

CURRICULUM VITAE

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Citizenship: U.S.A. **Date of Birth:** 03/11/52 **Place of Birth:** Coral Gables, Florida

Education:

Post-doctoral:	Bowman Gray School of Medicine, Wake Forest Univ, Winston-Salem, NC	1976-79
	Internship and Residency in Internal Medicine	
	Indiana University School of Medicine, Indianapolis, IN	7/79-12/81
	Fellowship in Cardiology and Electrophysiology	
Graduate:	University of Florida College of Medicine, Gainesville, FL	1972-76
	M.D. degree	
Undergraduate:	Georgia Institute of Technology, Atlanta, GA	1969-72
	Mechanical Engineering (no degree)	

Positions:

Academic: University of Oklahoma Health Sciences Center, Oklahoma City, OK

- Department of Medicine (Cardiovascular Section)
 - George Lynn Cross Research Professor of Medicine (Full Time) 06/10-Present
 - Part-time (25%) Employment - Research and Teaching 12/07- 05/10
 - George Lynn Cross Research Professor Emeritus of Medicine 02/08-05/10
 - George Lynn Cross Research Professor of Medicine 04/93-11/07
 - (Retired)
 - Professor of Medicine 07/92-11/07
 - (Retired)
 - Director of Clinical Electrophysiology 11/82-07/07
 - Associate Professor of Medicine (with Tenure) 07/88-06/92
 - Assistant Professor of Medicine 01/82-6/88
- Heart Rhythm Institute (formerly Cardiac Arrhythmia Research Institute)
 - Senior Scientific Advisor 12/07-Present
 - Co-Director 11/99-11/07
 - Co-Founder 11/99-Present

Academic Medical Center, University of Amsterdam, Amsterdam, The Netherlands
Visiting Professor in Electrophysiology (Dept of Cardiology) - 07/08-07/11

University of California Los Angeles, Los Angeles, CA
Visiting Professor of Medicine, David Geffen School of Medicine at UCLA - 03/11-Present

Aurora St Lukes Medical Center, Milwaukee, WI
Visiting Professor in Electrophysiology - 10/11-Present

Hospital Staff: OU Medical Center, Oklahoma City, OK 01/82-11/07 and 09/11-Present
Dept. of Veterans Affairs Medical Center, Oklahoma City, OK 01/82-11/07

Board Certification: National Board of Medical Examiners (# 161332) 1977
American Board of Internal Medicine:
- Internal Medicine (# 73326) 1979-indefinite
- Cardiovascular Disease (# 73326) 1981-indefinite
- Clinical Cardiac Electrophysiology (# 73326) 1992-2023

Medical licensure: Oklahoma (# 13370) - Active
Wisconsin (#57733-20) - Active
Indiana (# 29153) - Inactive
North Carolina (# 22481) - Inactive

Pending Research Grants:

Source: National Institute of Health (K23)
Faculty Award: R01 Tracking #11412424
Title: Iron Within Chronic Infarctions as a Substrate for Ventricular Arrhythmias
Study Period: 04/01/14 – 03/31/19
Funding: Total direct costs proposed \$2,469,825
Principal Invest: Dharmakumar R
Consultant: Jackman WM

Research Grants

Source: National Institute of Health (K23)
Faculty Award: 1 K23 HL0699 72-01-A1
Title: Determinants of Catheter Ablation Failure
Study Period: 02/01/03 - 11/30/08
Funding: Total direct costs \$654,010
Principal Invest: Po S
Sponsor: Jackman WM (Supervisor-Mentor)

Source: Presbyterian Health Foundation Bridge Grant
Project Title: The Role of Surviving Myocardial Bundles Within the Infarct Scar in Ischemia-Induced Ventricular Tachycardia/Fibrillation
Study Period: 10/01/04-9/30/05
Funding: Total costs \$60,000
Principal Invest: Nakagawa H
Co-Investigator: Jackman WM, Adamson P, Lazzara R

Research Grants

Source: American Heart Association – Heartland Affiliate (Grant-in Aid)
Project Title: Prevention of Post-Infarction Sudden Cardiac Death During Acute Ischemia by Catheter Ablation
Study Period: 07/31/03-06/30/05
Funding: Total costs \$110,000
Principal Invest: Nakagawa, H
Co-Investigator: Jackman WM, Adamson P, Lazzara R, de Bakker JMT

Source: National Institutes of Health
Award: National Research Service Award, 5T32 HL0718206
Study Period: 12/01/79 - 12/31/81
Funding: \$31,873 (electrophysiology fellowship stipend)
Sponsor: Indiana University (Charles Fisch, M.D.)
Investigator: Jackman WM

Source NIH - SBIR
Title: Magnetic Nanoparticles for Delivery of Cardiac Drugs
Study Period: 3/1/05-2/28/06
Funding: Total Costs \$215,678
Principal Invest: Seeney C, McFetridge PS
Co-Investigator: Jackman WM

Source: Oklahoma Center for the Advancement of Science and Technology (OCAST)
Award: PHF #1438
Title: Drug Delivery to Heart using Magnetic Nanoparticles
Study Period: 01/27/03 -
Funding: \$29,600
Principal Invest: Seeney CE
Co-Investigators: Dormer KK, Jackman WM

Source: University of Oklahoma Foundation
Award: Whitaker Seed Grant
Title: Investigation of Conduction Obstacle-Related Ventricular Tachyarrhythmia Using Optical Mapping
Study Period: 10/01/01 - 03/01/03
Funding: Total direct costs \$24,525
Principal Invest: Po S
Co-Investigators: Jackman WM, Nakagawa H

Source: Oklahoma Health Research Program (OCAST)
Award: AR6-059
Title: Prevention of Post-Infarction Sudden Death by Ablation
Study Period: 12/01/96 - 11/30/98
Funding: Total direct costs \$148,110
Principal Invest: Jackman WM
Co-Investigators: Otomo K, Arruda M, Nakagawa H, Lazzara R, Scherlag BJ, Patterson E, Hull S, Pitha JV

Research Grants

Source: NIH: National Heart, Lung and Blood Institute (RO1)
Award: 2R01 HL39670-04
Title: Catheter Ablation of Ventricular Myocardium
Study Period: 07/01/91 - 06/30/95
Funding: Total direct costs \$416,504
Principal Invest: Jackman WM
Co-Investigators: Friday KJ, Wang X, Pitha JV

Source: NIH: National Heart, Lung and Blood Institute (RO1)
Award: R01 HL39670-01
Title: Long-term Safety of RF Current Across Mitral Annulus
Study Period: 07/01/88 - 06/30/91
Funding: Total direct costs \$214,970
Principal Invest: Jackman WM
Co-Investigators: Friday KJ, Pitha JV

Source: Oklahoma Health Research Program (OCAST)
Award: HRC-RRP-A-028
Title: Catheter Ablation of Accessory Pathways Using RF Current
Study Period: 07/01/87 - 06/31/90
Funding: Total direct costs \$89,245
Principal Invest: Jackman WM
Co-Investigators: Friday KJ, Reynolds DW

Source: NIH: National Heart, Lung, and Blood Institute (Clinical Trials Branch)
Award: HL34071-01
Title: Comparison of Electrophysiologic Study to ECG Monitoring (ESVEM Trial)
Study Period: 06/85 - 05/90
Funding: Total direct costs (7 centers) \$5,701,538
Principal Invest: Jay Mason, M.D., University of Utah
Oklahoma PI: Lazzara R
Oklahoma Invest: Jackman WM, Friday KJ

Source: American Heart Association, Oklahoma Affiliate
Award: Young Investigator Award, OK-83-Y-2
Title: Catheter Recording of Accessory Pathway Activation
Study Period: 07/01/83 - 06/30/85
Funding: Total direct costs \$50,000
Investigator: Jackman WM

Patents

Hayam G, Jackman WM, Nakagawa H: U.S. Patent 8,359,092: Determining locations of ganglia and plexi in the heart using complex fractionated atrial electrogram. January 22, 2013.

