PRESENT APPOINTMENT/POSITION

University of Wisconsin School of Medicine and Public Health

2014 – Present	Clinical Adjunct Professor of Medicine

Aurora Health Care - St. Luke's Medical Center

1997-Present	Transplant Advisory Committee – Member
1995-Present	Medical Director, Pulmonary Hypertension Clinic
1990- Present	Staff Physician in Thoracic Organ Transplant Clinic

American College of Chest Physicians

1994-Present	Editorial Board paper reviewer

Independent Physician's Network (IPN)

1997-Present	Elected Board Member (currently on second 3-year term)

Blue Cross/Blue Shield/Compcare

1998-Present	Cardiovascular Medicine consultant

Society of Cardiovascular Computed Tomography

2006 – Present	Member

PAST APPOINTMENTS/POSITIONS

University of Wisconsin School of Medicine and Public Health

2013-2014	Clinical Adjunct Associate Professor of Medicine
1998-2013	Clinical Associate Professor of Medicine
1994-1998	Associate Professor of Medicine

1987-1994	Assistant Professor of Medicine

Medical College of WI

1987-1992	Clinical Instructor of Surgery; Department of Emergency Medicine Trauma

Aurora Health Care - St. Luke's Medical Center

2002-2006	Quality Management Committee --
2002-2006	Secretary – Treasurer of the Medical Staff, Aurora-St. Luke's Medical Center
2000-2006	Medical Director, Coronary Intensive Care Unit, Aurora-St. Luke's Medical Center

American Heart Association

1994-1999	Board of Governors, WI Affiliate
1992-1998	ACLS Affiliate faculty for the State of WI

Pulmonary Hypertension Association

2014- Present	Review Committee
1992- 2001	Scientific Advisory Board Member

ACCME (Accreditation Council for Continuing Medical Education)

1995-1998	AMA appointee to the National Council
1995-2000	Site Surveyor

State Medical Society of WI

1987-1997	Chairperson, Continuing Medical Education Commission (State credentialing body)
1985-1987	Member, Continuing Medical Education Commission

Health Care Network Advisory Committee (HCN)

1998- 2002 Medical Advisory Committee Member

CERTIFICATION AND LICENSURE

2008 Certified – Cardiovascular Computed Tomography; SCCT
2001 Board Certified - Cardiovascular Disease; ABIM
1985 Board Certified - Internal Medicine; ABIM

DEA: AZ2384838
License: WI - 25815

ACTIVE CLINICAL PRIVILEGES

05/10/88 – Present
Aurora Health Care - St. Luke's Medical Center
2900 W. Oklahoma Avenue
Milwaukee, WI 53215
ACTIVE STAFF

04/04/88 – Present
Aurora Health Care - Sinai Medical Center
945 N. 12th Street
Milwaukee, WI 53233
ACTIVE STAFF

06/01/98 – Present
Aurora Health Care - West Allis Memorial Hospital
8901 W. Lincoln Avenue
West Allis, WI 53227
CONSULTING STAFF

11/14/85 – Present
Columbia*St. Mary's / Milwaukee Division / St. Mary's Campus
2323 N. Lake Drive
Milwaukee, WI 53211
CONSULTING STAFF

09/01/02 – Present
Select Specialty Hospital / St. Luke's Medical Center
2900 W. Oklahoma Avenue
Milwaukee, WI 53215
ACTIVE STAFF

07/17/88 – Present Wheaton Franciscan Healthcare / St. Francis Hospital
3237 S. 16th Street
Milwaukee, WI 53215
COURTESY STAFF

PROFESSIONAL SOCIETY MEMBERSHIPS

American College of Cardiology

1993-Present	Fellowship
1987-1993	Member
1985-1987	Associate Member

American College of Cardiology – Women in Cardiology

2008-Present	Member

American College of Chest Physicians

1992-Present	Fellowship
1985-1992	Member

American College of Physicians

1991-Present	Fellowship
1985-1991	Member
1982-1985	Associate Member

Pulmonary Hypertension Association - International

1994- 2001	Board Member

International Society for Adult Congenital Cardiac Disease

1996-Present	Member

Critical Care Medicine

1985-1998 Member

EDUCATIONAL ACTIVITIES AND PRESENTATIONS

DIRECTOR - PULMONARY HYPERTENSION PRECEPTORSHIP COURSES

2013	November 6-7	Aurora St. Luke's Medical Center / Clinical Preceptorship
	April 17-18	Aurora St. Luke's Medical Center / Clinical Preceptorship
2012	October 17-18	Aurora St. Luke's Medical Center / Industry Preceptorship
	August 22-23	Aurora St. Luke's Medical Center / Clinical Preceptorship

