

**College of Medicine  
Medical University of South Carolina  
CURRICULUM VITAE**

**Name:** Terrence X. O'Brien, M.D., M.S., F.A.C.C.

**Date of CV:** 6/30/06

**Office Address:** Division of Cardiology, Department of Medicine, MUSC,  
135 Rutledge Avenue, Suite 1201, P.O. Box 250592, Charleston, SC 29425

**Phone:**(843) 792-2295  
**Fax:** (843) 792-7771

**Office Address:** Division of Cardiology, Ralph H. Johnson V.A.M.C.  
109 Bee Street, Charleston, SC 29403

**Phone:**(843) 577-5011, ext. 6138  
**Fax:** (843) 723-1535

**Education:**

<b>Years</b>	<b>Institution/Location</b>	<b>Degree</b>
9/76 to 6/80	Stanford University, Palo Alto, CA	B.S., Chemistry (co-awarded with M.S. degrees)
9/76 to 6/80	Stanford University, Palo Alto, CA	M.S., with Honors, Biological Sciences
9/80 to 6/84	University of California, San Diego	M.D.

**Internship:** University of Texas Southwestern Medical Center, Dallas, TX 7/84-6/85  
Parkland Memorial Hospital and VAMC, Dallas, TX

**Residencies or Post Doctoral:** Residency in Internal Medicine 7/85-6/87  
University of Texas Southwestern Medical Center, Dallas, TX  
Parkland Memorial Hospital and VAMC, Dallas, TX

Cardiology Fellow (Clinical) 7/88 to 6/90  
University of California Medical Center and VAMC, San Diego, CA

Research Fellowship, Bugher Foundation-American Heart Association 7/91 to 7/93  
Dept. of Medicine and Center for Molecular Genetics  
University of California, San Diego, CA

**Specialty/Board Certification:** 1987 Board Certification in Internal Medicine (ABIM)  
1991 Board Certification in Cardiovascular Diseases (ABIM)  
2001 Board Recertification in Cardiovascular Diseases (ABIM)

**Licensure:** Licensure Examinations: National Board of Medical Examiners 7/85, FLEX Examination 6/85

South Carolina Physician's License; DEA and DHEC (numbers are available).  
Retired Licenses in Good Standing from Texas and California

**Faculty Appointments:**

<b>Years</b>	<b>Rank</b>	<b>Institution</b>	<b>Department</b>
7/87 to 6/88	Assistant Clinical Professor of Medicine	Univ. of Texas Southwestern Med. Center (Parkland Hospital), 5323 Harry Hines Blvd. Dallas, Texas 75235 Attending: Parkland Emergency Dept.	Medicine (General)
7/90 to 12/92	Instructor in Medicine (Cardiology)	University of California, San Diego UCSD Med. Ctr. & VAMC, San Diego, CA	Medicine (Cardiology)
7/90 to 7/93	Associate Investigator	Veterans Admin. Med. Center, San Diego 3350 La Jolla Village Dr. San Diego, CA 92093 Phone: (619) 552-8585 ext. 3817 Attending: Cardiac Cath. Lab. (Diagnostic), Echocardiography, MICU/CCU	Medicine (Cardiology)
1/93 to 7/93	Assistant Clinical Professor of Medicine	University of California, San Diego UCSD Med. Ctr. & VAMC, San Diego, CA 9500 Gilman Dr. San Diego, CA 92093 Phone: (619) 534-5769	Medicine (Cardiology)
7/93 to 7/00	Assistant Professor of Medicine and Cell Biology & Anatomy	Medical University of South Carolina	Medicine Cell Biology & Anatomy
7/93 to Current	Staff Physician	RHJ Veterans Affairs Medical Center	Medical Subspecialties
7/98 to current	Molecular & Cellular Biology & Pathobiology Faculty	Medical University of South Carolina	MCBP Program
7/00 to current	Associate Professor of Medicine and Cell Biology & Anatomy	Medical University of South Carolina (with tenure)	Medicine Cell Biology & Anatomy

**Administrative Appointments:**

<b>Years</b>	<b>Position</b>	<b>Institution</b>	<b>Department</b>
3/06 to current	Member, Charleston Research Institute Board of Directors	RHJ-VAMC Charleston	Research
8/03 to current	Director, Cardiovascular Clinical Research	MUSC and RHJ-VAMC, Charleston	Medicine/Cardiology
7/03 to current	Member, Rank and Promotions Committee Medicine/Cardiology		MUSC
8/01 to current	Medical Director, MUSC Cardiology at East Cooper	MUSC (Outreach Clinic)	Medicine/Cardiology
1995 to current	Director, Echocardiography Laboratory	RHJ-VAMC, Charleston	Medical Subspecialties
4/1/03 to 7/1/03	Acting Associate Chief of Staff for Research and Development	RHJ-VAMC, Charleston	Research

**Hospital Appointments/Privileges:**

<b>Years</b>	<b>Active/Inactive</b>	<b>Institution</b>
7/93 to current	Active	Medical University of South Carolina Medical Center, Charleston, SC
7/93 to current	Active	Veterans Affairs Medical Center, Charleston, SC
6/95 to current	Active	Charleston Memorial Hospital (also Kindred Hospital of S.C.), Charleston, SC Consulting Staff Privileges
5/06 to current	Active	East Cooper Regional Medical Center, Consulting Staff Privileges 11/97-4/06
7/95 to current	Courtesy	Roper/St. Francis Hospital Charleston, SC Consulting Staff Privileges

**Membership in Professional/Scientific Societies:****National Societies:**

Heart Failure Society of America, 2001-current.  
 Fellow of the American Heart Association, 2001- current.  
 American Society of Echocardiography, 12/96 – current.  
 Southern Medical Association, 11/96 – 6/98, 5/06 - current.  
 South Carolina Chapter, American College of Cardiology, 8/93 – current.  
 American Heart Association, Clinical and Basic Science Councils, 10/90 – current.  
 Fellow, American College of Cardiology, 12/92 – current.  
 American Medical Association, 7/88 – 6/96, 2004 - current.  
 American Physiological Society, 4/00 – 12/03.  
 University of California, San Diego Medical Alumni Association.

**Local Societies:**

University Medical Associates, MUSC, Charleston, SC, 8/93 – current.  
 South Carolina Medical Association, 8/93 – current.  
 Charleston County Medical Society, South Carolina, 8/93 – current.  
 Waring Library Society, MUSC 1/94 – current.