Patterson E, Po S, Scherlag BJ, Jackman WJ: Provisional Application # 60/800-865: Method of inhibiting or treating atrial fibrillation. May 16, 2006.

Jackman WM, Webster WW: U.S. Patent #5,423,882: Catheter having electrode with annular recess and method of using same. June 13, 1995.

Jackman WM, Lazzara R: U.S. Patent #4,572,192: System for prevention of paroxysmal supraventricular tachycardia. February 25, 1986

Publications of Original Research

Stavrakis S, Humphrey MB, Scherlag BJ, Hu Y, Jackman WM, Nakagawa H, Lockwood D, Lazzara R, Po SS: Low level transcutaneous electrical vagal nerve stimulation suppresses atrial fibrillation. Submitted.

Koa-Wing M, Nakagawa H, Jamil-Copley S, Linton N, Sandler B, Peters NS, Davies DW, Francis DP, Jackman WM, Kanagaratnam P: Development of a diagnostic algorithm for the use of ripple mapping in atrial tachycardias. Submitted.

Ikeda A, Nakagawa H, Lambert H, Shah DC, Fonck E, Yulzari A, Sharma T, Pitha JV, Lazzara R, Jackman WM: Relationship between catheter contact force and radiofrequency lesion size and incidence of steam pop in the beating canine heart: electrode amplitude, impedance and electrode temperature are poor predictors of electrode-tissue contact force and lesion size. *Circ Arrhythm Electrophysiol* 2014 Nov 7. pii: CIRCEP.113.001094. [Epub ahead of print]

Stavrakis S, Jackman WM, Nakagawa H, Sun Y, Xu Q, Beckman KJ, Lockwood D, Scherlag BJ, Lazzara R, Po SS: Risk of coronary artery injury with radiofrequency ablation and cryoablation of epicardial posteroseptal accessory pathways within the coronary venous system. *Circ Arrhythm Electrophysiol* 2014; 7:113-119.

Cokic I, Kali A, Wang X, Yang H-J, Tang RLQ, Thajudeen A, Shehata M, Amorn AM, Liu E, Stewart B, Bennett N, Harlev D, Tsafaris SA, Jackman WM, Chugh S, Dharmakumar R: Iron deposition following chronic myocardial infarction as a substrate for cardiac electrical anomalies: initial findings in a canine model. *PLoS ONE* 2013; 8(9): e73193.

Keating VP, Cooley R, Jackman WM: Anterolateral papillary muscle ventricular tachycardia. *Heart Rhythm* 2014; 11:907-908.

Gandhavadi M, Sternick EB, Jackman WM, Wellens HJJ, Josephson ME: Characterization of the distal insertion of atriofascicular accessory pathways and mechanisms of QRS patterns in atriofascicular antidromic tachycardia. *Heart Rhythm* 2013; 10:1385-1392.

Nakagawa H, Kautzner j, Natale A, Peichl p, Cihak R, Wichterle D, Ikeda A, Santangeli P, Di Biase L, Jackman WM: Locations of high contact force during left atrial mapping in atrial fibrillation patients: electrogram amplitude and impedance are poor predictors of electrode-tissue contact force for ablation of atrial fibrillation. *Circ Arrhythm Electrophysiol* 2013; 6:746-753.

Vedantham V, Jackman WM, Scheinman MM: Unexpected potential following ablation of a right atriofascicular accessory pathway. *J Cardiovasc Electrophysiol* 2013; 24:939-941.

De Groot JR, Driessen AHG, Van Boven WJ, Krul SPJ, Linnenbank AC, Jackman WM, Wilde AAM, De Bakker JM: Epicardial confirmation of conduction block during thoracoscopic surgery for atrial fibrillation – a hybrid surgical-electrophysiological approach. *Minim Invasive Ther Allied Technol* 2012; 21:293-301.

Yu L, Scherlag BJ, Sha Y, Li S, Sharma T, Nakagawa H, Jackman WM, Lazzara R, Jiang H, Po SS: Interactions between atrial electrical remodeling and autonomic remodeling: how to break the vicious cycle. *Heart Rhythm* 2012; 9: 804-809.

Moers AM, Scherlag BJ, Niu G, Lu Z, Ghas M, Lazzara R, Jackman WM, Po SS: Pharmacological prevention and termination of focal atrial fibrillation. *Europace* 2012; 14: 426-430.

Nakagawa H, Ikeda A, Sharma T, Lazzara R, Jackman WM: Rapid high-resolution electroanatomical mapping: evaluation of a new system in a canine atrial linear lesion model. *Circ Arrhythm Electrophysiol* 2012; 5: 417-424.

Publications of Original Research

Liu Y, Scherlag BJ, Yagi T, Patterson E, Jackman WM, Lazzara R, Po SS: Extra- and intracellular recordings from the AV junction: discerning the mechanisms for irregular ventricular responses during supraventricular arrhythmias. *Acta Cardiol* 2012; 67:221-229.

Waldo AL, Wilber DJ, Marchlinski FE, MD, Stevenson WG, Aker B, Boo LM, Jackman WM: Safety of the open-irrigated ablation catheter for radiofrequency ablation: safety analysis from six clinical studies. *PACE* 2012; 35:1081-1089.

Yu L, Scherlag BJ, Li S, Sheng X, Lu Z, Nakagawa H, Zhang Y, Jackman WM, Lazzara R, Jiang H, Po SS: Low-level vagosympathetic nerve stimulation inhibits atrial fibrillation inducibility: direct evidence by neural recordings from intrinsic cardiac ganglia. *J Cardiovasc Electrophysiol* 2011; 22: 455-463.

Scherlag BJ, Nakagawa H, Jackman WM, Lazzara R, Po SS: Non-pharmacological, non-ablative approaches for the treatment of atrial fibrillation: experimental evidence and potential clinical implications. *J Cardiovasc Transl Res* 2011; 4: 35-41.

Sheng X, Scherlag BJ, Yu L, Li S, Ali R, Zhang Y, Fu G, Nakagawa H, Jackman WM, Lazzara R, Po SS: Prevention and reversal of atrial fibrillation inducibility and autonomic remodeling by low-level vagosympathetic nerve stimulation. *J Am Coll Cardiol* 2011; 57: 563-571.

Sha Y, Scherlag BJ, Yu L, Sheng X, Jackman WM, Lazzara R, Po SS: Low-level right vagal stimulation: anticholinergic and antiadrenergic effects. *J Cardiovasc Electrophysiol* 2011; 22: 1147-1153.