Original Manuscripts

1. Zhi-Cheng J, D'Souza G, Chin K, Burgess GC, Teeter JG, Lamb J, Zwicke D. Sitaxentan in Treatment-Naïve Adult Functional Class III Pulmonary Arterial Hypertension. *Eur Respir J 2014* (in press).
2. Todaro MC, Oreto L, Zwicke D, Kay J, Bajwa T, Khandheria BK. Stress-induced cardiomyopathy after patent foramen ovale closure: what role did anesthesia play? *J Cardiothorac Vasc Anesth 2012;26:e52-4.*
3. Zwicke D**.** PAH and Pregnancy: Physiologic Changes, Challenges, and Outcomes. *Advances in Pulmonary Hypertension. Autumn 2011. Vol 10, No 3*
4. Zwicke D, Levine DJ, Horn E, Lang I, Oudiz R. The Challenges of PAH in Pregnancy. Pulmonary Hypertension Roundtable. *Advances in Pulmonary Hypertension. Autumn 2011. Vol 10, No 3*
5. Zwicke D. Pregnancy in PAH is Potentially Manageable. *Pulmonary Reviews. February, 2009.*
6. Zwicke D, Buggy B, Lobacz D, Rollins K, Strootman D. Treatment of a nonhealing saphenous vein harvest graft with treprostinil sodium. *Ann Thorac Surg 2008;85:e20-2.*
7. Galie N, Badesch D. Oudiz R, Simonneau G, McGoon MD, Keogh AM, Frost AE, Zwicke D, Naeije R, Shapiro S, Olschewski H, Rubin LJ. Ambrisentan therapy for pulmonary arterial hypertension. *J Am Coll Cardiol 2005;46:529-35*.
8. Barst RJ, Langleben D. Frost A, Horn EM, Oudiz R, Shapiro S, McLaughlin V, Hill N, Tapson VF, Robbins IM, Zwicke D, Dunchan B, Dixon RA, Frumkin LR: STRIDE-1 Study Group. Sitaxsentan therapy for pulmonary arterial hypertension. *Am J Respir Crit Care Med 2004;169:441-7.*

9. Vachiery J-L., Hill N., Zwicke DL, Barst R, Blackburn S, Naeije R: Transitioning From IV Epoprostenol to Subcutaneous Treprostinil in Pulmonary Arterial Hypertension. *Chest May 5, 2002: Vol 121, Pgs 1561-1565.*

10. Zwicke, DL, et al.: ASSENT-2 Trial: Single-bolus tenecteplase compared with front-loaded alteplase in acute myocardial infarction. Lancet August 28, 1999: Vol. 354, Pgs 716-722.

11. Packer M, Poole-Wilson PA, Armstrong PW, Cleland JG, Horowitz JD, Massie B, Ryden L, Thygesen K, Uretsky B, (Zwicke, DL-the ATLAS Study Group).: Comparative effects of low and high doses of the angiotensin-converting enzyme inhibitor, lisinopril, on morbidity and mortality in chronic heart failure. *Circulation 1999;100(23):2312-8.*

12. Zalenski, R.J., Rydman, R.J., Sloan, E.P., Hahn, K.H., Cooke, D, Tucker, J, Fligner, D., Fagan, J., Justis, D., Hessions, W., Pribble, J., Shah, S., Zwicke, D.L.: "ST Segment Elevation and the Prediction of Hospital Life-Threatening Complications. *J Electrocardiol 1998;31:164-171.*

13. Jean, W., Al-Bitar, I., Zwicke, D., Port, S., Schmidt, D., Bajwa, T.: High Incidence of Renal Stenosis in Patients with Coronary Artery Disease. *Cath Cardio Diag 32:8-10, 1994*.

14. Zwicke, D.L.: Pulmonary Hypertension: Misdiagnosed, Misunderstood. *CDC Report. Vol. 6, No. 2, Fall, 1994.*

15. Zwicke, D.L.: Patients of the '90s: Women and Heart Disease. *Cardiac Concepts. A News letter from The Heart Center. University Medical Center of Eastern Carolina-Pitt County. November.*

16. Tucker, J., Zwicke, D.L., et al: Value of Serial Myoglobin Levels in the Early Diagnosis of Acute Myocardial Infarction. *Ann. Emer Med, Oct., 1994*.

17. Zwicke, DL. Et al., GUSTO INVESTIGATORS: A Global Randomized Trial of Aggressive Versus Standard Thrombolytic Strategies in 41, 021 Patients with Acute Myocardial Infarction. *New Eng J. Med 1993;329(10):673-682*.