**Editorial and Study Section Positions:**

Ad Hoc Scientific and Clinical Journal Reviews (Journal of Clinical Investigation, Trends in Cardiovascular Medicine, Journal of the American College of Cardiology, Circulation, Circulation Research, American Journal of Physiology, American J. of the Medical Sciences, VA Merit Review ad hoc External Reviewer) 7/93 to current. Abstract Grader for the American Heart Association National Meeting (2000-5).

Study Section: VA Merit Review Subcommittee on implantable cardioverter defibrillators and antiarrhythmic drugs. Washington, D.C., December 17, 2003.

Study Section: VA Merit Review – Cardiology Subcommittee (ad hoc member) 2004-5, (member) 2005-9.

Editorial Board, Cardiology Section, The American Journal of the Medical Sciences, 5/06-current.

**Extramural Grants/Award Amounts (currently active):**

**As Principal Investigator (% effort):**

**Current Principal Investigator Awards:**

	<u>Source:</u>	<u>Amount Awarded:</u>
05/01/06-Initiation	Clinical Trial at the RHJ-VAMC and MUSC sponsored by Encysive Pharmaceuticals: "Sitaxsentan sodium to improve exercise tolerance in subjects with diastolic heart failure."	\$12,300/per pt. 3% effort
04/01/06-03/31/09	VA Merit Award: "The Cardiac Conduction System and Nkx2.5."	\$125,000/year 3 years
03/22/05-Initiation	Clinical Trial at the RHJ-VAMC sponsored by CV Therapeutics (protocol 3036): A randomized, double-blind, parallel group, placebo-controlled, multinational, clinical trial to evaluate the efficacy and safety of ranolazine versus placebo in patients with non-ST segment elevation acute coronary syndromes. The MERLIN-TIMI 36 trial.	\$5,000/per pt. 3% effort
02/01/05-Initiation	Clinical Trial at the RHJ-VAMC sponsored by Amylin Pharmaceuticals (protocol 2592-101): "A Phase 2, randomized, double-blind, parallel-group, placebo-controlled, multicenter study to examine the effects of AC2592 administered by continuous subcutaneous infusion in subjects with advanced chronic congestive heart failure."	\$6,000/per pt. 3% effort
08/01/04-Initiation	Clinical trial at the RHJ-VAMC sponsored by the Office of Research and Development, Dept. of Veterans Affairs: "DITPA, a thyroid analogue to treat heart failure: Phase II trial."	\$2,500/per pt. 3% effort
05/01/04-Initiation	Clinical trial at the RHJ-VAMC sponsored by Pfizer Pharmaceuticals: "A randomized, double-blind, multicenter study evaluating the effects of Eplerenone versus placebo on ventricular remodeling in patients with left ventricular systolic dysfunction (EF<35%) and mild to moderate heart failure."	\$3,225/per pt. 3% effort
11/11/03-Initiation	Clinical trial at the RHJ-VAMC sponsored by Otsuka America Pharmaceuticals: "Multicenter, randomized, double-blind, placebo controlled study to evaluate the long-term efficacy and safety of oral Tolvaptan tablets in subjects hospitalized with worsening congestive heart failure." The EVEREST trial.	\$14,700/per pt. 3% effort
01/01/04-Initiation	Clinical trial at the RHJ-VAMC sponsored by Fujisawa Healthcare, Inc.: "Protocol 03-0-162, a phase 2, dose escalation evaluation of the pharmacokinetic and hemodynamic effects of Carperitide in subjects with congestive heart failure."	\$12,600/per pt. 3% effort

08/01/03-07/31/08	NIH Program Project Grant Renewal: "Load Induced Cardiac Hypertrophy in the Adult Mammal." Director: Dr. George Cooper \$7,106,000 direct costs (5 years)	5% Effort \$32,478/year 5% Effort
	Principal Investigator: Core E-Morphology and Molecular Imaging.	
	Co-Investigator Project 3: "Cardiac Na-Ca Exchanger: Hypertrophic Regulation." Principal Investigator: Dr. Donald Menick	
01/01/03-12/31/05	VA merit award: "Cardiac Conduction System Regulation by Nkx2.5."	\$129,700/year 20% effort
05/01/02-Initiation	Clinical trial at the RHJ-VAMC sponsored by Bristol Myers Squibb and Sanofi-Synthelabo: "Irbesartan in heavy failure with preserved systolic function" (I-PRESERVE).	\$66,520/10 pt. 2% effort

**As Co-Principal Investigator (% effort):**

<u>Co-Investigator Awards:</u>	<u>Source:</u>	<u>Amount Awarded:</u>
05/01/01-4/31/06	NIH Program Project Grant: "Patterning by Invasive Mesochoyme in the Heart." Director: Dr. Robert Gourdie \$1,132,617/year; HD39946	
	Co-principal investigator, Project 1: The genetic origin Of structural and functional defects of atrioventricular Conduction in humans. Principal Investigator: Dr. Woodrow Benson	5% Effort
06/98 – current (Summers only)	Summer Research Program for Minority Students. MUSC Institutional T35 Grant: NIH HL07923.	Student Stipend

**As Sub-Investigator (% effort):**

11/01/04-Initiation	Clinical Trial at the RHJ-VAMC Sponsored by CV Therapeutics: 1% Effort A double-blind, randomized, placebo-controlled, parallel-group study of Ranolazine SR at a dose of 1000 mg twice a day in patients with chronic angina who remain symptomatic despite treatment with Amlodipine 10 mg once a day. PI: Calin Maniu, M.D.	
07/04-VA Initiation	Clinical Trial at the RHJ-VAMC Sponsored by Guidant, Inc.: CRT Optimization Algorithm Validation Study. PI: Michael Gold, M.D., Ph.D. (trial requires a sub-investigator to be done at the VAMC).	0% Effort
07/04-Initiation	Clinical Trial at the RHJ-VAMC Sponsored by Guidant, Inc.: Contak Renewal 3 AVT. PI: Michael Gold, M.D., Ph.D. (trial requires a sub-investigator to be done at the VAMC).	0% Effort