Krul SPJ, Driessen AHG, Van Boven WJ, Linnenbank AC, Geuzebroek GSC, Jackman WM, Wilde AAM, De Bakker JM, De Groot JR: Thoracoscopic video-assisted pulmonary vein antrum isolation, ganglionated plexus ablation and periprocedural confirmation of ablation lesions: first results of a hybrid surgical-electrophysiological approach for atrial fibrillation. *Circ Arrhythm Electrophysiol* 2011; 4: 262-270.

Stavrakis S, Madden G, Pokharel D, Po SS, Nakagawa H, Jackman WM, Sivaram CA: Transesophageal echocardiographic assessment of pulmonary veins and left atrium in patients undergoing atrial fibrillation ablation. *Echocardiography* 2011; 28: 775-781.

Lu Z, Scherlag BJ, Niu G, Lin J, Fung KM, Zhao L, Yu L, Jackman WM, Lazzara R, Jiang H, Po SS: Functional properties of the superior vena cava (SVC)-aorta ganglionated plexus: evidence suggesting an autonomic basis for rapid SVC firing. *J Cardiovasc Electrophysiol* 2010; 21: 1392-1399

Zhang Y, Scherlag BJ, Lu Zhibing, Niu G, Yamanashi WS, Hogan C, Fields J, Lazzara R, Jackman WM, Po SS: Comparison of atrial fibrillation inducibility by electrical stimulation of either the extrinsic or the intrinsic autonomic nervous system. *J Intervent Card Electrophysiol* 2009; 24: 5-10.

Lin J, Scherlag BJ, Niu G, Lu Z, Patterson E, Liu S, Lazzara R, Jackman WM, Po SS: Autonomic elements within the ligament of Marshall and inferior left ganglionated plexus mediate functions of the atrial neural network. *J Cardiovasc Electrophysiol* 2009; 20: 318-324.

Edgerton JR, Jackman WM, Mack MJ: A new epicardial lesion set for minimal access left atrial maze: the Dallas lesion set. *Ann Thorac Surg* 2009; 88: 1655-1657.

Yokoyama K, Nakagawa H, Seres KA, Jung E, Merino J, Zou Y, Ikeda A, Pitha JV, Lazzara R, Jackman WM: Canine model of esophageal injury and atrial-esophageal fistula after applications of forward-firing high-intensity focused ultrasound and side-firing unfocused ultrasound in the left atrium and inside the pulmonary vein. *Circ Arrhythm Electrophysiol* 2009; 2: 41-49.

Publications of Original Research

Niu G, Scherlag BJ, Lu Z, Ghias M, Zhang Y, Patterson E, Dasari TW, Zacharias S, Lazzara R, Jackman WM, Po SS: An acute experimental model demonstrating two different forms of sustained atrial tachyarrhythmias. *Circ Arrhythm Electrophysiol* 2009; 2: 384-392.

Po SS, Nakagawa H, Jackman WM: Localization of left atrial ganglionated plexi in patients with atrial fibrillation. *J Cardiovasc Electrophysiol* 2009; 20: 1186-1189.

Lu Z, Scherlag BJ, Lin J, Yu L, Guo JH, Niu G, Jackman WM, Lazzara R, Jiang H, Po SS: Autonomic mechanism for initiation of rapid firing from atria and pulmonary veins: evidence by ablation of ganglionated plexi. *Cardiovasc Res* 2009; 84: 245-252.

Nakagawa H, Scherlag BJ, Patterson E, Ikeda A, Lockwood D, Jackman WM: Pathophysiologic basis of autonomic ganglionated plexi ablation in patients with atrial fibrillation. *Heart Rhythm* 2009; 6: S26-S34.

Lockwood D, Nakagawa H, Peyton MD, Edgerton JR, Scherlag BJ, Sivaram CA, Po SS, Beckman KJ, Abedin M, Jackman WM: Linear left atrial lesions in minimally invasive surgical ablation of persistent atrial fibrillation: techniques for assessing conduction block across surgical lesions. *Heart Rhythm* 2009; 6: S50-S63

Edgerton JR, Jackman WM, Mahoney C, Mack MJ: Totally thorascopic surgical ablation of persistent and longstanding persistent atrial fibrillation using the "Dallas" lesion set. *Heart Rhythm* 2009; 6: S64-S70.

Ghias M, Scherlag BJ, Lu Z, Niu G, Moers A, Patterson E, Jackman WM, Lazzara R, Po SS: The role of ganglionated plexi in apnea-related atrial fibrillation. *J Am Coll Cardiol* 2009; 54: 2075-2083.

Scherlag BJ, Hou Y, Lin J, Lu Z, Zacharias S, Dasari T, Niu G, Ghias M, Patterson E, Jackman WM, Lazzara R, Po SS: An acute model for atrial fibrillation arising from a peripheral atrial site: evidence for primary and secondary triggers. *J Cardiovasc Electrophysiol* 2008; 19: 518-527.

Lu Z, Scherlag BJ, Lin J, Jackman WM, Lazzara R, Jiang H, Po SS: Autonomic mechanism for complex fractionated atrial electrograms: evidence by fast Fourier transform analysis. *J Cardiovasc Electrophysiol* 2008; 19: 835-842.

Patterson E, Scherlag BJ, Zhou J, Jackman WM, Lazzara R, Po SS: Antifibrillatory actions of Cisatracurium - an atrial specific M2 receptor antagonist. *J Cardiovasc Electrophysiol* 2008; 19:861-868.

Lin J, Scherlag BJ, Lu Z, Zhang Y, Patterson E, Jackman WM, Lazzara R, Po SS: Inducibility of atrial and ventricular arrhythmias along the ligament of Marshall: role of autonomic factors. *J Cardiovasc Electrophysiol* 2008; 19: 955-962.

Zhou J, Scherlag BJ, Niu, Lu Z, Hou Y, Lazzara R, Jackman WM, Po SS: Anatomy and physiology of the right interganglionic nerve: implications for the pathophysiology of inappropriate sinus tachycardia. *J Cardiovasc Electrophysiol* 2008; 19: 971-976.

Stevenson WG, Wilber DJ, Natale A, Jackman WM, Marchlinski FE, Talbert T, Gonzalez MD, Worley SJ, Daoud EG, Hwang C, Schuger C, Bump TE, Jazayeri M, Tomassoni GF, Kopelman HA, Soejima K, Nakagawa H, for the Multicenter ThermoCool VT Ablation Trial Investigators: Irrigated radiofrequency catheter ablation guided by electroanatomic mapping for recurrent ventricular tachycardia after myocardial infarction: the Multicenter ThermoCool VT Ablation Trial. *Circulation*, 2008; 118: 2773-2782.

Publications of Original Research

Yokoyama K, Nakagawa H, Shah DC, Lambert H, Leo G, Aeby N, Ikeda A, Pitha JV, Sharma T, Lazzara R, Jackman WM: Novel contact force sensor incorporated in irrigated radiofrequency ablation catheter predicts lesion size and incidence of steam pop and thrombus. *Circ Arrhythm Electrophysiol* 2008; 1:354-362.

