

## SECTION OF CARDIOTHORACIC SURGERY

### Faculty

#### *Professor and Chief of Section*

John A. Elefteriades, M.D. (Yale University)

#### *Professor*

Graeme L. Hammond, M.D. (McGill University)

Gary S. Kopf, M.D. (Harvard University)

#### *Associate Professor*

George Tellides, M.D., Ph.D. (University of Witwatersrand, University of Oxford)

#### *Assistant Professor*

Peter W. Barrett, M.D. (St. George's University)

Michael A. Coady, M.D. (beginning July 2003) (George Washington University)

#### *Associate Clinical Professor*

Harold Stern, M.D. (Tufts University)

Allan L. Toole, M.D. (Columbia University)

#### *Assistant Clinical Professor*

Michael L. Dewar, M.D. (University of Massachusetts)

John Federico, M.D. (Georgetown University)

Ronald B. Ponn, M.D. (Harvard University)

Richard K Shaw, M.D. (Albert Einstein University)

#### *Associate Research Scientist*

Yinong Wang, M.D., Ph.D. (West China University/Peking Union Med. College)

Yalai Bai, M.D., Ph.D. (Beijing Medical University)

#### *Clinical Instructor*

Charles B. Beckman, M.D. (Tufts University)

Vasant B. Khachane, M.D. (Calcutta Medical College)

#### *Instructor in Surgery (Cardiothoracic)*

2002 – 2003 Constantinos J. Lovoulos, M.D. (Aristotelion Univ of Thessaloniki)

#### *Instructor/Chief Residents*

2003 – 2004 Christopher Kwon, M.D. (Albert Einstein College of Medicine)

2003 – 2004 Khaja Moinuddeen, M.D. (Karnatak Medical College)

2002 – 2003 Umer Darr, M.D. (University of Connecticut)

2002 – 2003 George Koullias, M.D. (Aristotle Univ. Medical School)

#### *Residents*

Shawn L. Tittle, M.D. (Wayne State School of Medicine)

Victor B. Kim, M.D. (Medical College of Virginia)

#### *Clinical Fellow*

Daniel Fusco, M.D. (University of Connecticut)

#### *Postdoctoral Fellows:*

Gonzalo Albornoz, M.D. (University of San Carlos)

Zhong Ding, M.D., Ph.D. (Xinxiang Medical College)  
Ioannis Hatzaras, M.D. (Aristotle University of Thessaloniki)  
Alexandre Iakimov, M.D. (Russian State Medical University)  
Hooman Ranjbaran Jahromi, M.D. (Tehran University Medical School)  
Jinah Kim, M.D., Ph.D. (Mount Sinai School of Medicine)  
Remo A. Moomiaie, M.D. (University of Szeged Medical School)

## **Overview**

The Section of Cardiothoracic Surgery has continued to advance its tripartite mission: patient care, education, and clinical and laboratory research. Patient care includes not only high volume traditional cardiothoracic procedures, but also cutting edge clinical applications in aortic diseases, revascularization for end-stage ischemic cardiomyopathy, cardiac transplantation, mechanical cardiac replacement, and diaphragm pacing. Educational programs for students and residents in Cardiothoracic Surgery are complemented by a Fellowship program as well as by programs in extramural education. The Section is a popular choice for thesis research by Yale undergraduate, medical, and physician's associate students. The past year saw a large number of scientific clinical and laboratory presentations and publications, encompassing major national meetings and journals in our discipline. Multiple accomplishments of the Section received major local, regional, and national lay media attention, including the aortic, transplant, mechanical heart, xenotransplantation, and experimental cardiac transplantation programs. Yale University was selected to host the upcoming American College of Cardiology Symposium on "No Boundaries: Medical/Surgical Approaches to Advanced Heart Failure" with Dr. Elefteriades as Course Director. Yale has been selected to host the 2005 meeting of the International College of Angiology.

