii
April 19, 2005	"Local Anesthetic Systemic Toxicity: Mechanisms, Models, Management" Medical College of Wisconsin Milwaukee, Wisconsin
April 19, 2005	"Contemporary Issues in Heart Failure: One Clinician-Researcher's Perspective" Medical College of Wisconsin Milwaukee, Wisconsin

INVITED LECTURES: (Continued)

NATIONAL:

April 20, 2005	"Normal Cardiac Aging: Does it Matter to the Anesthesiologist?" Medical College of Wisconsin Milwaukee, Wisconsin
May 18, 2005	"Echocardiographic Evaluation of Diastolic Function" Society of Cardiovascular Anesthesiologists 27th Annual Meeting and Workshops Baltimore, Maryland
October 25, 2005	Panel on: The Octogenarian: Improving Safety and Outcomes "Diastolic Dysfunction in the *Geriatric Patient*: Management Strategies" American Society of Anesthesiologists Annual Meeting Atlanta, Georgia
January 30, 2006	"Anesthesia for the Very Old Cardiac Surgical Patient" Society of Thoracic Surgeons Meeting Chicago, Illinois
May 1, 2006	"Systolic vs. Diastolic Heart Failure" (Monograph Session) Society of Cardiovascular Anesthesiology Annual Meeting San Diego, California
May 1, 2006	"Diastolic Dysfunction: A Normal Sequela of Aging?" Society of Cardiovascular Anesthesiology Annual Meeting San Diego, California
May 5, 2006	"The Role of GH/IGF-1 in Diastolic Dysfunction of Aging " American Geriatric Society Annual Meeting Chicago, Illinois
October 14, 2006	"What's at the Heart of High Blood Pressure" American Society of Anesthesiologists Annual Meeting Chicago, Illinois
February 5-6, 2007	"Translational Research in Diastolic Dysfunction" NIA Workshop on Translational Research Potomac, Maryland
October 2008	"Cardiac Surgery in the Octogenarian: Indication for Operation and Impact on Quality of Life." American Society of Anesthesiologists Annual Meeting Orlando, Florida
October 18-19, 2009	Demographics of Cardiovascular Diseases: "The Adult Cardiac Surgical Patient: Have We Gone Too Old? American Society of Anesthesiologists Annual Meeting New Orleans, Louisiana

INVITED LECTURES: (Continued)

NATIONAL:

March 25, 2010	Grand Rounds: "Cardiovascular Aging – A clinician-scientist's perspective" Department of Anesthesiology, University of Oklahoma Health Science Center Oklahoma City, Oklahoma
May 1, 2011	"Does Diastology Really Matter? Operative Implications of Diastolic Dysfunction" Society of Cardiovascular Anesthesiologists Annual Meeting Savannah, GA
May 14, 2011	"Diastolic Dysfunction: The Great Masquerader" Section for Enhancing Geriatric Understanding among Surgical and Medical Specialists American Geriatric Society Annual Meeting Washington, D.C
July 25, 2011	Translational Research in Cardiac Aging and Diastolic Dysfunction Barshop Institute-The University of Texas Health Science Center San Antonio, Texas
August 23, 2011	Translational Research in Cardiac Aging and Diastolic Dysfunction Department of Anesthesiology, University of Utah Salt Lake City, Utah
July 21, 2011	Translational Research in Cardiac Aging and Diastolic Dysfunction Department of Anesthesiology, University of Utah Salt Lake City, Utah

INTERNATIONAL:

September 2000	Local anesthetic: minimizing the risk. Astra Zeneca sponsored Symposium: European Symposium on Regional Anesthesia and Pain Management, Rome, Italy. (Lecture)
April 21-25, 2007	"Diastolic Dysfunction of Aging – What's all the Hype?" Society of Cardiovascular Anesthesiologists Meeting Montreal, Canada

NATIONAL MEETINGS (POSTERS; POSTER DISCUSSIONS; ORAL):

Groban L, Ebert TJ, Kreis DU, Skelton MM, Cowley AW Jr, Smith JJ. Cardiovascular effects of atrial natriuretic factor (ANF) in conscious man. FASEB Meeting. Washington, DC, April 1987.

Groban L, Barney JA, Stadnicka A, Smith JJ. Enhanced vagal cardiac activity during face immersion in endurance trained subjects. American College of Sports Medicine Meeting. Las Vegas, Nevada, May 1987.