Lu Z, Scherlag BJ, Lin J, Niu G, Fung KM, Zhao L, Ghas M, Jackman WM, Lazzara R, Jiang H, Po SS: Atrial fibrillation begets atrial fibrillation: autonomic mechanism for atrial electrical remodeling induced by short-term rapid atrial pacing. *Circ Arrhythm Electrophysiol* 2008; 1: 184-192.

Hou Y, Scherlag BJ, Lin J, Zhou J, Song J, Zhang Y, Patterson E, Lazzara R, Jackman WM, Po SS: Interactive atrial neural network: determining the connections between ganglionated plexi. *Heart Rhythm* 2007; 4:56-63.

Edgerton JR, Jackman WM, Mack MJ: Minimally invasive pulmonary vein isolation and partial autonomic denervation for surgical treatment of atrial fibrillation. *J Intervent Card Electrophysiol* 2007; 20:89-93.

Hou Y, Scherlag BJ, Lin J, Lu Z, Truong K, Patterson E, Lazzara R, Jackman W, Po SS: Ganglionated plexi modulating extrinsic cardiac autonomic nervous inputs: effects on sinus rate, AV conduction, refractoriness and AF inducibility. *J Am Coll Cardiol* 2007; 50:61-68.

Nakagawa H, Jackman WM: Catheter ablation of paroxysmal supraventricular tachycardia. *Circulation* 2007; 116:2465-2478.

Zhou J, Scherlag BJ, Edwards J, Jackman WM, Lazzara R, Po SS. Gradients of atrial refractoriness and inducibility of atrial fibrillation due to stimulation of ganglionated plexi. *J Cardiovasc Electrophysiol* 2007; 18:83-90.

Nakagawa H, Antz M, Wong T, Schmidt B, Ernst S, Ouyang F, Vogtmann T, Wu R, Yokoyama K, Lockwood D, Po SS, Beckman KJ, Davies DW, Kuck KH, Jackman WM: Initial experience using a forward directed, high-intensity focused ultrasound balloon catheter for pulmonary vein antrum isolation in patients with atrial fibrillation. *J Cardiovasc Electrophysiol* 2007; 18:136-144.

Arruda MS, He DS, Friedman P, Nakagawa H, Bruce C, Azegami K, Anders R, Kozel P, Chiavetta A, Marad P, MacAdam D, Jackman W, Wilber DJ: A novel mesh electrode catheter for mapping and radiofrequency delivery at the left atrium-pulmonary vein junction: A single-catheter approach to pulmonary vein antrum isolation. *J Cardiovasc Electrophysiol* 2007; 18: 206-211.

Patterson E, Jackman WM, Beckman KJ, Lazzara R, Lockwood D, Scherlag BJ, Wu R, Po SS: Spontaneous pulmonary vein firing in man: relationship to tachycardia-pause early afterdepolarizations and triggered arrhythmia in canine pulmonary veins *in vitro*. *J Cardiovasc Electrophysiol* 2007; 18: 1067-1075.

Lin J, Scherlag BJ, Zhou J, Lu Z, Patterson E, Jackman WM, Lazzara R, Po SS: Autonomic mechanism to explain complex fractionated atrial electrograms (CFAE). *J Cardiovasc Electrophysiol* 2007; 18:1197-1205.

Yokoyama K, Nakagawa H, Wittkampf FHM, Pitha JV, Lazzara R, Jackman WJ: Comparison of electrode cooling between internal and open irrigation in radiofrequency ablation lesion depth and incidence of thrombus and steam pop. *Circulation* 2006; 113:11-19.

Po S, Scherlag BJ, Yamanashi W, Edwards J, Zhou J, Wu R, Geng N, Lazzara R, Jackman WM: Experimental model for atrial fibrillation arising at the pulmonary vein-atrial junctions. *Heart Rhythm* 2006; 3:201-208.

Publications of Original Research

Zhou J, Scherlag BJ, Yamanashi W, Wu R, Huang Y, Lazzara R, Jackman WM, Po S: Experimental model simulating right ventricular outflow tract tachycardia: a novel technique to initiate RVOT-VT. *J Cardiovasc Electrophysiol* 2006; 17:771-775

Scherlag BJ, Yamanashi WS, Nakagawa H, Patterson E, Po S, Jackman WJ, Lazzara R: Electrical stimulation to identify neural elements on the heart: their role in atrial fibrillation. *J Intervent Card Electrophysiol* 2005; 13:37-42.

Nakagawa H, Jackman WM: Para-Hisian pacing: useful clinical technique to differentiate retrograde conduction between accessory AV pathways and AV nodal pathways. *Heart Rhythm* 2005; 2:667-672.

Aoyama H, Nakagawa H, Pitha JV, Khammar GS, Chandrasekaran K, Matsudaira K, Yagi T, Yokoyama K, Lazzara R, Jackman WM: Comparison of cryothermia and radiofrequency current in safety and efficacy of catheter ablation within the canine coronary sinus close to the left circumflex coronary artery. *J Cardiovasc Electrophysiol* 2005; 16:1218-1226.

Scherlag BJ, Yamanashi W, Patel U, Lazzara R, Jackman WM: Autonomically induced conversion of pulmonary vein focal firing into atrial fibrillation. *J Am Coll Cardiol* 2005; 45:1878-1886.

Scherlag BJ, Yamanashi W, Amin R, Lazzara R, Jackman WJ: Experimental model of inappropriate sinus tachycardia: initiation and ablation. *J Intervent Card Electrophysiol* 2005; 11:21-29.

Wittkamp FHM, Nakagawa H, Foresti S, Aoyama H, Jackman WM: Saline-irrigated radiofrequency ablation electrode with external cooling. *J Cardiovasc Electrophysiol* 2005; 16:323-328.

Po S, Li Y, Tand D, Liu H, Geng N, Jackman WM, Scherlag B, Lazzara R, Patterson E: Rapid and stable reentry within the pulmonary vein as a mechanism initiating paroxysmal atrial fibrillation. *J Am Coll Cardiol* 2005; 45:1871-1877.

Wu EQ, Birnbaum HG, Mareva M, Tuttle E, Castor AR, Jackman W, Ruskin, J: Economic burden and co-morbidities of atrial fibrillation in a privately insured population. *Current Medical Research and Opinions* 2005; 21:1693-1699.

Tang D, Li Y, Wong J, Po SS, Patterson E, Chen WR, Jackman WM, Liu H: Characteristics of a charged-coupled-device-based optical mapping system for the study of cardiac arrhythmia. *J Biomed Opt* 2005; 10: 024009

Heidbuchel H, Jackman WM: Characterization of subforms of AV nodal reentrant tachycardia. *Europace* 2004; 6:316-329.

Friedman PL, Dubuc M, Green MS, Jackman WM, Keane DTJ, Marinchak RA, Nazari J, Packer DL, Skanes A, Steinberg JS, Stevenson WG, Tchou PJ, Wilber DJ, Worley SJ: Catheter cryoablation of supraventricular tachycardia: results of the multicenter prospective "frosty" trial. *Heart Rhythm* 2004; 1:129-138.