### **Awards, Honors, Membership in Honorary Societies:**

6/01 to current	Fellow of the American Heart Association
5/01-5/03	Study Section, American Heart Association Mid-Atlantic Affiliate.
1/01 to current	Tenure, Medical University of South Carolina
7/00 to current	Faculty Senate, MUSC
7/98 to current	Faculty Member, Molecular and Cellular Biology and Pathobiology Interdisciplinary Graduate Program
7/95 to 6/99	Research Associate, Division of Cardiology, Ralph H. Johnson V.A.M.C.
8/21-25/96	Young Investigator Award, American Heart Association, Scientific Conference on the Molecular Biology of the Normal, Hypertrophied, and Failing Heart, Salt Lake City, Utah
5/95 to current	Member, Graduate Faculty of the Medical University of South Carolina
7/91 to 6/93	Bugher Fellowship in Molecular Biology, American Heart Association, Cardiology Division, University of California, San Diego
7/90 to 6/93	Associate Investigator Career Development Award, Veterans Administration Medical Center, San Diego
5/92	Trainee Investigator Award for Excellence in Scientific Research, American Federation for Clinical Research
6/3/84	Samuel Hamburger Award, Honorable Mention, Outstanding Doctor of Medicine Thesis, University of California, San Diego
9/80 to 6/84	Regents Scholarship, University of California, San Diego, School of Medicine
6/79 to 9/79	IAESTE Award (International Association for the Exchange of Students for Technical Experience), Drug Encapsulation Research, Haessle Laboratories, Gothenburg, Sweden
9/76 to 5/80	Stanford University Four-Year Academic Undergraduate Scholarship
9/77 to 5/80	California State Academic Scholarship, Stanford University

### **Major Clinical Interests and Responsibilities:**

#### **Ralph H. Johnson Veterans Affairs Medical Center, Charleston, SC:**

Director, Echocardiography Laboratory (1995 – current):

This includes the performance of approximately 1750 transthoracic and 200 trans-esophageal echocardiograms per year as well as stress and intra-operative echocardiography.

The state-of-the-art echocardiography suit includes tissue harmonic and digital imaging, stress echo and research protocols.

MICU (2 month/year) V.A. Attending

Attending Nuclear Cardiologist (interpretation) one day per week

Cardiovascular Clinical Trials (see P.I. award listing)

Clinical and Didactic Teaching of medical and graduate students, residents, clinical fellows and post-doctorates.

#### **Medical University of South Carolina Medical Center, Charleston, SC:**

University Cardiology Associates at East Cooper, Director plus weekly outpatient clinic, 6/00-current.

Private Outpatient Consulting weekly clinic at MUSC.

Echocardiography Attending (Interpretation)

Coronary Care Unit and Red Service (Cardiology) 2 months/year.

Cardiology Noninvasive Call (1 week out of 6)

Attending, Cardiology Consulting Service

### **Research Interests:**

1. Basic mechanisms of cardiac hypertrophy and failure relating to the cardiac transcription factor Nkx2.5.
2. Molecular biology of the cardiac conduction system.
3. Clinical trials investigating therapies and pathophysiology of systolic and diastolic heart failure.

## **PUBLICATIONS:**

### **Peer Reviewed Journal Articles:**

1. O'Brien, TX. Cross-reactivity of antisera to core lipopolysaccharide mutants in vitro. Thesis requirement for M.D. degree, School of Medicine, University of California, San Diego; June 1984.
2. Baumgartner JD, O'Brien TX, Kirkland TN, Glauser MP, Ziegler EJ. Demonstration of cross-reactive antibodies to smooth gram-negative bacteria in antiserum to Escherichia coli J5. *Journal of Infectious Diseases* 1987; 156:136-142.
3. O'Brien TX, Ross J Jr. Non-Q-wave myocardial infarction: Incidence, pathophysiology and clinical course compared with Q-wave infarction. *Clinical Cardiology* 1989; 12:III, 3-9.
4. Shrestha M, O'Brien TX, Haddox R, Gourlay HS, Reed G. Decreased duration of emergency department treatment of chronic obstructive pulmonary disease exacerbations with the addition of Ipratropium bromide to beta-agonist therapy. *Annals of Emergency Medicine* 1991; 20:1206-1209.
5. O'Brien TX, Hunter JJ, Dyson E, Chien KR. Heart-to-Heart: New approaches for gene transfer in the myocardium. (Editorial.) *Circulation* 1991; 83:2133-2136.
6. O'Brien TX, Feld GK, Ross RS. Case Studies in Molecular Cardiology: A young woman with syncope and sudden death: What molecular mechanisms could be involved? *Trends in Cardiovascular Medicine* 1992; 2:37-40.
7. Ross RS, O'Brien TX. The mouse that roared: Cardiovascular applications of transgenic technology. *Heart Failure* 1992; 8:109-120.
8. Lee KJ, Ross RS, Rockman HA, Harris AN, O'Brien TX, Van Bilsen M, Shubeita HE, Kandol R, Brem G, Price J, Evans SM, Zhu H, Franz WM, Chien KR. Myosin light chain-2-luciferase transgenic mice reveal distinct regulatory programs for cardiac and skeletal muscle specific expression of a single contractile protein gene. *Journal of Biological Chemistry* 1992; 267:15875-15885.
9. Chien KR, Zhu H, Knowlton KU, Miller-Hance W, Van-Bilsen M, O'Brien TX, Evans SM. Transcriptional regulation during cardiac growth and development. *Annual Review of Physiology* 1993; 55:77-95.
10. O'Brien TX, Lee KJ, Chien KR. Positional specification of the ventricular myosin light chain-2 gene in the primitive murine heart tube. *Proceedings of the National Academy of Science* 1993; 90:5157-5161.
11. Evans SM, O'Brien TX. Expression of the helix-loop-helix factor Id during mouse embryonic development. *Developmental Biology* 1993; 159:485-499.
12. O'Brien TX. Molecular Biology in Clinical Cardiology: Update on gene therapy for coronary artery disease. Ed. Assey ME. *Journal of the Southern Medical Association* 1994;(Dec), Dial Access.
13. Kubalak SW, Miller-Hance WC, O'Brien TX, Dyson E, Chien KR. Chamber specification of atrial myosin light chain-2 expression precedes septation during murine cardiogenesis. *Journal of Biological Chemistry* 1994; 269:16961-16970.
14. Thompson JT, Rackley MS, O'Brien TX. Up-regulation of the cardiac homeobox gene Nkx2.5 (CSX) in feline right ventricular pressure overload. *American Journal of Physiology* 1998; 274:H1569-H1573.
15. O'Brien TX, Schuyler GT, Rackley MS, Thompson JT. F<sub>1</sub>-ATP synthase  $\beta$ -subunit and cytochrome c transcriptional regulation in right ventricular hemodynamic overload and hypertrophically stimulated cardiocytes. *Journal of Molecular and Cellular Cardiology* 1999; 31:167-178.
16. Gramling-Babb P and O'Brien TX. High thoracic epidural block as a cardioprotective adjunct for severe left main coronary

disease with cardiogenic shock. *Internet Journal Anesthesia*, January 2000; Vol. 4N1:  
<http://www.ispub.com/journals/IJA/Vol4N1/htea.htm>.