Groban L, Ebert TJ, Kreis DU, Skelton MM, Cowley AW Jr. The renal and hormonal effects of incremental infusion of atrial natriuretic factor (ANF) in normal males. The Endocrine Society's 70th Annual Meeting, New Orleans, Louisiana, June 1988.:

INVITED LECTURES: (Continued)

NATIONAL MEETINGS (POSTERS; POSTER DISCUSSIONS; ORAL):

Groban L, Ebert TJ, Skelton MM Cowley AW Jr. Atrial natriuretic peptide (ANP) augments forearm capillary filtration in humans. FASEB meeting, Washington, DC, April 1990.

Groban L, Ebert TJ, Cowley AW Jr. The renal effects of physiologic concentrations of ANP in humans with and without fixed cardiac preload. National Student Research Forum, Galveston, Texas, April 1991.

Groban L, Cheng EY, Mazzeo A, Muzi M, Ebert T. Stroke volume responses during iced injectate thermodilution in critically ill patients. American Society of Anesthesiologists Annual Meeting, New Orleans, Louisiana, October 1992.

Groban L, Zvara DA, Deal DD, Vernon BS, Vinten-Johansen J. Cloricromene improves myocardial blood flow in a canine model of ischemic-reperfusion injury. American society of Anesthesiologists Annual Meeting, New Orleans, Louisiana, October 22, 1996.

Groban L, Zvara DA, Deal DD, Vernon JC, Flye CW, Vinten-Johansen J. Cloricromene reduces infarct size after an ischemic-reperfusion injury in the canine myocardium. International Anesthesia Research Society Meeting, San Francisco, California, March 1997.

Groban L, Zvara DA, Deal DD, Vernon JC, Carpenter RC. Thoracic epidural anesthesia reduces myocardial injury in ischemic-reperfused canine hearts. Gulf Atlantic Resident's Conference. New Orleans, Louisiana, May 1997.

Groban L, Zvara DA, Deal DD, Vernon JC, Carpenter RC. Thoracic epidural anesthesia attenuates reperfusion hyperemia in the ischemic canine myocardium. American Society of Anesthesiology Annual Meeting, San Diego, California, October 1997.

Groban L, Zvara DA, Vernon JC. Intrathecally administered morphine reduces myocardial infarct size in rats subjected to ischemia reperfusion injury. American Society of Anesthesiology Annual Meeting, Orlando, Florida, October 1998.

Groban L, Deal DD, Vernon JC, Butterworth J. Is bupivacaine cardiotoxicity an electrophysiologic phenomenon? American Society of Anesthesiologists Annual Meeting, Dallas, Texas, October 1999.

Groban L, Deal DD, Vernon JC, Butterworth JF. Cardiac resuscitation after graded local anesthetic (LA) infusions in anesthetized dogs: a comparative study. International Anesthesia Research Society Meeting, Honolulu, Hawaii, March 2000.

Poster Discussion Moderator, "Local Anesthesia." International Anesthesia Research Society Meeting, Honolulu, Hawaii, May 2000.

Groban L, Butterworth J, Legault C, Hammon J. Does intensive insulin therapy reduce the need for inotropic or antiarrhythmic therapy. Society of Cardiovascular Anesthesia Meeting, Orlando, Florida, May 2000.

Groban L, Deal DD, Vernon JC, Butterworth JF. Do diastolic filling indices differentiate among local anesthetic cardiotoxicities? American Society of Anesthesiology Annual Meeting, San Francisco, California, October 2000.

Should We Continue to Use Bupivacaine? Panel Discussant, ASRA International Conference on Local Anesthetic Toxicity. Miami Beach, Florida, November 18, 2001.

INVITED LECTURES: (Continued)

NATIONAL MEETINGS (POSTERS; POSTER DISCUSSIONS; ORAL):

Groban L, Sabourin S, Lin M, Konig MW, Nelson TE. Differential effects of sevoflurane, isoflurane, and halothane on Ca^{2+} uptake by skeletal muscle sarcoplasmic reticulum. International Anesthesia Research Society Meeting, San Diego, CA, March 2002.

Groban L, Lin M, Sabourin S, Konig MW, Nelson TE. Do protease inhibitors attenuate volatile anesthetic-mediated membrane-protein interactions?. International Anesthesia Research Society Meeting, San Diego, CA, March 2002.