Nakagawa H, Aoyama H, Beckman KJ, Po SS, Wu R, Lockwood D, Spector P, Calame JD, Lustgarten DL, Hasdemir C, Singh D, Herring L, Lazzara R, Jackman WJ: Relationship between pulmonary vein firing and extent of left atrial-pulmonary vein connection in patients with atrial fibrillation. *Circulation* 2004; 109:1523-1529.

Brunckhorst CB, Delacretaz E, Soejima K, Jackman WM, Nakagawa H, Kuck KH, Ben-Haim SA, Seifert B, Stevenson WG: Ventricular mapping during atrial and right ventricular pacing: relation of electrogram parameters to ventricular tachycardia reentry circuits after myocardial infarction. *J Intervent Card Electrophysiol* 2004; 11:183-191.

Publications of Original Research

Scherlag BJ, Yamanashi WS, Yagi T, Patterson E, Lazzara R, Jackman WM: Variability of AV nodal potentials recorded in vivo: direct demonstration of dual AV nodal physiology. *J Intervent Card Electrophysiol* 2004; 10:9-18.

Nakagawa H, Jackman WM, Scherlag BJ, Lazzara R. Pulmonary vein isolation during atrial fibrillation: insight into the mechanism of pulmonary vein firing. *J Cardiovasc Electrophysiol* 2003; 14:261-262.

Matsudaira K, Nakagawa H, Wittkamp F, Yamanashi W, Imai S, Yagi T, Pitha J, Lazzara R, Jackman WM: High incidence of thrombus formation without impedance rise during radiofrequency ablation using electrode temperature control. *Pacing Clin Electrophysiol (PACE)* 2003; 26:1227-1237.

Hasdemir C, Scherlag BJ, Yamanashi WS, Lazzara R, Jackman WM: Endovascular stimulation of autonomic neural elements in the superior vena cava using a flexible loop catheter. *Japan Heart J* 2003; 44:417-427.

Sun Y, Arruda MS, Otomo K, Beckman KJ, Nakagawa H, Calame J, Po S, Spector P, Lustgarten D, Herring L, Lazzara R, Jackman WM: Coronary sinus-ventricular accessory connections producing posteroseptal and left posterior accessory pathways: incidence and electrophysiological identification. *Circulation* 2002; 106:1362-1367.

Brunckhorst CB, Stevenson WG, Jackman WM, Kuck K H, Soejima K, Nakagawa H, Cappato R, Ben-Haim SA: Ventricular mapping during atrial and ventricular pacing: relation of multipotential electrograms to ventricular tachycardia re-entry circuits after myocardial infarction. *Eur Heart J* 2002; 23:1131-1138.

Scherlag BJ, Patterson E, Jackman WM, Lazzara R: The elusive AV nodal potential: studies from the canine heart, ex vivo. *J Intervent Card Electrophysiol* 2002; 7:39-52.

Nakagawa H, Jackman WM: Catheter ablation of macroreentrant atrial tachycardia in patients following atriotomy. *Eur Heart J* 2002; 23: 1566-1568

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Task Force, Practice Guideline and Consensus Documents

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Invited Editorials

Nakagawa H, Jackman WM: Electroporation (revival of direct current ablation): new approach for increasing epicardial ablation safety in close proximity to a coronary artery. Circ Arrhythm Electrophysiol 2014; 7:779-780.

Scherlag BJ, Jackman WM: Unravelling the paradoxical effects of ganglia ablation. Circ Arrhythm Electrophysiol 2014; 7:570-572.

Letters to the Editor

Nakagawa H, Yokoyama K, Wittkampf FHM, Pitha JV, Lazzara R, Jackman WM: Irrigation in radiofrequency ablation lesion depth and incidence of thrombus and steam pop. Circulation 2006;113: 937.

Sponsor (Supervisor-Mentor) for Research and Training Fellowship Awards:

Fellowship Recipient: Heidbuchel H
Source: National Institutes of Health, Fogerty International Center
Award: International Research Fellowship
Project Title: Characterization of Reentrant Arrhythmias
Study Period: 07/01/93 - 10/31/94
Sponsor/Mentor: Jackman WM

Fellowship Recipient: Hazlitt HA
Source: Presbyterian Health Foundation, Oklahoma City
Award: Physician-Scientist Fellowship Program
Project Title: Incidence and Location of the Slow Pathway Potential
Study Period: 07/01/92 - 06/30/93
Sponsor/Mentor: Jackman WM

Fellowship Recipient: Singh A
Source: Presbyterian Health Foundation, Oklahoma City
Award: Physician-Scientist Fellowship Program
Project Title: Catheter Ablation of Ventricular Tachycardia Using Radiofrequency Energy
Study Period: 07/01/92 - 07/30/93
Sponsor/Mentor: Jackman WM

Fellowship Recipient: Twidale N
Source: Lions Heart Foundation of South Australia
Award: Overseas Research Fellow
Project Title: Monophasic Action Potential Recordings in Patients with Ventricular Tachyarrhythmias
Study Period: 06/01/90 - 06/30/91
Sponsor/Mentor: Jackman WM

Fellowship Recipient: Twidale N
Source: Royal Australasian College of Physicians
Award: C.R.B. Blackburn R.A.C.P. Overseas Traveling Fellowship
Project Title: Catheter-Mediated Ablation of Cardiac Arrhythmias
Study Period: 07/01/89 - 06/30/91
Sponsor/Mentor: Jackman WM

Fellowship Recipient: Moulton K
Source: Presbyterian Health Foundation, Oklahoma City
Award: Physician-Scientist Research Fellowship
Project Title: Determinants of Conduction Across Accessory Pathways in the Wolff-Parkinson-White Syndrome
Study Period: 07/01/89 - 06/31/91
Sponsor/Mentor: Jackman WM

Fellowship Recipient: Yeung-Lai-Wah JA
Source: Alberta Heritage Foundation for Medical Research, Edmonton, Alberta
Award: Clinical Research Fellowship, 003520
Study Period: 07/19/84 - 07/18/86
Sponsor/Mentor: Jackman WM

Consultant and/or Advisory Board Member (Past or Present) to the Following Companies for Development or Improvement of Cardiac Mapping or Ablation Systems:

- Webster Laboratories
 - Mansfield Scientific
 - Biosense
 - Biosense Webster*
 - Stereotaxis
 - EP Technologies
 - Endocardial Solutions
 - Bard
 - CryoCath
 - AtriCure
 - ProRhythm
 - CardioFocus
 - CryoCor (Now Boston Scientific)
 - Endosense*
 - Catheffects
 - Irvine Biomedical
 - Rhythmia Medical*
 - VytronUS*
 - ACT
 - Boston Scientific*
- asterisk (*) indicates presently active

Investigator or Industry Sponsored Clinical Studies:

- Sponsor: Biosense Webster, Inc.
Location: Multi-center Study
Title: Evaluation of the NaviStar ThermoCool Catheter for Endocardial Radiofrequency Ablation in Patients Ventricular Tachycardia
Study Period: 04/07 -
Okla Co-PI: Jackman WM, Nakagawa H
Okla Co-Invest: Beckman K, Po S, Lockwood D
- Sponsor: Investigator Sponsored (Beckman K)
Location: Single Center Study (Univ Oklahoma)
Title: Early Detection and Treatment of Esophageal Injury After Catheter Ablation for Atrial Fibrillation
Study Period: 12//01/06 - present (currently enrolling)
Principal Invest: Beckman K
Co-Invest: Nakagawa H, Jackman WM, Po S, Lockwood D
- Sponsor: Biosense Webster, Inc.
Location: Multi-center Study
Title: Evaluation of the NaviStar ThermoCool Catheter with the Stockert 70 Radiofrequency Generator for Endocardial Ablation in Patients with Typical Atrial Flutter, Condition of Approval Study (Follow-up Study to Study #8)
Study Period: 05/01/06 - 02/14/08
Multicenter PI: Jackman WM
Okla PI: Beckman K
Okla Co-Invest: Nakagawa H, Po S, Lockwood D
- Sponsor: AtriCure, Inc
Location: Multicenter Study
Title: Thoracoscopically-Assisted Epicardial Bilateral Pulmonary Vein Isolation Using the AtriCure Bipolar System and Exclusion of the Left Atrial Appendage for the Treatment of Atrial Fibrillation
Study Period: 09//05 - 09/15
Multicenter PI: Jackman WM, Edgerton J
Okla PI: Lockwood D, Peyton M

Investigator or Industry Sponsored Clinical Studies:

Sponsor: Investigator Sponsored (Lockwood D)
Location: Single Center Study (Univ Oklahoma)
Title: Ablation of inappropriate sinus tachycardia syndrome by targeting cardiac neural input
Study Period: 06/07/04 - present (currently enrolling)
Principal Invest: Lockwood D
Co-Invest: Jackman WM, Beckman K, Po S, , Wu R

Sponsor: Investigator Sponsored (Lockwood D)
Location: Single Center Study (Univ Oklahoma)
Title: Localization of the anterograde and retrograde components of the reentrant circuit in AV nodal reentrant tachycardia.
Study Period: 03/25/04 - present (currently enrolling)
Principal Invest: Lockwood D
Co-Invest: Jackman WM, Beckman K, Po S, Wu R

Sponsor: Investigator Sponsored (Jackman WM)
Location: Single Center Study (Univ Oklahoma)
Title: Comparison of the Safety and Efficacy of Catheter Ablation of Atrial Fibrillation Between Pulmonary Vein Isolation Alone (Conventional Approach) and Pulmonary Vein Isolation Combined with Endocardial Ablation of Autonomic Ganglia Adjacent to the Pulmonary Veins
Study Period: 01/29/04 - 09/23/04
Principal Invest: Jackman WM, Nakagawa H
Co-Invest: Beckman K, Po S, Lockwood D, Wu R, Lazzara R

Sponsor: ProRhythm, Inc
Location: Multicenter Study Clinical Trial
Title: Study for the Assessment of Safety and Efficacy of the High Intensity Focused Ultrasound (HIFU) System for Pulmonary Vein Isolation
Study Period: 01/26/04 - 05/28/08
Multicenter PI: Jackman WM, Calkins H
Okla PI: Beckman K
Okla Co-Invest: Nakagawa H, Po S, Lockwood D, Wu

Sponsor: Investigator Sponsored (Jackman WM, Nakagawa H)
Location: Two Center Study (Univ Oklahoma and Massachusetts General Hospital)
Title: VERITAS: Ventricular Electroanatomical Mapping to Assess the Risk of Life Threatening Arrhythmias
Study Period: 01/04 - 10/07
Principal Invest: Jackman WM, Nakagawa H (Univ Okla), Reddy V (Mass General)
Co-Invest: Beckman K, Po S, Lockwood D, Lazzara

Sponsor: Investigator Sponsored (Jackman WM) IDE# G030138
Location: Single Center Study (Univ Oklahoma)
Title: Navi-Star Thermo-Cool Catheter (CARTO Mapping and Irrigated Catheter) for Ablation of Atrial Fibrillation
Study Period: 10/-03 - present (currently enrolling)
Principal Invest: Jackman WM, Nakagawa H
Co-Invest: Beckman K, Po S, Lockwood D, Wu R, Lazzara R

Investigator or Industry Sponsored Clinical Studies:

Sponsor: Investigator Sponsored (Jackman WM)
Location: Single Center Study (Univ Oklahoma)
Title: Long Term Follow-Up of Patients Undergoing Catheter Ablation
Study Period: 08/25/03 - present (currently enrolling)
Principal Invest: Jackman WM,
Co-Invest: Karen Beckman, Peter Spector, Hiroshi Nakagawa, Nayyar Shah, Arun Rao, Dan Lustgarten

Sponsor: Stereotaxis, Inc
Location: Multicenter Study
Title: Arrhythmia Treatment Using Magnetic Catheter Maneuvering and a Thermocouple Radiofrequency Ablation Catheter - ATTRAC Study
Study Period: 11/25/02 - 03/18/05
Multicenter PI: Lindsay B
Okla PI: Beckman K
Okla Co-Invest: Jackman WM, Po S, Lockwood D, Wu R

Sponsor: CryoCath Technologies, Inc
Location: Investigator Initiated (Jackman WM, Nakagawa H), Single Center (Oklahoma)
Title: Cardiac Vein Cryoablation of Posterior Accessory AV Pathways (FROSTY II)
Study Period: 08/08/01 - 1/31/06
Principal Invest: Jackman WM, Nakagawa H
Co-Invest: Beckman K, Po S, Lockwood D, Wu R

Sponsor: CryoCath Technologies, Inc
Location: Multicenter Study (US, Canada)
Title: FROSTY: Freezor trial of Supraventricular Tachycardia "Frosty"
Study Period: 06/01/01 - 04/19/02
Multicenter PI: Friedman PL
Okla PI: Jackman WM
Okla Co-Invest: Nakagawa H, Beckman K, Po S, Lockwood D, Wu R

Sponsor: Investigator Sponsored (Jackman WM) IDE#980071
Location: Single Center Study (Univ Oklahoma)
Title: Radiofrequency Catheter Ablation of Macroreentrant Left and Right Atrial Tachycardia and Non-Macroreentrant Left Atrial Tachycardia Using a Saline Irrigated Electrode Catheter

Study Period: 09/21/00 - 11/22/06
Principal Invest: Jackman WM, Nakagawa H
Co-Invest: Beckman K, Po S, Lockwood D, Wu R, Lazzara R

Sponsor: St. Jude Medical
Location: Multicenter Study
Title: Electrical Isolation of Pulmonary Veins in the Treatment of Paroxysmal or Persistent Atrial Fibrillation
Study Period: 07/23/00 - 01/30/03
Okla PI: Jackman WM
Okla Co-Invest: Karen Beckman, Peter Spector, Hiroshi Nakagawa, Nayyar Shah, Arun Rao, Dan Lustgarten

Investigator or Industry Sponsored Clinical Studies:

Sponsor: CryoCath Technologies, Inc
Location: Multicenter Study (US, Canada)
Title: Multicenter Study Evaluating the Safety and Effectiveness of the CCT Cryogenic Console System and the 9FR Freezor Focal Ablation Catheter in Patients with Supraventricular Tachycardia
Study Period: 11/03/99 - 09/28/04
Multicenter PI: Friedman PL
Okla PI: Jackman WM
Okla Co-Invest: Nakagawa H, Beckman K, Gonzalez M, Arruda M, Lazzara R