The University mourned the passing of the great Dr. William W.L. Glenn during the past year. Dr. Glenn was one of the great figures of the early open-heart era.

## **Accomplishments**

For the sixth year in a row, the report from the massive national database of the Society of Thoracic Surgeons provided vivid objective confirmation of the quality of the clinical cardiac surgery performed at Yale. The report to our Center for Outcomes Research found Yale's survival statistics for coronary artery bypass, mitral valve replacement, and aortic valve replacement to exceed by a wide margin the predicted rates based on clinical characteristics of the population.

Yale was approved by the American College of Cardiology to host the upcoming, Yale-developed "No Boundaries" international symposium on end-stage heart failure.

Yale placed the first revolutionary Jarvik 2000 artificial heart device in New England.

Dr. George Tellides has been awarded grants from the NIH, the Medical Research Council of the United Kingdom, and ISIS Pharmaceuticals on his basic science research in vascular biology and transplantation immunology.

The Yale Center for Thoracic Aortic Diseases continued its exponential growth and now includes computerized data on 2000 patients, 4000 imaging studies, and 4000 patient-years of follow-up. Referrals include national and international patients. Clinical research from this database continues to be presented world-wide and is felt to represent the most extensive and rigorous information available on the natural behavior of the thoracic aorta. Work begun under an American Heart Association grant is being extended to elucidate the genetics of transmission of thoracic aortic aneurysm, which Yale research has shown to be an inherited disorder.

The novel "heart-and-a-half" cardiac transplant procedure developed in our laboratories was published in the *Annals of Thoracic Surgery* and attracted widespread attention in the lay media. This procedure is aimed at preventing death from right heart failure of the donor heart due to antecedent pulmonary hypertension in the recipient. On-going pre-clinical experiments continue in the laboratory. Recent

modifications of this technique aim at novel solutions for congenital cardiac lesions. This experimental program has also produced recent papers in the Journal of Thoracic and Cardiovascular Surgery and the Journal of Heart and Lung Transplantation.

Dr. Elefteriades serves as U.S. clinical project leader for laboratory testing of a novel NO-synthase inhibitor that holds great promise as a novel agent for treating peri-operative hypotension.

Dr. Elefteriades was honored at the 3<sup>rd</sup> World Congress on Heart Disease in Washington, D.C., where he was awarded the Walter Bleifeld Memorial Award for Distinguished Contribution in Clinical Research in Cardiology. At the International College of Angiology, he received the Professor John B. Chang Research Achievement Award for excellence in clinical research. Dr. Elefteriades received the Synetic award for laboratory research.

Yale cardiothoracic clinical faculty received multiple “Best Doctor” designations by various agencies during the course of the year. Dr. Elefteriades was selected by *Men’s Health* Magazine as one of the country’s ten best doctors and given a position on the Editorial Advisory Board of the magazine.

Yale continues to be a world-leading center in the clinical application of diaphragm pacing, originally developed by Dr. Glenn at Yale. Referrals originate from throughout the nation and the world.

Dr. Elefteriades was honored at the annual meeting of The Connecticut College of Cardiology for completion of a three-year term as President and Governor. He will now sit at the National level on the Board of Governors’ State Advocacy Committee.

Dr. Elefteriades was elected President-Elect of the International College of Angiology.

Yale’s collaborative project with Celera Diagnostics promises to produce the most comprehensive analysis of the genetics of thoracic aortic aneurysm to date.

Dr. Elefteriades was awarded \$200,000 to establish the Jo and Gus Berkes Research Fellow Fund for laboratory investigation.