18. Zwicke, D.L.: Patients of the '90s: Women with Heart Disease. *CDC REPORT - Fall, 1991*.

19. Shalev, Y., Zander, G., Port, S., Zwicke, D.L., Gal, R., Bajwa, T., Amrani, D., Schmidt, D.H.: Elevated Blood Levels of Platelet Activating Factor in Patients with Unstable Angina. *J Am Coll Cardiol 15 (2):129A, 1990.*

20. Zwicke, D.L.: Heart Transplants and Artificial Devices. *CDC REPORT - Winter, 1990*.

21. Escobar, J., Zwicke, D.L., Flemma, R.J.: Successful Repair of an Aortic Dissection at a Saphenous Vein Graft Site in a Normotensive Patient. *J Inv Cardiol March, 89(3).*

22. Gal, R., VanWyhe, G., Zwicke, D.L.: Renal Cell Carcinoma with Extension into the Right Atrium: Diagnosis by Echocardiography and CT Scan. *Cardiovascular Imaging 1(3);23-35, 1989.*

23. Sra, J., Zwicke, D.L., Gal, R.: Retained Mitral Valve Apparatus After Valve Replacement Causing Dynamic Left Ventricular Outflow Obstruction. *Cardiovascular Imaging January 1(1):64, 1989.*

24. Zwicke, D.L., Huxley, R.L.: Blunt Chest Trauma with Resultant Two Vessel Myocardial Infarction and Coronary Artery Dissection. *J Inv Cardio November, 88(1):51-4.*

25. Cuttino, J.T., Clark, R.L., Feaster, S.H., Zwicke, D.L.: The Evaluation of Gross Hematuria in Anticoagulated Patients: Efficacy of IV Urography and Cystoscopy. *Am J of Roent, 149:527-528, September, 1987.*

26. Zwicke, D.L., Donohue, J.F., Wagner, E.H.: Use of the Emergency Department Observation Unit in the Treatment of Acute Asthma. *Ann Emerg Med 11(2):1977-83, 1982*.

27. Zwicke, D.L., Bobzien, W.F., Wagner, E.H.: Triage Nurse Decision: A Prospective Study. *JEN 8:132-38, 1982*.

Abstracts

1. Downey III FX, Pedersen R, Sulemanjee N, Hastings E, Cheema O, Zwicke D, Crouch J, Downey CA, Thohan V. Temporal Benefits of Continuous Flow Left Ventricular Assist Device Therapy Assessed With SF-36. *Mini Oral Prestentation at International Society for Heart and Lung Transplantation Annual Meeting* Nice, France, April 15-18, 2015.
2. Shi Y, Cho, Carlie L, Perez R, Shearer R, Sulemanjee NZ, Zwicke DL, Hastings TE, Cheema OM, Thohan V. Echocardiographic Markers of Implantable Cardioverter-Defibrillator Therapy. *Flat-board Poster Presentation at ACC 2015 Annual Meeting.* San Diego, CA March 14-16, 2015
3. Zwicke DL, Pinninti M, Khandheria BK, Bajwa T, Paulus S, Kramer C, Thohan V. *Poster Presentation at PHA's 11th International Pulmonary Hypertension Conference and Scientific Sessions.* Indianapolis, IN June 20-22, 2014
4. Singsank Z, Paulus S, Zeidler A, Niebauer N, Freichels TL, Thohan V, Zwicke DL. Transitioning patients with pulmonary arterial hypertension from parenteral prostacyclin: Single-Center Experience. *Poster Presentation at PHA's 11th International Pulmonary Hypertension Conference and Scientific Sessions*. Indianapolis, IN June 20-22, 2014