Sponsor: Biosense Webster, Inc.
Location: Multi-center Study
Title: Feasibility Evaluation of the NaviStar Thermo-Cool Catheter for Endocardial Ablation in Patients with Typical Flutter
Study Period: 04/24/99 - 07/14/04
Multicenter PI: Jackman WM
Okla PI: Jackman WM
Okla Co-Invest: Nakagawa H, Beckman K, Gonzalez M, Arruda M, Spector P, Lustgarten D, Po S, Lockwood D, Wu R, Lazzara R

Sponsor: Cordis Webster, Inc.
Location: Multi-center Study
Title: Evaluation of efficacy of the Cordis Webster NAVISTAR and REF-STAR Catheters for the Interruption of Atrial Flutter
Study Period: 0729/98 - 12/11/98
Okla PI: Jackman WM
Okla Co-Invest: Nakagawa H, Beckman K, Gonzalez M, Arruda M, Lazzara R

Sponsor: Biosense Webster, Inc
Location: Multi-center Study
Title: NaviStar ThermoCool Catheter (CARTO Mapping and Irrigated Catheter) for Endocardial Ablation in Patients with Ventricular Tachycardia
Study Period: 06/08/98 -11/30/04
Multicenter PI: Stevenson W
Okla PI: Jackman WM
Okla Co-Invest: Nakagawa H, Beckman K, Gonzalez M, Arruda M, Spector P, Lustgarten D, Po S, Lockwood D, Wu R, Lazzara R

Sponsor: Cordis Webster, Inc.
Location: Multi-center Study
Title: Evaluation of Efficacy of the Cordis Webster Navi-Star and Ref-Star Catheters Used in Conjunction with the CARTO Mapping System and a Medtronic CardioRhythm Generator to Perform Mapping and Catheter Ablation of Ventricular Tachycardia
Study Period: 07/21/97 - 07/18/98
Okla PI: Jackman WM
Okla Co-Invest: Nakagawa H, Beckman K, Gonzalez M, Arruda M, Lazzara R

Investigator or Industry Sponsored Clinical Studies:

Sponsor: Cordis Webster, Inc
Location: Investigator Initiated (Jackman WM), Single Center Study (Univ Oklahoma)
Title: Endocardial Ablation of VT Using the Cordis Webster Deflectable Irrigated Tip Electrode Catheter
Study Period: 07/06/97 - 06/07/98
Principal Invest: Jackman WM
Co-Invest: Nakagawa H, Beckman K, Gonzalez M, Arruda M, Lazzara R

Sponsor: Cordis Webster/Biosense Webster, Inc
Location: Investigator Initiated (Jackman WM), Single Center Study (Univ Oklahoma)
Title: Radiofrequency Ablation of Atrial Fibrillation/Flutter Using a Deflectable Irrigated Tip Electrode Catheter (Supplement to Study #2)
Study Period: 01/10/96 - 02/23/98
Principal Invest: Jackman WM
Co-Invest: Nakagawa H, Beckman K, Gonzalez M, Arruda M, Spector P, Lustgarten D, Po S, Lockwood D, Wu R, Lazzara R

Sponsor: Cordis Webster/Biosense Webster, Inc
Location: Investigator Initiated (Jackman WM), Single Center Study (Univ Oklahoma)
Title: Deflectable Irrigated Tip Electrode Catheter for Radiofrequency Ablation of Accessory Pathways in Patients with Prior Ablation Failure
Study Period: 07/11/94 - 09/22/05
Principal Invest: Jackman WM
Co-Invest: Nakagawa H, Beckman K, Gonzalez M, Arruda M, Spector P, Lustgarten D, Po S, Lockwood D, Wu R, Lazzara R

* First trial of catheter ablation using an irrigated electrode to cool the ablation interface

Sponsor: National Heart, Lung and Blood Institute (NHLBI)
Location: Multicenter (US)
Title: ESVEM: Electrophysiologic Study Versus Electrocardiographic Monitoring
Study Period: 07/85 -
Multicenter PI: Mason J
Okla PI: Jackman WM
Okla Co-Invest: Friday K, Beckman K

Teaching Activities:

Electrophysiology Fellows Trained by WMJ and colleagues at the University of Oklahoma

Vikram Katari, M.D.	Shinobu Imai, M.D. (Japan)*	Kenzo Hirao, M.D. (Japan)*
Adriana Slobodova, M.D.	Andy Hazlitt, M.D.	Hiroshi Nakagawa, M.D. (Japan)*
Jack Collier, M.D.	Nayyar Shah, M.D.*	Mauricio Arruda, M.D. (Brazil)*
Charan Kantipudi, M.D.	David Schleinkofer, M.D.	Ian Santoro, M.D.
Garbine Goya, M.D.	Matthias Antz, M.D. (Germany)*	Jess Oren, M.D.*
Himanshu Shukla, M.D.	Claudio Tondo, M.D. (Italy)*	Michael Prior, M.D.*
Sandeep Chopra, M.D.	Jeffrey Neuhauser, M.D.	Andrew Hazlitt, M.D.
Sameer Oza, M.D.*	Terrance Khastgir, M.D.	Nick Twidale, MDPH(Australia)*
Sara Foresti (Italy)	Kenichiro Otomo, M.D. (Japan)*	Kriegh Moulton, M.D.
Hiroshi Aoyama (Japan)	Hein Heidbuchel, MD (Belgium)*	P. David Margolis, M.D.
Qingke Xu, M.D. (China)	Michael Rome, M.D.	Xunzhang Wang, M.D. (China)*
Karen C. Clark, M.D.	Bernard Thibault, MD (Canada)*	Carlos A. Roman, M.D.*
Dalip Singh, M.D.	Mario Gonzalez, M.D.*	Anthony J. Bowman, M.D.
Can Hasdemir, M.D. (Turkey)	Anantjit Singh, M.D.	David M. Fitzgerald, M.D.*
Yumie Hou, M.D. (China)	Raed Sweidan, M.D.	John Yeung-Lai-Wah, B.Ch.B.*
Yingxian Sun, M.D. (China)*	Ishmaile Abdulla, M.D.*	Bryan Beck, M.D.
Helbert Acosta, M.D.	Heinz Gossinger, M.D. (Austria)*	
Arun Rao, M.D.		
Kagari Matsudaira, M.D. (Japan)*		
Zulu Wang, M.D. (China)*		
Fritz Friehoff, M.D. (Austria)		

*Fellowship followed by an academic faculty appointment

Course Co-Director or Faculty: “Advanced Catheter Ablation of Cardiac Arrhythmias,” American College of Cardiology (ACC) Heart House, Bethesda, Maryland (Sponsored by ACC)

January 2003 – Faculty (final year sponsored by ACC)	December 1997 - Co-Director	April 1995 - Co-Director
February 2002 – Faculty	December 1998 - Co-Director	April 1994 - Co-Director
December 1999 - Co Director	May 1996 - Co-Director	June 1993 - Co-Director*

* Beginning of ablation course program for ACC - Consistently received highest or nearly highest scores from course attendees of all ACC programs during that period