17. Usher BW and O'Brien TX. Recent advances in dobutamine stress echocardiography. *Clinical Cardiology* 2000; 23:560-570.
18. Brown AM and O'Brien TX. Upcoming therapies for congestive heart failure. *Clinical Cornerstones* 2000; 3: 36-44.
19. Cawthon TH and O'Brien TX. Genetic Mechanisms of Sudden Cardiac Death. *Journal of the South Carolina Medical Association* 2001;97:417-420.
20. Mitchell, GF, Tardif, JC, Arnold, JMO, Marchiori, G, O'Brien, TX, Dunlap, MA, Pfeffer, MA: Pulsatile Hemodynamics in Congestive Heart Failure. *Hypertension*, 2001; 38:1433-1439.
21. Nunamaker JL and O'Brien TX. Pericarditis: Constrictive. In: Geibel J, et.al., Emedicine Online. Emedicine, Inc., St. Petersburg, FL, ([www.emedicine.com](http://www.emedicine.com)). October 1, 2001.
22. O'Brien TX and Nunamaker JL. Pericarditis: Constrictive-effusion. In: Geibel, J. et. at., Emedicine Online, Emedicine, Inc., St. Petersburg, FL, ([www.emedicine.com](http://www.emedicine.com)) October 1, 2001.
23. Muller JG, Thompson JT, Rackley MS, McQuinn TC, Menick DR, O'Brien TX. Co-regulation of Nkx2-5 and serum response factor induced activation of the cardiac sodium-calcium exchanger promoter. *Journal of Molecular and Cellular Cardiology*, 2002;34:807-821.
24. Harris BS, O'Brien TX, Gourdie RG. Coronary arteriogenesis and differentiation of periarteriolar Purkinje fibers in chick: Is there a link? *Texas Heart Journal*, 2002;29:262-270.
25. Gourdie RG, Harris BS, Bond J, O'Brien TX, Mikawa T, Sedmera D, Thompson RP. His-Purkinje lineages and development. In: Development of the cardiac conduction system. *Novartis Symposia Series*,2003;250:110-124.
26. Gourdie RG, Harris BS, Bond J, Justus C, Hewett K, O'Brien TX, Thompson RP, Sedmera D. Development of the cardiac pacemaking and conduction system. *Birth Defects Research*, 69:46-57, 2003.
27. Teunissen BE, Jansen AT, van Amersfoort SC, O'Brien TX, Jongasma HJ, Bierhuizen MF. Analysis of the rat connexin 43 promoter in neonatal cardiomyocytes. *Gene*, 2003,322:123-36.
28. Jay PY, Harris BS, Maguire CT, Buerger A, Wakimoto H, Kuperschmidt S, Roden DM, Schultheiss TM, O'Brien TX, Gourdie RG, Berul CI, Izumo S. Nkx2-5 Mutation causes anatomic hypoplasia of the cardiac conduction system. *Journal of Clinical Investigation*, 2004;113:1130-1137.
29. Jay, PY, Harris BS, Buerger A, Rozhitskaya O, Maguire CT, Barbosky L, McCusty E, Berul CI, O'Brien TX, Gourdie RG, Izumo S. Function follows form: Cardiac conduction system defects in NKx2.5 mutation. *Anatomical Record*, 280A:966-972, 2004.
30. Harris BS, Jay PY, Rackley MS, Izumo S, O'Brien TX, Gourdie RG. Transcriptional regulation of cardiac conduction system. *Anatomical Record*, 280A: 1036-1045,2004.
31. O'Brien, TX, Smith, DA. Congestive Heart Failure Overview. In: Emedicine Consumer Health. Emedicine, Inc., St. Petersburg, FL, ([www.emedicinehealth.com/Articles/10929-1.asp](http://www.emedicinehealth.com/Articles/10929-1.asp)). January 7, 2005.
32. Harris BS, Gourdie RG, O'Brien TX. The atrioventricular conduction system and transcription factors Nkx2.5 and Msx2. Editorial, *Journal of Cardiovascular Electrophysiology*, 16:86-87, 2005.
33. Little WC, Zile M, Kitzman DW, Hundley WG, O'Brien TX, deGroof RC. The effects of Alagebrium Chloride ALT-711, a novel glucose cross-link breaker, in the treatment of elderly patients with diastolic heart failure. *Journal of Cardiac Failure*. 11:191-195, 2005.
34. Bonnema DD, O'Brien TX, Pericarditis constrictive-effusive. ([www.emedicine.com](http://www.emedicine.com)) eMedicine Journal Medicine Cardiology, Vol. 6, Number 5, June 22, 2005.

35. Pennington WR, O'Brien TX. Pericarditis, constrictive. ([www.emedicine.com](http://www.emedicine.com)) eMedicine Journal Medicine Cardiology, Vol. 6, Number 8, Aug. 7, 2005.
36. Mitchell GF, Arnold MO, Dunlap ME, O'Brien TX, Marchiori G, Warner E, Granger CB, Desai S, Pfeffer MA. Pulsatile hemodynamic effects of candesartan in patients with chronic heart failure: The Charm Trial. *European J. of Heart Failure*, 8:191-7, 2005.
37. Harris BS, Spruill L, Edmonson AM, Rackley MS, Benson DW, \*O'Brien TX, \*Gourdine RG (\*=co-senior authors). Differentiation of cardiac purkinje fibers requires precise spatiotemporal regulation of Nkx2-5 expression. *Developmental Dynamics*, 235:38-49, 2006.
38. Colley BJ, O'Brien TX. Cardiac Tamponade: Still being newly described. Editorial in *Southern Med. J.* 99:4, 2006.

**Journals: (Submitted, in Revision, or in Preparation)**

1. Udelson, JE, Bilsker M, Hauptman P, Betkowski A, Sequeira R, Thomas I, O'Brien TX, Zimmer C, Orlandi C, Konstam MA. Vasopressin Inhibition in Congestive Heart Failure: A Multicenter, Randomized, Double-blind, Placebo-Controlled Efficacy and Safety Study of Tolvaptan Compared to Furosemide and the Combination of Tolvaptan and Furosemide. Submitted, 2005.