5. McElderry T, Waxman A, Gomberg-Maitland M, Burke M, Ross E, Bersohn M, Tarver J, Zwicke D, Feldman J, Chakinala M, Frantz R, Torres F, Li P, Morris M, Peterson L, Bourge R. Totally Implantable IV Treprostinil Therapy in Pulmonary Arterial Hypertension: Assessment of the Implantation Procedure. J Heart Lung Transplant 2014. Poster Presentation at ISHLT 2014
6. Pinninti M, Sulemanjee NZ, Cook JA, Cho C, Cheema OM, Hastings TE, Zwicke DL, Crouch J, Downey FX, Thohan V. Clinical outcomes of multidisciplinary team management in patients supported with left ventricular assist devices. *J Heart Lung Transplant* 2014 (in press). *Presented at ISHLT 2014*
7. Murtaza G, Downey FX, Crouch J, Sulemanjee NZ, Cheema OM, Hastings TE, Zwicke DL, Cho C, Thohan V. Favorable outcomes of left ventricular assist device as bridge to simultaneous heart kidney transplantation. *J Heart Lung Transplant* 2014 (in press). *Presented at ISHLT 2014*
8. Roberts E, Sulemanjee NZ, Lazarov L, Cook JA, Schultz KA, Cho C, Cheema OM, Hastings TE, Zwicke DL, Crouch J, Downey FX, Thohan V. Prevalence of late right ventricular dysfunction after left ventricular assist device implantation. *J Heart Lung Transplant* 2014 (in press). *Presented at ISHLT 2014*
9. Grayburn R, Anigbogu M, Godden J, Cho C, Zwicke D, Cheema O, Hastings TE, Sulemanjee N. Cytomegalovirus infection prophylaxis using lower dose valganciclovir in cardiac transplant patients: a retrospective analysis of efficacy and safety. *J Card Fail 2013;19:S57*.
10. Nagendran K, Khandheria BK, Bajwa T, Allaqaband S, Wenzel ME, Tajik AJ, Zwicke DL. Atrial level shunt: To close or not to close. *CHEST, October* 2012 Supplement.
11. Zwicke DL, Wenzel ME, Cavey JT. Transitioning patients with pulmonary arterial hypertension from parenteral prostacyclin: one center's experience. *CHES, October 2011 Supplement*.
12. Zwicke D, Hayat F, Gronski T, Mori N, Spexarth F, Moline W, Krause A, Pano C, Schaeve J. Inhaled epoprostenol as solo or adjunctive therapy for pulmonary artery hypertension. *Presented at Aurora Scientific Day, May 4, 2010, Aurora Conference Center, Milwaukee, WI.*
13. Zwicke DL, Buggy, BP. Pregnancy and pulmonary arterial hypertension: Successful management of 37 consecutive patients. *Presented at First International Meeting on Cardiac Problems in Pregnancy, February 2010, Valencia, Spain*.
14. Zwicke D, Hayat F, Gronski T, Mori N, Spexarth F, Moline W, Krause A, Pano C, Schaeve J. Inhaled epoprostenol (Flolan) as solo or adjunctive therapy for pulmonary arterial hypertension. CHEST 2009;136:63S.

15. Kostopoulos L, Nfor T, Lobacz D, Zwicke DL. Exercise capacity and echocardiographic evaluation of right heart indices in patients on long-term ambrisentan therapy for established pulmonary arterial hypertension. *CHEST 2008;134:137003S.*

16. Zwicke, D, Buggy, B. Pregnancy and Pulmonary Arterial Hypertension: Successful Management of 37 Consecutive Patients. *CHEST 2008;134:64002S*.

17. McSwain CS, Benza R, Shapiro S, Hill N, Schilz R, Elliott CG, Zwicke DL, Oudiz R, Staszewski JP, Arneson CP, Wade M, Zaccardelli D, McLaughlin V. Dose proportionality of treprostinil sodium (Remodulin®) administered by continuous subcutaneous and intravenous infusion. *CHEST 2007; Volume 132, page 634S*.

18. Zwicke D, Buggy B, Lobacz D, Schmidt W, Harris K, Wade M, Strootman D. Treprostinil sodium for management of wounds refractory to standard therapy secondary to critical limb ischemia. *Wounds 2007;19:A31*.

19. Zwicke D, Buggy B, Lobacz D, Schmidt W, Harris K, Wade M, Rollins K, Strootman D. Treprostinil sodium for management of wounds refractory to standard therapy secondary to critical limb ischemia: an extension study. *Wounds 2007;19:A32.*

20. Zwicke D, Buggy B, Lobacz D, Schmidt W, Harris K, Wade M, Strootman D. Treprostinil sodium for management of wounds refractory to standard therapy secondary to critical limb ischemia: Buerger's disease. *Symposium on Advanced Wound Care- Poster #329 (2007).*

21. Mortada, M.E., Zwicke, D., Lobacz, D.: Improved Right-Heart Function Measured by Echocardiography with Long-Term Sitaxsentan Therapy in Patients with Pulmonary Arterial Hypertension (PAH). *Aurora Scientific Day, Oral Poster Presentation/Abstract May 11, 2006.*

22. Frost, A., Manes, A., Keogh, A., Zwicke, D., Oudiz, R., Shapiro, S., Naeije, R., Olschewski, H., Badesch, D., McGoon, M., Simonneau, G., Rubin, L., Galie, N.: Ambrisentan Improves 6-Minute Walk Distance Equally For WHO Class II And III PAH Patients. *PATS* (Proceedings from the American Thorac Society) 2005;2:(April issue).