## **RESEARCH IN PROGRESS AND ACCOMPLISHMENTS**

**Dr. John A. Elefteriades** continues his research in diseases of the thoracic aorta. The Section has now produced a body of work including over 35 original publications on aortic diseases, including delineation of the natural behavior of the aneurysmal aorta, characterizing the radiographic identification of various aortic pathologies, defining criteria for aortic replacement, developing new techniques for the conduct of aortic operations, measuring the elastic properties of the aorta, and examining outcomes after aortic replacement. Dr. Elefteriades continues research on application of conventional cardiac procedures (coronary bypass, mitral valve replacement, aortic valve replacement, and left ventricular aneurysmectomy) to patients with advanced left ventricular failure—as alternatives to transplantation. The most recent results have shown that revascularization engenders improvement in function, which is durable for years, by reanimating hibernating muscle. Recent analysis has also confirmed beneficial remodeling of the structure and size of the revascularized heart. In the laboratory, Dr. Elefteriades, together with Dr. Kopf, and a large team of students and residents continued research into the novel “right ventricle sparing heart transplant” procedure developed at Yale. This new model aims to decrease death from right heart failure after cardiac transplantation. These split ventricle experiments are now being expanded to explore new treatments for congenital heart disease. Dr. Elefteriades was again named the recipient of the Ferraiolo Award for laboratory research. Dr. Elefteriades continues to serve on the Board of Directors of the Heritage Affiliate of the American Heart Association. He has completed his term as Chairman of the Graham Memorial Traveling Fellowship Committee of The American Association for Thoracic Surgery. Dr. Elefteriades is Co-Director of the Yale-New Haven Hospital Heart Center. Dr. Elefteriades was recognized in America’s Top Doctors published by Castle, Connolly and New York’s Top 100 Minimally Invasive Surgeons by New York Magazine. During the past academic year, Dr. Elefteriades delivered invited addresses and lectures at: the 8<sup>th</sup> World Congress on Heart Failure – Mechanisms & Management in Washington DC, the

4<sup>th</sup> International Symposium on Aortic Diseases at Stanford University, San Francisco, CA, Cedars-Sinai Heart Center Symposium on Controversies in Adult Cardiac Surgery, the Third International Symposium on Heart Failure Management in Milan, Italy, the International Vascular Scientific Meeting in Paris, France, the Society of Cardiovascular Anesthesiologists 8<sup>th</sup> Annual Update on Cardiopulmonary Bypass, the 18<sup>th</sup> International Meeting on Clinical Cardiology, 83<sup>rd</sup> Annual Meeting of the American Association for Thoracic Surgery, the Valves in the Heart of the Big Apple III Symposium at Cornell Medical Center, the 14<sup>th</sup> Annual Scientific Sessions of the American Society of Echocardiography, the 3<sup>rd</sup> Vienna Interdisciplinary Symposium on Aortic Repair, and the 45<sup>th</sup> Annual World Congress of the International College of Angiology. Dr. Elefteriades serves on the Editorial Board of the American Journal of Cardiology and has been elected President-Elect of the International College of Angiology. He is working with Celera Diagnostics to identify the genetic mutation responsible for thoracic aortic aneurysms. Dr. Elefteriades, along with Dr. Sedrakyan, continues work under a grant from Bayer Pharmaceuticals to investigate the role of Trasylol in aortic surgery. Dr. Elefteriades is project leader for investigation of a novel NO-synthase inhibitor in human patients undergoing open-heart surgery.

**Dr. Graeme L. Hammond** continues to perform xenograft transplantation research. Suppressor genes from trophoblast libraries that repress MHC Class I and Class II expression are being cloned. The cloned genes are transfected into MHC expressing cells and their effect on MHC expression analyzed at the mRNA and protein level. The mechanism for constitutive and inducible suppression of Class II antigen by CIITA promoter binding inhibition is also being investigated. If the cloning strategies are successful and transfection assays confirm MHC suppression, the development of cell cultures and animal strains as a source of cells and tissues for transplantation purposes becomes theoretically possible. Dr. Hammond continues to serve on the National Heart Lung and Blood Institute, Special Emphasis Review Committee for Cardiopulmonary Research and Training Grants.