**Chapters in Scholarly Books and Monographs:**

1. O'Brien TX, Smith RL, Sherman D. Quantitative glycosaminoglycan analysis in rabbit chondrocyte tissue culture. Master's Thesis, Dept. of Biological Sciences, Stanford University 1980.
2. Chien KR, Knowlton KU, Lee KJ, Ross RS, Rockman HA, O'Brien TX. Molecular analysis of cardiac growth and development in transgenic mouse model systems. In: Figulla et al. eds. Idiopathic Dilated Cardiomyopathy. Springer-Verlag Berlin Heidelberg, 1993.
3. Thompson JT and O'Brien TX. Cardiovascular genetic diseases. In: Taylor GJ, ed. Primary Care Management of Heart Disease, Mosby, p. 481-488, 2000.
4. Paul SC and O'Brien TX. Chest x-ray and vascular studies. In: Taylor, GJ, ed. Primary Care Management of Heart Disease. Mosby, p. 77-84, 2000.
5. O'Brien TX. Heart disease and hormone replacement therapy. ([www.audio-digest.org/pages/html05/03150.3.4514940113511015836/OB5111](http://www.audio-digest.org/pages/html05/03150.3.4514940113511015836/OB5111)) > Obstetrics/Gynecology Audio-Digest, 51:2004.
6. Gourdine RG, Kubalak SW, O'Brien TX, Chien KR, Mikawa T. Development of Pacemaking and Cardiac Conduction System Lineages. In: Molecular Basis of Cardiovascular Disease, 2<sup>nd</sup> Edition, (ed. KR Chien), W. B. Saunders, p225-237, 2004.

**Journal Articles Citing Participation in Clinical Trial (not as co-author):**

1. Young JB, Dunlap ME, Pfeffer MA, et. al. Mortality and morbidity reduction with candesartan in patients with chronic heart failure and left ventricular systolic dysfunction. *Circulation*, 110:2618-2626, 2004.
2. Gheorghjade M, Orlandi C, Burnett JC, DeMetts D, Grinfeld L, Maggioni A, Swedberg K, Udelson JE, Zannad F, Zimmer C, Konstam MA. Rationale and design of the multicenter, randomized, double-blind, placebo-controlled study to evaluate the efficacy of vasopressin antagonism in heart failure: Outcome Study with Tolvaptan (EVEREST). *J. Cardiac Failure*, 11:260-269, 2005.
3. Carson P, Massie BM, McKelvie R, McMurray J, Komajda M, Zile M, Ptaszynska A, Frangin G, for the I-PRESERVE investigators. The irbesartan in heart failure with preserved systolic function (I-PRESERVE) trial: rationale and design. *J. Cardiac Failures*, 11:576-585, 2005.

**Abstracts:**

1. O'Brien TX, Frost L, Ghosh P, Taylor TKF. Effects of glycosaminoglycanpolysulfates on the synthesis and degradation of articular cartilage proteoglycans. *Clinical Research* 31:46A, 1983.
2. O'Brien TX, Chien KR. Developmental regulation of the cardiac myosin light chain-2 gene. *Clinical Research* 40:293A, 1992.
3. O'Brien TX, Evans SM, Chien KR. The developmental mRNA expression of ID, a negative regulatory helix-loop-helix gene. *Circulation* 86:I-347, 1992.
4. Dyson E, O'Brien TX, Patterson DF, Chien KR. Myosin light chain-2v expression in a canine model of genetically transmitted ventricular outflow tract region malformations. American Heart Association Scientific Sessions, November 11-14, 1993. *Circulation* 1993; 88:I-437.
5. O'Brien TX, Menick DR, Rackley MS, McDermott PJ, Cooper IV G. Neonatal Rat Cardiocytes Subjected to In Vitro Load Stress Acutely Upregulate the Mitochondrial F<sub>1</sub>-ATPase -Subunit. American Physiological Society October 5-8, 1994. *The Physiologist* 1994; 37:A-7.
6. Menick DR, O'Brien TX, McDermott DE, Rozich JD, Schuyler GT, Cooper IV G. The rapid upregulation of nuclear and mitochondrial encoded subunits of the F<sub>1</sub>ATPase and cytochrome oxidase complexes in response to load. American Physiological Society, October 5-8, 1994. *The Physiologist* 1994; 37:A-7.
7. Schuyler GT, Ridenour AS, Menick DR, Rozich JD, O'Brien TX, Cooper IV G. Use of differential display technology in the identification of upregulated transcripts during acute right ventricular overload. American Physiological Society, October 5-8, 1994. *The Physiologist* 1994; 37:A-7.
8. Thompson JT, Rackley MR, Menick DR, Cooper IV G, O'Brien TX. Analysis of cytochrome c transcription ion right ventricular overload and hypertrophically stimulated cardiomyocytes. *Circulation* 1996; 94:I-308.
9. O'Brien TX, Menick DR, Rackley MS, Rozich JD, McDermott PJ, Cooper IV G. Right Ventricular Load Transcriptionally Activates the F<sub>1</sub>-ATP Synthase -Subunit in Vivo and a cis-Region of its Gene is Inducible by Hypertrophic Stimuli in Cardiocytes. *Journal of the American College of Cardiology* 1996; 27:157A.
10. Duncan RL and O'Brien TX. Validation of cost-effective coronary disease screening with dobutamine stress echocardiography. American College of Physicians Associates (SC) Meeting. Sept. 5, 1997; Charleston, SC..
11. O'Brien TX, Rackley MS, Thompson JT, Hamawaki M, McDermott P, Cooper IV G. Early initiation factor 2 is up-regulated upon the induction of cardiac hypertrophy via hemodynamic load. *Circulation* 1997; 96:I-495.
12. Thompson JT, Rackley MS, O'Brien TX. Co-regulation of Nkx2-5 transcriptional activation in cardiac hypertrophy. *Journal of Investigative Medicine* 1998; 46:202A.
13. Lu X, Rackley MS, Ross RS, Menick DR, O'Brien TX. Adenoviral mediated overexpression of Nkx2-5 and serum response factor activates the cardiac sodium-calcium exchanger promoter in neonatal and adult cardiomyocytes. *Circulation* 1999; 100:I-?, November.
14. Muller JG, Thompson JT, Rackley MS, Menick DR, O'Brien TX. Co-regulation of Nkx2-5 and serum response factor activation of the cardiac sodium-calcium exchanger promoter. *Journal of the American College of Cardiology* 1999; 33:182A.
15. Brown A, Rackley MS, Ross RS, O'Brien TX. Adenoviral – medicated gene transfer of the cardiac transcription factor Nkx2.5 into adult cardiomyocytes. *Journal of the American College of Cardiology* 2001; 37:195A.
16. Gourdie RG, Kubalak SW, O'Brien TX, Chien, KR, Mikawa T. Development of Pacemaking and Cardiac Conduction System Lineages. In: *Molecular Basis of Cardiovascular Disease*, 2<sup>nd</sup> Edition, (ed. KR Chien), W. B. Saunders. In press.
17. O'Brien TX, Edmonson AM, Rackley, MS, Gourdie RG, Benson W. Nkx2.5 in the Conduction System. *Journal of Cardiac Failure* 2001;7:II-25.