Faculty for Annual Course: “Advanced Catheter Ablation of Cardiac Arrhythmias,” Heart Rhythm Society (HRS)

October 18-21, 2014	September 10-14, 2010	October 19-22, 2005
September 8-11, 2013	October 4-7, 2008	October 18-20, 2004
September 8-10, 2012	October 14-17, 2007	
September 10-13, 2011	October 29-Nov. 1, 2006	

Faculty for the Annual or Semi-Annual HRS/ACC Board Review Course in Clinical Electrophysiology (Sponsored by HRS and ACC)

September 10-13, 2003	September 13-16, 2000	October 12-16, 1996
September 11-14, 2002	September 22-25, 1999	October 1-5, 1994
October 10-13, 2001	September 23-26, 1998	1992

Teaching Activities:

Course Director (or Co-Director with Hiroshi Nakagawa): “Advanced Catheter Ablation of Cardiac Arrhythmias,” University of Oklahoma Health Sciences Center: Week-long program for electrophysiologists comprising didactic presentations and live cases. Sponsored by Univ of Oklahoma

March 19-23, 2007	May 13-16, 2002	September 5-10, 1996
September 18-22, 2006	March 4-7, 2002	July 18-23, 1996
April 3-7, 2006	November 16-22, 2001	April 11-16 1996
November 17-22, 2005	September 6-11, 2001	January 18-23, 1996
September 19-23, 2005	March 1-6, 2001	November 17-22, 1995
April 4-8, 2005	February 8-13, 2001	September 14-19, 1995
November 12-17, 2004	November 2000	November 18-23, 1994
September 20-23, 2004	May 2000	October 13-19, 1994
May 3-6, 2004	April 2000	April 4-10, 1994
September 29-October 2, 2003	November 1999	April 10-11, 1992
May 19-22, 2003	September 1999	November 15-16, 1991
May 19-22, 2003	January 1999	April 19-20, 1991
March 3-6, 2003	November 1998	January 15-16, 1991
November 22-27, 2002	September 1998	November 16-17, 1990
September 9-12, 2002	January 1997	
	November 1996	

Course Co-Director: “Minimally Invasive Surgical Ablation for Atrial Fibrillation,” University of Oklahoma Health Sciences Center, Oklahoma City, OK: Techniques of assessing pulmonary vein isolation and verification of autonomic ganglionated plexi ablation during minimally invasive surgical ablation of atrial fibrillation (for surgeon and electrophysiologist teams). Sponsored by the University of Oklahoma

February 16, 2005	April 12, 2006	September 13, 2006
September 14, 2005	May 11, 2006	April 18, 2007
November 9, 2005	June 28, 2006	

Course Co-Director: “ThermoCool Irrigated Tip Catheter Mastery Program,” University of Oklahoma Health Sciences Center, Oklahoma City: Safe use of irrigated RF ablation system and electroanatomical mapping of atrial flutter and macroreentrant atrial tachycardia (Sponsored by Biosense Webster)

March 31, 2006	May 22, 2006	November 9, 2006
May 2, 2006	July 17, 2006	

Professional Associations:

- American Society for Clinical Investigation
- Central Society for Clinical Research
- American Federation for Clinical Research
- American College of Physicians
- Association of University Cardiologists
- American College of Cardiology (Fellow)
- American Heart Association:
 - Heartland Affiliate Board of Directors 1/04-12/06
 - Clinical Cardiology Council 1/82-Present
 - Committee on Electrocardiography and Cardiac Electrophysiology 7/90-6/92
 - Oklahoma County Division Board of Directors 7/87-6/88
 - Southern Region Research Committee 7/86-6/88
 - Oklahoma Affiliate Research Committee 7/85-6/88
- Heart Rhythm Society (Formerly North American Society of Pacing and Electrophysiology)
 - Fellow of the Heart Rhythm Society 05/07
 - Member (Certificate # 1029) 01/87
 - Committee to Establish Consensus Opinion on Catheter Ablation of Atrial Fibrillation 6/06-6/07
 - Board of Trustees 5/93-5/94, 5/95-5/00
 - Young Investigators Awards Committee 05/93-04/96
 - Ethics Committee 06/92-06/94
 - Devices Sub-Committee of Government Relations Committee 05/92-05/94
 - Ad Hoc Committee on Catheter Ablation Procedures 02/91-04/93
 - Committee for Long Range Planning 10/90-4/92
 - Advisory Council 5/89-04/92
- Electrophysiology Society
- Japanese Society of Cardiac Pacing and Electrophysiology
 - International Advisory Board
- International Academy of Cardiology
 - Scientific Advisory Board for 12th-19th World Congress on Heart Disease 7/06-12/14
- American Medical Association
 - Diagnostic and Therapeutic Technology Assessment (DATTA) Panel 06/91
- Clinical and Translational Science Society (CTSS) 2007

Editorial Board Member (Past or Present):

- Circulation
- Journal of Clinical Electrophysiology
- Journal of Interventional Cardiovascular Electrophysiology
- Journal of Atrial Fibrillation
- Journal of Arrhythmia
- EP Lab Digest
- Journal of Innovations in Cardiac Rhythm Management (Founding Board Member)

Honors and Awards:

Undergraduate (Georgia Institute of Technology):

Tau Beta Pi Honorary Fraternity	1971
Pi Tau Sigma National Mechanical Engineering Honorary Fraternity	1971

Graduate (University of Florida College of Medicine):

Alpha Omega Alpha Honor Medical Society	1976
Mosby Scholarship Award (x2)	1975, 1976
Lange Publications Award for Academic Achievement	1974

Fellowship in Cardiology/Electrophysiology (Indiana University):

First Prize in Young Investigator Competition, North American Society of Pacing and Electrophysiology (NASPE, now Heart Rhythm Society)	1982
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Faculty/Professional:

Awardee, 2 nd Annual Pioneer in Electrophysiology, University of Kansas	2011
Mirowski Award – Annual Award for Original Contribution to the Field of Pacing and Electrophysiology (sponsored by Guidant/Boston Scientific)	2006
Awardee, Pioneer in Pacing and Electrophysiology, North American Society of Pacing and Electrophysiology (NASPE, now Heart Rhythm Society)	2000
Provost's Research Award, University of Oklahoma Health Sciences Center	1989
Sponsor for Applicants of Young Investigator Award Competition (YIC):	
- Mauricio Arruda, MD, Honorable Mention, YIC, NASPE	1997
- Kenzo Hirao, MD, Honorable Mention, YIC, NASPE	1995
- Hiroshi Nakagawa, MD, PhD, Finalist, Samuel A Levine YIC, American Heart Association	1994
- Hiroshi Nakagawa, MD, PhD, Nonorable Mention, YIC, NASPE	1993
- John A F Yeung-Lai Wah, MB ChB, Third Prize, YIC, NASPE	1986
Citations for Clinical Excellence in Specialty of Clinical Cardiac Electrophysiology:	
- "Guide to America's Top Cardiologists"	2007-2011
- "America's Top Doctors," Castle Connolly Medical LTD	2001-2006
- "Best Doctors in America, Woodward/White Publishing	1992-2010
- Global directory of Who's Who (Top Doctors)	2012-2017
- Vitals Top 10 Cardiologists	2013