**Dr. Gary S. Kopf** is conducting clinical research on the surgical treatment of congenital heart disease, including pulmonary artery shunting, tetralogy of Fallot, coarctation of the aorta, and ventricular septal defect, and cardiovascular surgery in low birth weight neonates. He continues performing clinical application of radiofrequency ablation for MAZE procedure for congenital heart surgery. In collaboration with Pediatric Cardiology and Adult Cardiology and Imaging, he has developed a Yale internet-based instructional program in congenital heart disease. He has published the first page in the Congenital Heart Surgery Section of the CTSNet Experts Technique Section. Dr. Kopf was recognized in America's Top Doctors in Thoracic Surgery and New York Magazine's The Best Doctors in New York (Thoracic Surgery) as published by Castle, Connolly.

**Dr. George Tellides** is Associate Professor of Surgery (clinician-scholar track) and Chief of Cardiothoracic Surgery at the West Haven VA Medical Center. He is conducting basic science research in vascular biology and transplantation immunology. Major projects include the pathogenesis of coronary arteriosclerosis and human anti-porcine xenograft rejection responses. Active grant support is from the NIH, the Medical Research Council of the United Kingdom, and ISIS Pharmaceuticals. He was elected to membership in the New England Surgical Society, and serves on the Research Committee of The Thoracic Surgery Foundation for Research and Education, the Intra-Thoracic Organs Committee of the American Society of Transplantation and the Thoracic Organ Transplantation Committee of the American Society of Transplant Surgeons.

**Dr. Peter Barrett**, during his first year as Medical Director of CTICU, has taken an active role in setting up the Surgical Section of the new Lung Cancer Center. He has introduced an early vent-weaning protocol and is currently working on an atrial fibrillation protocol.

**Dr. Michael Coady** trained in General Surgery at Yale and during that time was actively involved with many of the ongoing research projects in our Section on thoracic aortic aneurysms. He completed his Cardiothoracic Surgery training at Stanford and joined our faculty as an Assistant Professor and Director of Cardiac Transplantation in July 2003. Dr. Coady plans to continue his research on the natural history and genetics of thoracic aortic disease.

**Dr. Richard K Shaw** specializes in stentless valve replacement for diseases of the aortic valve. He brought non-invasive vein harvesting to our institution, a technique that has proven immensely beneficial and popular. He is investigating a novel technique for left ventricular aneurysmectomy. He maintains a comprehensive clinical database which is utilized in much of the Section's clinical research.

**Dr. Michael Dewar** continues to serve as our expert on homograft aortic valve replacement and the Ross operation. He has also accumulated a vast clinical experience with off-pump coronary artery bypass grafting.

## ACTIVE GRANTS

- “Chronic DTH and IFN- $\gamma$  in Human Graft Arteriosclerosis”—Program Project  
National Heart, Lung, and Blood Institute—PO1 2001 to 2006  
Principal Investigator: Jordan Pober, M.D., Ph.D.  
Project Leader and Core B Director: George Tellides, M.D., Ph.D.
- “Human anti-porcine immune responses *in vivo*”  
National Heart, Lung, and Blood Institute—RO1 2000 to 2004  
Principal Investigator: Alfred Bothwell, M.D.  
Co-Investigator: George Tellides, M.D., Ph.D.
- “Regulation of Vascular Smooth Muscle Cell Apoptosis  
and Transplant Vasculopathy” 2000 to 2004  
Medical Research Council of the United Kingdom;  
Cambridge-Yale Cardiovascular Program Planning Grant;  
Principal Investigators: John R. Bradley and Jordan S. Pober;  
Pilot Project 1 Yale Leader: George Tellides, M.D., Ph.D.
- “Functions of STAT Proteins in Vascular Cell Pathology” 2002 to 2004  
ISIS Pharmaceuticals Collaborative Research Agreement  
Principal Investigator: Jordan S. Pober, M.D., Ph.D.  
Co-Investigator: George Tellides, M.D., Ph.D.
- “Characterization of the Role of Chemokine Signaling  
in Cardiac Graft Arteriosclerosis”  
OSHE Award/Yale University 1/2003 – 12/2003  
Principal Investigators: Jinah Kim, M.D.  
Mentor: George Tellides M.D., Ph.D.
- “Mechanism of MHC Class I Suppression in the Trophoblast”  
OSHE Award/Yale University 1/2003 – 12/2003  
Principal Investigator: Raymond Lynch, MS  
Sponsor: Graeme L. Hammond, M.D.
- “Role of Chemokine Signaling in Graft Arteriosclerosis”  
Society of University Surgeons 7/1/03 – 6/30/04  
Principal Investigators: Jinah Kim, M.D.  
Mentor: George Tellides M.D., Ph.D.
- “Right ventricle-sparing heart transplantation”  
Ferraiolo Foundation Award 7/1/02 to present  
Recipient: John A. Elefteriades, M.D.
- “Right ventricle-sparing heart transplantation”  
Synectic Engineering, Inc. 11/1/02 - present  
Recipient: John A. Elefteriades, M.D.