18. O'Brien TX, Edmonson AM, Rackley MS, Benson DW, Gourdie RG. Role of the cardiac transcription factor Nkx2.5 in the cardiac conduction system. *Circulation* 2001;104:17.
19. Udelson J, Orlandi C, O'Brien TX, Sequeira, R, Ouyang J, Konstam M. Vasopressin receptor blockade in patients with congestive heart failure: Results from a placebo-controlled, randomized study comparing the effects of Tolvaptan, Furosemide and their Combination. *Journal of the American College of Cardiology*, 2002;39:156A.
20. Harris BS, Edmondson AM, Rackley MS, Serbezov I, O'Brien, TX, Gourdie, RG. Differentiation of Cardiac Purkinje Fibers Requires Precise Regulation of Nkx2.5 Expression. Presented at the Weinstein Cardiovascular Development Meeting, Boston, MA, May 17, 2003.
21. Harris BS, Edmonson AM, Serbezov I, Rackley MS, Gourdie RG, O'Brien, TX. Cardiac Conduction System Development is Regulated by the Cardiac Transcription Factor Nkx2.5. Oral presentation at the American Heart Association Asia Pacific Scientific Forum, June 8 – 10, 2003, Honolulu, HI. *Circulation* 2003;107:E138.
22. Kitzman DW, Zile MR, Little WC, Hundley WG, O'Brien, TX, deGroot RC. Effect of ALT-711, a novel glucose cross-link breaker, in the treatment of diastolic heart failure. Annual Scientific Session of the Society of Geriatric Cardiology, May 29, 2003. European Society of Cardiology Congress, In press in a supplement to the *European Heart Journal*, Sept. 1, 2003.
23. Harris BS, Edmondson AM, Rackley MS, Serbezov I, O'Brien TX, Gourdie RG. Differentiation of cardiac purkinje fibres requires precise regulation of Nkx2.5 expression. Experimental Biology/FASEB Meeting. April 17, 2004.
24. Bhella PS, Doshi HM, Reuben A, O'Brien, TX. Diastolic dysfunction in end-stage liver disease post-liver transplant. *J. of Cardiac Failure*, 2004;10:S32.
25. Harris BS, Rackley MS, Menick DR, O'Brien TX. The cardiac sodium-calcium exchanger is differentially regulated by Nkx2-5 versus three human Nkx2-5 mutations. *J. Cardiac Failure*, 11:S126, 2005.
26. Udelson JE, McGrew F, Flores E, Ibrahim H, Koshkarian G, Katz S, O'Brien TX, Zimmer C, Orlandi C, Konstam MA. Effects of the vasopressin V<sub>2</sub> receptor antagonist, Tolvaptan, on the long-term progression of left ventricular dilatation in patients with heart failure. *Circulation* 112:II-504,2005.

**Invited Lectures and Presentations (from 2001 on):**

- CME Grand Rounds: “New Classes of Antianginal Drugs.” Northeast Medical Center, Concord NC, June 16, 2006.
- American College of Cardiology: Cardiology for the Primary Physician. CME Lecture: “Recent advances in the Medical Treatment of Angina.” Charleston, SC, June 1, 2006.
- CME Invited Lecture: “Update on the Treatment of Coronary Artery Disease.” Highpoint Medical Society Annual Conference, Highpoint, NC, May 11, 2006.
- CME Grand Rounds: “Statins in Hospitalized Patients.” Department of Family Medicine, MUSC, April 17, 2006.
- Heart Failure Society of America. Poster presentation: The cardiac sodium-calcium exchanger is differentially regulated by Nkx2-5 versus three human Nkx2-5 mutations. Boca Raton, FL, September 18-21, 2005.
- American College of Cardiology CME Lecture: Cardiology for the Primary Physician. “Recent Advances Angina”. Charleston, SC June 4, 2005.
- Heart Failure Society of America. Poster presentation: Diastolic Dysfunction in End-Stage Liver Disease Post-Liver Transplant. Toronto, Canada, Sept. 13-15, 2004.
- CME Invited Speaker: “Update on the Clinical Management of Systolic Heart Failure”. Regional Medical Center, Orangeburg, SC July 7, 2004.
- Office Practice of Primary Care Medicine: “Systolic Heart Failure”. MUSC CME course, April 14, 2004, Charleston, SC.

Reproduction Endocrinology MUSC CME course: "Hormone Replacement Therapy: A Cardiologist's Perspective". March 15, 2004, Charleston, SC.

RHJ-VAMC CME Conference: "Heart Failure Management and Research at the VAMC". February 3, 2004, Charleston, SC.

Fourth Annual Issues in Women's Health: "Cardiovascular Disease in Women and Heart Disease and Hormone Replacement Therapy". MUSC CME Course: Oct. 31, 2003, Charleston, SC.

Grand Rounds, Cardiology: "Cardiac Conduction System Molecular Biology", May 1, 2003, MUSC.

American College of Cardiology: Cardiology for the Primary Physician. CME. "Adult Congenital Heart Disease", May 31, 2003, Charleston, SC.

Third Annual Issues in Women's Health. MUSC CME Course: "Clinical Management Issues Involving Women and Heart Disease". Charleston, SC, November 1, 2002.

Grand Rounds, Trident Regional Medical Center. "Cardiac Risk Factors and Development of the Metabolic Syndrome." North Charleston, SC, Sept. 6, 2002.

American College of Cardiology: Cardiology for the Primary Physician. CME Lecture: "Cardiovascular Gene Therapy", June 1, 2002, Charleston, SC.

South Carolina Medical Association Annual Meeting. "Cardiovascular Disease in Woman". April 26, 2002, Charleston, SC.