Groban L, Konig M, Lin M, Nelson T. Internet based, interactive information site of malignant hyperthermia for lay persons and non-anesthesiologist health care providers. Exhibit at the American Society of Anesthesiologists Annual Meeting, Orlando, Florida, October 2002.

Groban L, Konig M, Lin M, Nelson T. Does myoplasmic Ca^{2t} regulation by the sarcoplasmic reticulum respond differently to sevoflurane in the young? American Society of Anesthesiologists Annual Meeting, Orlando, Florida, October 2002.

Groban L, Lin M, Cheng C-P, Sonntag W. Is there a role for GH and IGF-1 “Senescence” in diastolic function? Society of Geriatric Cardiology 9th Annual Meeting, Chicago, IL, March 2003.

Groban L, Averill D, Ferrario C, Westwood B, Chappell M. Diastolic dysfunction in the estrogen depleted, hypertensive Mren(2).lewis rat: Is adaptive myocardial hypertrophy playing a role? (Poster) Second International Conference on Women, Heart Disease, and Stroke, American Heart Association, Orlando, Florida, February 16-19, 2005.

Westwood B, Averill D, Ferrario C, Groban L, Chappell M. Disparate effects of combined ACE & AT1 blockade on blood pressure, Renal injury and cardiac hypertrophy in the salt-sensitive female mren2.lewis rat. (Poster) Second International Conference on Women, Heart Disease, and Stroke, American Heart Association, Orlando, Florida, February 16-19, 2005.

Groban L, Pailes N, Bennett C, Carter C, Chappell M, Kitzman D, Sonntag W. Growth hormone replacement attenuates diastolic dysfunction and cardiac angiotensin II expression in senescent rats. American Geriatrics Society, Orlando, Florida, May 11-15, 2005.

Groban L, Lin M, Bennett C, Kitzman D, Cheng C-P, Sonntag W. Improved diastolic function in a rat model of IGF-1 “Senescence”: A role for GH treatment in diastolic dysfunction of aging. American Geriatrics Society, Orlando, Florida, May 11-15, 2005.

Groban L, Burch T, Cheng H-J, Cheng C-P. Cardiac dysfunction in a murine model of heart failure: does the presence of β_3-adrenergic receptors have a role? Society of Cardiovascular Anesthesiologists 27th Annual Meeting and Workshops. Baltimore, Maryland, May 14-18, 2005.

Groban L, Callahan MF, Liu T, Duesberry NS, Leppla SH, Eichacker P. Anthrax-induced biventricular failure. 2nd Annual Symposium of the American Heart Association Council on Basic Cardiovascular Sciences, Targeting Heart Failure: New Science, New Tools, New Strategies. Keystone, Colorado, July 24-27, 2005.

Gender Differences in Heart Failure. Workshop on Sex Differences in Hypertension and Cardiovascular and Renal Disease. Georgetown University, Washington, DC. September 24, 2005.

INVITED LECTURES: (Continued)

NATIONAL MEETINGS (POSTERS; POSTER DISCUSSIONS; ORAL):

Corcoran W, Beck J, Gerancher J, Butterworth J, Groban L. Local anesthetic-induced cardiac toxicity: a survey of contemporary practice strategies among academic anesthesiology departments. International Anesthesia Research Society, 80th Clinical and Scientific Congress, San Francisco, California, March 24-28, 2006. (Poster Discussion)

Groban L. Systolic vs. Diastolic Heart Failure. Monograph Session: Advances in the Management of Congestive Heart Failure, Society of Cardiovascular Anesthesiology 28th Annual Meeting and Workshops. San Diego, California, May 1, 2006.

Groban L. Diastolic Dysfunction: A Normal Sequela of Aging? Session B: Advanced Age: Implications of the Perioperative Care for the Elderly–Jointly presented with Society of Cardiovascular Anesthesiology and Society for the Advancement of Geriatric Anesthesia. Society of Cardiovascular Anesthesiology 28th Annual Meeting and Workshops, San Diego, California, May 1, 2006.

Groban L. The Role of GH/IGF-1 in Diastolic Dysfunction of Aging. New Frontiers in Geriatrics: The Jahnigen and Williams Awardees Report on Research Leading to Improved Care by Surgical and Medical Subspecialists. American Geriatric Society, May 5, 2006.