“Genetic Studies on Thoracic Aortic Aneurysms” 12/2002 - present  
Celera Diagnostics, LLC  
Principal Investigator: John A. Elefteriades, M.D.

“Effects of MTR-105 in Cardiac Surgery” 10/2002 - present  
Meditor Pharmaceuticals, Ltd.  
Principal Investigator: John A. Elefteriades, M.D.

“Aprotinin in Thoracic Aortic Surgery Patients” 3/2003 - present  
Bayer Corporation  
Principal Investigator: John A. Elefteriades, M.D.

### **Original Publications**

**Alboronoz GF, Tang PC, Coady MA, Davies RR, Roberts M, Rizzo JA, Kopf GS, Elefteriades JA:** Are Thoracic Aortic Aneurysms a Genetic Disease? *Journal of the American College of Cardiology*, Vol. 41, March 2003; p. 287A.

Bruckheimer E, Berul CI, **Kopf GS**, Hill SL, Warner KA, Kleinman CS, Rosenfeld LE, Nehgme RA. Late Recovery of Surgically-Induced Atrioventricular Block in Patients with Congenital Heart Disease. *J of Interventional Cardiac Electrophys.* 6, 191-197, 2002.

Davies RR, Goldstein LJ, Coady MA, Tittle SL, Rizzo JA, **Kopf GS, Elefteriades JA.** Yearly Rupture/Dissection for Thoracic Aortic Aneurysms: Simple Prediction Based on Size. *Ann Thorac Surg.* 73:17-28, 2002.

**Elefteriades JA.** Natural History of Aortic Aneurysms: Indications for Surgery, and Surgical vs. Nonsurgical Risks. *Ann. Thorac Surg;* 74:2002

**Elefteriades JA.** Invited Editorial: What Operation for Acute Type A Aortic Dissection? *J Thoracic & Cardiovascular Surg*, Vol. 123(2):201-3, 2002.

**Elefteriades, JA.** Invited Focused Review. Thoracic Aortic Aneurysm: Current Approach to Surgical Timing. *ACC Current Journal Review*, May/June 2002.

**Elefteriades, JA.** Invited Commentary: Effectiveness of Combined Blood Conservation Measures in Thoracic Aortic Operations Under Deep Hypothermic Circulatory Arrest. *Ann Thoracic Surg*, 73:743-744, 2002.

**Elefteriades JA.** Invited Article. Twelve Tips on Writing a Good Scientific Paper. *International Journal of Angiology* 11:1; 53- 2002.

**Elefteriades JA.** Mechanical Properties of Normal and Aneurysmal Ascending Aorta. *J of Heart Disease.* 3(1): 36-37, 2003.

**Elefteriades JA,** Edwards R. Coronary Bypass in Left Heart Failure. *Seminars in Thoracic and Cardiovascular Surgery* 14(2), 2002.