Grand Rounds, Southeastern Georgia Regional Medical Center. "Diagnosis and Therapy of Acute Myocardial Infarction". Brunswick, GA, April 14, 2001.

Grand Rounds, Dept. OB/GYN, MUSC, "Causes and treatment of Cardiovascular Disease in Women, May 29, 2001.

Invited CME Lecture: "Coronary Artery Disease in Women". North Carolina Academy of Family Physicians. Myrtle Beach, SC, July 5, 2001.

Medical University of South Carolina, College of Medicine CME course in Women's Health. North Carolina Academy of Family Physicians. Invited Lecture: Coronary Artery Disease in Women: Diagnosis and Therapy. Charleston, SC, April 16, 2001.

Invited Lecture: "Update in Acute Coronary Syndromes". Sponsored by Aventis Pharmaceuticals, Charleston, SC, April 4, 2001.

American College of Cardiology Scientific Sessions. Session Co-Chair. March 18 – 21, 2001. Orlando, FL.

**Past Principal Investigator Awards:**

08/01/02-Initiation	Clinical trial at MUSC and the RHJ-VAMC sponsored by Otsuka America Pharmaceuticals: "A multicenter, randomized, double-blind, placebo-controlled, efficacy study on the effects of Tolvaptan on left ventricular dilatation and function in patients with heart failure and left ventricular systolic dysfunction", the METEOR trial.	\$61,500/8 pt. 2% effort
01/01/02–04/01/04	Clinical trial at the RHJ-VAMC sponsored by Nitromed, Inc. "A placebo controlled trial of Bidil (combination of hydralazine and isosorbide dinitrate) added to standard therapy in African-American patients". A-Heft (African-American Heart Failure Trial).	\$4,035/per pt. 2% effort
07/01/02-04/01/03	Clinical Trial at the RHJ-VAMC sponsored by Alteon: Diastolic Dysfunction Improvement with ALT-711 Remodeling (The Diamond Study)".	\$107,823 10 enrolled 2% effort
09/01/01-06/30/03	Clinical trial at the RHJ-VAMC and MUSC sponsored by Sanofi-Synthelabo: "A multicenter, randomized, placebo-controlled; double-blind trial to evaluate the effects of vasopressin V <sub>2</sub> receptor antagonist (SR121463B) on clinical improvement in patients with severe chronic heart failure". Aquavit Trial.	\$48,190 6 enrolled 2% effort
9/01/01-12/30/03	Clinical trial at the RHJ-VAMC sponsored by Mitsubishi Chemical: "A phase II, double-blind, randomized, placebo-controlled, dose comparative study of the efficacy, tolerability and safety of MCC135 in subjects with chronic heart failure NYHA II/III". Also an MRI substudy.	\$232,830. 14 enrolled 2% effort
10/01/98-09/30/03	VA-Research Enhancement Award Program (REAP): Dr. Terrence X. O'Brien-PI of Project 3 (of 5): "Regulation of Transcription Factor Nkx2-5 in Cardiac Hypertrophy." (Training supplement to VA Merit Award) Dr. George Cooper-PI (Director of REAP program) "Basic Mechanisms of Cardiac Hypertrophy and Failure" \$1,350,000/5 years (Direct Costs)	\$34,800/year (Direct Costs) 5% effort
01/01/00-12/31/02	VA Merit Award: "Regulation of the Cardiac Transcription Factor Nkx2-5 in Cardiac Hypertrophy."	\$75,900/year 20% effort
05/01/00-05/01/02	Clinical Trial at the RHJ-VAMC sponsored by Otsuka America Pharmaceuticals: "Multicenter, Randomized, Double-Blind Placebo-Controlled, Efficacy and Safety Study to Evaluate the Effects of Tolvaptan (OPC-41061) on the Chronic Outcomes of Patients with Congestive Heart Failure." "VITAL" trial.	\$30,894 - direct \$ 7,106 - indirect 8 enrolled
11/1/00-03/01/02	Clinic Trial at the RHJ-VAMC sponsored by Otsuka America Pharmaceuticals: "Multicenter Randomized Double-Blind Placebo Controlled Parallel Group Efficacy Safety Study to Evaluate the Effects of Oral Administration of Tolvaptan (OPC 41061) compared to Furosemide and the Combination of Tolvaptan and Furosemide in Patients with CHF." "Victor" Trial.	\$75,838 (direct) \$15,144 (indirect) 7 enrolled.
10/01/00-02/01/02	Clinical Trial at the RHJ-VAMC sponsored by Novartis	\$13,263 (direct)

	Pharmaceuticals: "Open Label, single Arm Forced Titration, Multicenter Study to Assess the Effect of Valsartan on Heart Rate Variability (HRV) in patients with Chronic Heart Failure".	\$ 3,961 (indirect) 4 enrolled
03/01/96-02/28/02	NIH R29 Award (HL55284-02) "Oxidative Phosphorylation in Cardiac Hypertrophy"	\$333,952/total 50% effort
05/01/1999 – 03/01/01	Clinical Trial at the RHJ-VAMC sponsored by Parke-Davis Pharmaceuticals: "A 12-week, Double-Blind, Placebo-controlled, Multicenter Study of Oral YM087 (CI-1025) to Assess Functional Capacity in Patients with Class III Chronic Heart Failure." "Advance Trial".	\$68,214-direct 16,040 -indirect 12 enrolled
06/01/99-05/30/00	Clinical Trial at the RHJ-VAMC sponsored by Immunex Corporation: "Multicenter double blind, randomized, placebo Controlled, Phase II/III study of the efficacy and safety of recombinant human tumor necrosis factor receptor (p 75) Fc fusion protein (TNFR:Fc) (etanercept) in patients with chronic heart failure (Class II=IV)". Study terminated prematurely prior to any patient enrollment at our site.	\$1,200 (Study terminated w/o enrollment)
07/01/95-06/30/99	Veterans Affairs Research Associate Award (RA #1384) (Salary Award) "Cardiac Hypertrophy: Transcriptional Oxidative Phosphorylation Response".	\$460,000/total (Salary-4 years)
08/01/95-07/31/97	NIH Institutional Postdoctoral Training Grant (Salary) (NIH-HL07260) for Jerry T. Thompson, Ph.D.	\$58,000 (Salary)
07/01/94-06/30/96	American Heart Association-South Carolina; Grant-In-Aid "Cardiac Conduction System Differential Gene Expression".	\$45,000 (Salary)