Moderator: Clinical Circulation: Echocardiography and Clinical Management Issues. American Society of Anesthesiologists Annual Meeting, Chicago, Illinois, October 14, 2006.

Panelist: Highs and Lows of Blood Pressure: When does it Really Matter? American Society of Anesthesiologists Annual Meeting, Chicago, Illinois, October 15, 2006.

Moderator and Speaker: Diastolic Dysfunction of Aging. Society of Cardiovascular Anesthesiologists Meeting, Montreal, Canada, April 21-25, 2007.

Groban L, Jobe H, Lin M, Bennett C, Sonntag B. Improvements in Diastolic Function by Exercise Training and Growth Hormone (GH) Replacement in the Aged Rodent are Regulated by Different Mechanisms. American Geriatrics Society 2007 Annual Scientific Meeting, Seattle, Washington, May 2-6, 2007. (Poster Discussion)

Groban L, Ferrario CM, Ganten D, Diz DI. Transgenic Rats with Low Brain Renin-angiotensin System Activity Due to Glial Deficiency are Protected Against Heart Failure Late in Life. 11th Annual Scientific Meeting Heart Failure Society of America, Washington, DC, Sept 16-29, 2007. (Poster Discussion)

Your Worst Nightmare: An Urgent Pericardial Window in a Morbidly Obese Patient with Severe Pulmonary Hypertension and a Large Pericardial Effusion. Problem-Based Learning Discussion. Presented at the American Society of Anesthesiologists Annual Meeting, San Francisco, California, October 15-17, 2007.

Perioperative Care for Cardiac Geriatric patients: Indications for Operation and Impact on Quality of Life. Panel Discussant, American Society of Anesthesiologists Annual Meeting, Orlando, Florida, October 18-22, 2008.

Demographics of Cardiovascular Diseases: “The Adult Cardiac Surgical Patient: Have We Gone Too Old? American Society of Anesthesiologists Annual Meeting New Orleans, Louisiana, October 18-19, 2009

Groban L, Deal DD, Vernon JC, James RL, Butterworth JB. Local anesthetic (LA) stereoselectivity and structure predicts myocardial depression in anesthetized canines. International Symposium on Regional Anesthesia and Pain Medicine, Quebec City, Canada, June 2000. (Poster Discussion)

INVITED LECTURES: (Continued)

NATIONAL MEETINGS (POSTERS; POSTER DISCUSSIONS; ORAL):

Local anesthetic: minimizing the risk. Astra Zeneca sponsored Symposium: European Symposium on Regional Anesthesia and Pain Management, Rome, Italy. September 2000. (Lecture)

Zapata-Sudo GZ, Groban L, Lin M, Nelson TE. Hypothermia opens RYR2 calcium release channels: a mechanism for calcium dysregulation with cold cardioplegia. Society of Cardiovascular Anesthesiologists 23rd Annual Meeting, Vancouver, BC, Canada, May 2001. (Poster Discussion).

GRADUATE STUDENTS, FELLOWS, AND RESIDENTS ADVISED:

MEDICAL CENTER (UNDERGRADUATE RESEARCH MENTOR):

2006	Harrison Jobe, Summer research, UNC-Chapel Hill "Effects of short-term exercise training or growth hormone supplementation on diastolic function and exercise tolerance in old rats"
2007-2008	Frederico Machado, US-Brazil Student Exchange Consortium "Does mid-life exercise training attenuate age-related metabolic syndrome and diastolic dysfunction through RAS-mediated modulation of body composition?"
2008	Elizabeth O'Brien, Summer research, Univ of Virginia "Exercise training on age-related metabolic syndrome in Mid-aged Sprague Dawley and ASrAogen Rats"
2009	Clarisa Chagas, US-Brazil Student Exchange Consortium "Dietary Fish Oil Supplementation late in life attenuates diastolic dysfunction in Aged Brown Norway X Fisher 344 Rats"
2010	Ha Yen T. Dong, Summer Research Intern, WFU Exercise Science "Physical function and Aging: An Observational Study in Female Vervet Monkeys (*Chlorocebus aethiops sabaeus*)"

MEDICAL CENTER (PRE-DOCTORAL RESEARCH MENTOR):