**Elefteriades, JA,** Lovoulos C, Edwards R, tittle S, Riley T, Tang PY, Rocco E, Kopf G. Novel Technique for Isolated Accessory Right Heart Transplantation for Congenital Heart Disease. *J Thorac & Cardiovasc Surg*, 125(6) 1283-1290, 2003.

**Elefteriades JA, Kopf GS.** Response to Letter to the Editor on Novel technique for isolated accessory right heart transplantation for congenital heart disease. *J Thor and Cardiovasc Surg* (in press).

**Eleftheriades JA**, Tittle SL, Kopf GS. Management of Aortic Intramural Hematoma, *Journal of the American College of Cardiology*. 39(1):180-181, 2002.

**Eleftheriades JA**, Quin JA. Key References: Diaphragm Pacing. [Bibliography] *Ann Thorac Surg*, Feb. 73(2):691-2, 2002.

**Eleftheriades JA**, Quin JA, Hogan JF, Holcomb WG, Letsou GV, Chlosta WF, Glenn WWL. Long-Term Follow-Up of Pacing of the Conditioned Diaphragm in Quadriplegia. *PACE*, 25(6):897-906, 2002.

Geirsson A, Lynch RJ, Paliwal I, Bothwell AL and **Hammond GL**. Human Trophoblast Noncoding RNA Suppresses CIITA Promoter III activity in Murine B-lymphocytes. *Biochem Biophys Res Com*. 307:718-724, 2003.

Geirsson A, Paliwal I, Lynch RJ, Bothwell AL and **Hammond GL**. Class II Transactivator Promoter Activity is Suppressed through Regulation by a Trophoblast Noncoding RNA. *Transplantation*. 76(1), 2003.

**Kopf, GS**, Mello DM, Moltedo J, Kenney KM, Rollinson NR, Snyder CS. Intraoperative Radiofrequency Ablation of the Right Atrium: Effectiveness for Treatment of Supraventricular Tachycardia in Congenital Heart Surgery. *Ann of Thoracic Surg* 74(3):797-804, 2002.

Koullias GJ, **Eleftheriades JA**, Wu, Ihui, Jovin, Ion, Jadbabaie, Farid, McNamara, Robert. Massive Paradoxical Embolism: Caught in the Act. *Circulation* (in press).

Lancaster G, Lovoulos C, Mossouttas M, Goldstein A, Laifer D, Fayad P, Olsen D, **Eleftheriades JA**. Aortic Arch Replacement for Recurrent Cerebral Embolization: A Case Report. *Ann Thorac Surg* 73(1):291-294, 2002.

**Lovoulos C**, Tittle S, Goldstein L, Austin DJ, Singh S, Rocco E, Keane J, Olsen D, **Kopf GS**, **Eleftheriades JA**. Right Ventricle-Sparing Heart Transplantation Effective Against Iatrogenic Pulmonary Hypertension. *J Heart and Lung Transplantation* (in press).

Mello D, **Kopf GS**. Repair of Infantile Aortic Coarctation and Transverse Arch Hypoplasia with Resection and Transverse Arch Hypoplasia with Resection and Extended End to Undersurface of Aortic Arch Anastomosis. *CTSNET Experts' Techniques*, 2002.

Moinuddeen K, **Eleftheriades JA**. Standard CABG is the procedure of choice for myocardial Revascularization: pro point of view, *J of Cardiothoracic and Vasc Anesth*. 17(2):260-2, 2003.

Moledo JM, **Kopf GS**, Mello DM, Porter GA. Right Coronary Artery Arising from the Left Ventricular Outflow Tract. A Rare Congenital anomaly of the Coronary Arteries. *Pediatric Cardiology* (in press).

Ottavio A, **Eleftheriades JA**, Chapolini RJ, Steckel R, Allen WJ, Reed SW, Schreck, S. Novel Suture Device for Beating-Heart Mitral Leaflet ("Milano") Approximation, *Ann Thorac Surg* 74:000-000, 2002.