**Past Co-Principal Investigator Awards:**

06/30/99-06/30/03	Clinic Trial at the RHJ-VAMC sponsored by Astra Pharmaceuticals: "Candesartan Cilexetil (Candesartan) in Heart Failure Assessment of Reduction in Mortality and Morbidity (Charm)." Co-P.I. with Dr. Michael Zile.	\$97,852. 16 enrolled; 2% effort
08/01/98-07/31/03	NIH Program Project Grant Renewal: "Load-induced Cardiac Hypertrophy in the Adult Mammal." Director: Dr. George Cooper. \$6,153,331/5 years (Direct Costs)  Co-Investigator, project 3: Cardiac Sodium-Calcium Exchanger: Hypertrophic Regulation Principal Investigator: Dr. Donald Menick  Co-Investigator, Core C: Animal Model Core Principal Investigator: Dr. Michael Zile	5% Effort  5% Effort
12/95–12/99	Clinical trial at the RHJ-VAMC. "Beta-blocker survival trial (BEST). Echo substudy only.	N/A

**Past Mentored Research Awards:**

7/90-6/93	Veterans Affairs Associate Investigator Award (Salary Award): \$153,000/total "Ventricular Myosin Light Chain-2 Expression in Cardiogenesis".	
7/91-6/93	AHA/Bugher Fellowship in Molecular Biology, University of California, San Diego, CA.	\$59,000/total

**College of Medicine  
Medical University of South Carolina  
CURRICULUM VITAE  
Supplemental and Prior Information**

**Name:** Terrence X. O'Brien, M.D., M.S., F.A.C.C.

**Hospital Appointments/Privileges – Inactive:**

3/95 to 12/02	Active	Bon Secours-St. Francis Xavier Hospital, Charleston, SC Consulting and Courtesy Staff Privileges	
1/94 to 12/00	Inactive	Williamsburg Regional Medical Center, Kingstree, SC: Outreach Outpatient and Inpatient Consulting	
1/99 to 6/99	Inactive	Savannah Veterans Affairs Outpatient Clinic - Consultant	
10/93 to 12/99	Inactive	Beaufort Memorial Hospital, Beaufort, SC Consulting Staff Privileges	
7/88 to 6/90	Inactive	University of California Medical Center, San Diego, CA	
7/88 to 6/90	Inactive	Veterans Affairs Medical Center, La Jolla, CA	
7/85 to 6/87	Inactive	University of Texas Southwestern Medical Center, Dallas, TX	
7/85 to 6/87	Inactive	Parkland Memorial Hospital, Dallas, TX	
7/85 to 6/87	Inactive	Veterans Affairs Medical Center, Dallas, TX	
07/90 to 06/93	Fluoroscopy & X-ray Supervisor License	State of California (San Diego, VAMC)	Cardiac Cath Lab
01/89 to 06/93	Attending Physician (Part-Time)	Coronado Hospital, Coronado, CA	Emergency Department
12/88 to 05/93	Attending Physician (Part-Time)	Scripps Memorial Hospital 354 Santa Fe Road, Encinitas, CA 92024	Emergency Department
12/85 to 06/87	Attending Physician (Part-Time)	Emergency Department Primecare, 9991 Marsh Lane, Dallas, TX 75220.	Emergency Department

**Past Intramural Awards:**

04/01/99-03/31/01	MUSC College of Medicine Dean's Heart Research Center Grant: "Regulation of the Cardiac Transcription Factor Nkx2-5." This is a collaboration between Drs. Terrence O'Brien (PI), Robert Gourdie (Cell Biology and Anatomy), D. Woodrow Benson (Pediatric Cardiology), and Tim McQuinn (Pediatric Cardiology).	\$ 150,000
04/01/94-06/30/94	University Research Committee (MUSC-Institutional)* "Cardiac Conduction System Differential Gene Expression" *Awarded through 3/1/95, unused funds returned when AHA SC Grant obtained.	\$ 14,900

**Past Awards, Honors, Membership in Honorary Societies (pre-1999):**

7/98 to current Program	Faculty Member, Molecular and Cellular Biology and Pathobiology Interdisciplinary Graduate Program
7/95 to 6/99	Research Associate, Division of Cardiology, Ralph H. Johnson V.A.M.C.
8/21-25/96	Young Investigator Award, American Heart Association, Scientific Conference on the Molecular Biology of the Normal, Hypertrophied, and Failing Heart, Salt Lake City, Utah
5/95 to current	Member, Graduate Faculty of the Medical University of South Carolina
7/91 to 6/93	Bugher Fellowship in Molecular Biology, American Heart Association, Cardiology Division, University of California, San Diego
7/90 to 6/93	Associate Investigator Career Development Award, Veterans Administration Medical Center, San Diego
5/92	Trainee Investigator Award for Excellence in Scientific Research, American Federation for Clinical Research
6/3/84	Samuel Hamburger Award, Honorable Mention, Outstanding Doctor of Medicine Thesis, University of California, San Diego
9/80 to 6/84	Regents Scholarship, University of California, San Diego, School of Medicine
6/79 to 9/79	IAESTE Award (International Association for the Exchange of Students for Technical Experience), Drug Encapsulation Research, Haessle Laboratories, Gothenburg, Sweden
9/76 to 5/80	Stanford University Four-Year Academic Undergraduate Scholarship
9/77 to 5/80	California State Academic Scholarship, Stanford University

**Academic Committee Activities (past 5 years):**

<b>National</b>	VA Merit Review Subcommittee for Implantable Cardioverter Defibrillators and Antiarrhythmic Drugs. Fall, 2003. VA Merit Review Subcommittee for Cardiovascular Disease – B. Spring, 2004.
<b>University</b>	Department of Medicine Promotions and Tenure Committee 5/03 MUSC Contract Committee 1/03 Search Committee, Dean, School of Nursing, MUSC, 2002 SC Faculty Contract Committed 10/01- UMA Contract Committee 9/01-12/01 UMA Outreach Committee 8/01- University Research Committee, MUSC, Charleston, SC, Appointed Member 7/96-6/99; ad hoc reviewer 11/94-6/96 VAMC Research and Development Committee Appointed Member 10/96-9/99; 10/04–10/07. ad hoc reviewer, 7/95-9/96. VAMC Pharmacy and Therapeutics Committee, 7/94 – 12/99.
<b>Division</b>	Cardiology Fellowship Program: Curriculum Evaluation and Diversity Committees, 5/97 - current.