2001	Stephen Sabourin, Summer research for medical students, Eli Lilly "Differential effects of sevoflurane, isoflurane, and halothane on Ca2+ uptake by skeletal muscle sarcoplasmic reticulum".
2004-2005	Benjamin Morley, Medical student research (MS-4) Awarded third place, Gulf Atlantic Anesthesia Resident's Research Conference "Timing of lidocaine for prevention of pain upon induction with propofol or etomidate: Does it really matter?"
2006	Edi Ntuen, Summer research for medical students, WFUSM support "Diastolic dysfunction predicts adverse outcome after cardiac surgery."
2005-2006	William Corcoran, Medical student research (MS-4), WFUSM support Awarded best of section at the International Anesthesia Research Society 80th Clinical and Scientific Congress, San Francisco, CA, March 2006, "Local Anesthetic-Induced Cardiac Toxicity: A survey of contemporary practice strategies among academic anesthesiology departments"

GRADUATE STUDENTS, FELLOWS, AND RESIDENTS ADVISED: (continued)

MEDICAL CENTER (PRE-DOCTORAL RESEARCH MENTOR):

2005-2008 — Dawn Delo, Molecular Medicine Thesis Committee
Ph.D. 2008: "Cardiac Tissue Regeneration"

2006-2008 — Aaron Trask, Physiology & Pharmacology Thesis Committee
Ph.D. 2008: "Angiotensin II and Angiotensin-(1-7) in the Renin-Angiotensin System"

2006-2009 — Shea Gilliam-Davis, Physiology & Pharmacology Thesis Committee
Ph.D. 2009: "Factors Regulating the Intrarenal Renin-Angiotensin System and Renal Damage During Aging

2008-2011 — Jewell Jessup, Physiology & Pharmacology Thesis Advisor
Ph.D. June 2011: "Estrogen and the Cardiac Nitric Oxide System in Cardiac Structure and Function"

2010-present — Kimberly Kassik, MS-2, Summer Research for Medical Students
Late Breaking Poster Discussion at American Society of Anesthesiologist Meeting San Diego, CA, October 2010
"Low-dose ACE-inhibition late-in-life modulates cardiac reactive oxygen species to retard diastolic dysfunction in the BNF344 rat model of normative aging"

MEDICAL CENTER (POST-GRADUATE RESEARCH MENTOR):

2001-2002 — Matthias Konig, M.D. Anesthesia Resident
Awarded 3rd Place for Original Research Gulf Atlantic Anesthesia Resident's Res Conference, Atlanta, GA 2002
"Does Myoplasmic Ca2+ Regulation by the SR Respond Differently to Sevoflurane in the Young?

Matthias Konig, M.D. Anesthesia Resident
"Internet Based, Interactive Information Site on Malignant Hyperthermia for Lay Persons and Non-Anesthesiologist Health Care Providers" Exhibit at the American Society of Anesthesiologists Annual Meeting, Orlando, Florida, October 2002

2002-2003 — Nathan Pailes, M.D, Cardiothoracic Anesthesia Fellow
"Does Growth Hormone and IGF-1 Play a Role in Diastolic Dysfunction of Aging?"
Poster Presentation at the 26th SCA Annual Meeting, Honolulu, HI, April 2004

2004-2005 — Thomas Burch, M.D. Cardiothoracic Anesthesia Fellow
Awarded 1st Place for Original Research at the Gulf Atlantic Anesthesia Resident's Research Conference, Miami, FL, March 2005
"Cardiac Dysfunction in a Murine Model of Heart Failure: Does the Presence of $Beta_3$-Adrenergic Receptors have a Role?"

2005-2006 — Christopher Beck, M.D. Cardiothoracic Anesthesia Fellow
Poster presentation at Society of Cardiovascular Anesthesiologists Meeting 2006, "Impact of age and growth hormone on anesthetic-induced alterations in cardiac performance"

2006-2007 — Benjamin Antonio, D.O., Assistant Professor WFUSM

Poster at the Society of Critical Care Medicine Annual Meeting, Orlando, Florida, February 2007, “Does Diastolic Dysfunction Predict ICU Recidivism after Cardiac Surgery?

2007-2008

David Sanders, M.D., Cardiothoracic Anesthesia Fellow
Poster discussion at American Society of Anesthesiologists Meeting, Orlando, Florida 2008, “Diastolic dysfunction predicts adverse outcome after cardiac surgery.”