Sedrakyan A, Gondek K, Paltiel AD, **Eleftheriades JA**. Volume Expansion with Albumin Decreases Mortality After Coronary Artery Bypass Graft Surgery. *Chest* 123:1853-1857, 2003.

Tittle SL, Lynch RJ, Cole PE, Singh H, Rizzo JA, **Kopf GS**, **Eleftheriades JA**. Midterm follow-up of penetrating ulcer and intramural hematoma of the aorta. *J Thorac & Cardiovasc Surg*, 123:1051-1059, 2002.

Tittle SL, Mandapati, MD, **Kopf, GS**, **Eleftheriades JA**. Alternate Technique for Implantation of Left Ventricular Assist System: Left Thoracotomy for Reoperative Cases. *Ann Thorac Surg* 73:994-5, 2002.

Tittle SL, **Kopf GS, Eleftheriades JA**. Letter to the Editor. Management of Aortic Intramural Hematoma. *J Am Coll Cardiol* 30, Vol. 1, 2002.

Tolis G, Korkolis D, **Kopf GS, Eleftheriades JA**. Revascularization Alone (without Mitral Valve Repair) Suffices in Patients with Advanced Ischemic Cardiomyopathy and Mild to Moderate Mitral Regurgitation. *Ann Thorac Surg* 74(5) 1476-1481, 2002.

### **Book Chapters**

Darr U, **Eleftheriades JA**. Surgery for Atrial Fibrillation. *Atrial Fibrillation - the Arrhythmia of the Elderly*. Ezekowitz MD(ed) (in press).

Davies RR, Coady MA, **Eleftheriades JA**. Pathologic Variants of Thoracic Aortic Dissections: Penetrating Atherosclerotic Ulcers and Intramural Hematomas. In Liotta D (ed). *Diseases of the Aorta Handbook* (in press).

**Eleftheriades JA**. Thoracic Aortic Aneurysms. In: Crawford M. *Current Diagnosis & Treatment in Cardiology*. Second Edition. Lange/McGraw-Hill, 582-594, 2002.

**Eleftheriades JA**. Histoire naturelle des dissections aortiques. In, Kieffer E and Fabiani JN. *Chirurgie des Dissections Aortiques*. Editions AERCV. Paris 2002.

**Eleftheriades JA**. Coronary Artery Bypass in Patients with Severe LV Dysfunction. In: *Seminars in Thoracic and Cardiovascular Surgery*. Cardiac Surgery for Heart Failure. Cox J (Ed), McCarthy P (Guest Ed). W.B. Saunders, Philadelphia, PA, (in press).

**Eleftheriades JA**, Koullias GJ. Neurological Complications in Cardiac Surgery. In: Murray KD, Little AG (eds). *Complications in Cardiothoracic Surgery: Prevention and Treatment*, Blackwell Publishing, Elmsford, NY, (in press).

**Eleftheriades JA**, Tang P C F, Aortic Dissection. In: Yang SC, Cameron DE (eds). *Current Therapy in Thoracic and Cardiovascular Surgery*. Harcourt Health Sciences, Philadelphia, PA (in press).

**Eleftheriades JA**, Quin, JA. Phrenic Nerve Pacing. Chapter 56 In: Pearson FG, Cooper JD, Deslauriers J, Ginsburg RJ, Hiebert CA, Patterson GA, Urschel, HC (Eds). *Thoracic Surgery*, 2<sup>nd</sup> Edition, Churchill Livingstone, 2002.

**Kopf GS**. Neonatal Cardiac Surgical Palliations. In: Kleinman CS, et al (Eds). *Fetal And Neonatal Cardiology*. W.B. Saunders, Philadelphia, (in press)

Tittle SL, Tolis G, **Eleftheriades JA**. Concomitant Mitral Repair at the Time of Coronary Artery Bypass Grafting – The “Con” Point of View. In: Borer JS, Isom OW (eds). *Pathophysiology, Evaluation and Management of Valvular Heart Diseases*. Adv Cardiol. Basel, Karger, Vol. 39:157-163, 2002.