23. Galie, N., Keogh, A., Frost, A., Zwicke, D., Ourdiz, R., Shapiro, S., Naeije, R., Olschewski, H., Badesch, D., McGoon, M., Simonneau, G., Manes, A., Rubin, L.: Ambrisentan Long-Term Safety And Efficacy In Pulmonary Arterial Hypertension-One Year Follow-Up. *PATS* (Proceedings from the American Thorac Society) 2005;2:(April issue).

24. Zwicke, D., Lobacz, D., Harris, K., Roseigno, R., Watson, J.: Transitioning From Intravenous Epoprostenol to Subcutaneous Treprostinil in Stable Pulmonary Arterial Hypertension Outpatients. *6th Annual Pulmonary Hypertension Convention June 26, 2004-June 27, 2004. Abstract 1027.*

25. Zwicke, D., Lobacz, D., Johnson L., Wade, M., Roseigno, R.: Long-Term Treatment of Pulmonary Arterial Hypertension with Treprostinil: Echocardiograpic Evaluation of Efficacy. *6th Annual Pulmonary Hypertension Convention June 26, 2004-June 27, 2004. Abstract 1029.*

26. Zwicke, D., Buggy, B., Evans, W.: Successful Management of Pregnancy in Six Patients with Pulmonary Arterial Hypertension (PAH). *6th Annual Pulmonary Hypertension Convention June 26, 2004-June 27, 2004. Abstract 1031*.

27. Zwicke DL, Lobacz D, Harris K, Roseigno R, Watson J. Transitioning from intravenous epoprostenol to subcutaneous treprostinil in stable pulmonary arterial hypertension outpatients. *Chest 2004;126:760S*.

28. Horn E, Langleben D, Frost A, Hill, NS, McLaughlin V, Oudiz R, Robbins IM, Shapiro S, Tapson V, Zwicke D, Barst RJ for the STRIDE-1 Study Group. Chronic Sitaxsentan in pulmonary arterial hypertension. *Am J Respir Crit Care Med 2004;(abstract suppl):A210.*

29. Hill, N., Barst, R., Vachiery, JL., Zwicke, D., Naeije, R.: Long-term follow-up to the effects of transitioning patients with pulmonary arterial hypertension from IV epoprostenol to SC Treprostinil. *Am J Respir Crit Care Med 2004;(abstract suppl)A174*.

30. Frost, A., Langleben, D., Hill, NS., Horn, E., McLaughlin, V., Oudiz, R., Robbins, IM., Shapiro, S., Tapson, VF., Zwicke, D., Barst, RJ.. for the STRIDE-1 Study Group. 6MW as an efficacy endpoint in PAH clinical trials: demonstration of a ceiling effect. *Am J Respir Crit Care Med 2004;(abstract suppl)A176.*

31. Rubin, L., Galie, N., Badesch, D., Oudiz, R., Simonneau, G., McGoon, M., Manes, A., Keogh, A., Frost, A., Zwicke, D., Naeije, R.: Ambrisentan improves exercise capacity and clinical measures in pulmonary arterial hypertension (PAH). *Am J Respir Crit Care Med 2004 (abstract suppl)A210.*

32. Zwicke, DL., Buggy, B., Lobacz, D., Harris, K.: Rapid Transition From Subcutaneous Remodulin To Intravenous Flolan Therapy In Pulmonary Hypertension Patients. *Chest 2003;(suppl Oct):90S.*

33. Zwicke, D.L., Lobacz, D., Johnson, L., Wade, M.: Roscigno, R. Long-Term Treatment of Pulmonary Arterial Hypertension with Treprostinil: Echocardiographic Evaluation of Efficacy. *Chest 2003;(suppl Oct):89S*.

34. Zwicke, DL., Buggy, B., Evans, W.: Successful Management of Pregnancy in Six Patients with Pulmonary Arterial Hypertension (PAH). *Chest 2003;(suppl Oct):89S.*

35. Barst, RJ., Langleben, D., Frost, A., Horn, E., Ouidiz, R., Shapiro, S., McLaughlin, V., Hill, N., Tapson, V., Robbins, I., Zwicke, D., Duncan, B., Frumkin, LR.: Sitaxsentan, a selective ETA antagonist, improves cardiopulmonary hemodynamics in pulmonary arterial hypertension (PAH).). *Am J Respir Crit Care Med 2003;167:A273*.

36. Barst, RJ., Langleben, D., Frost, A., Horn, E., Oudiz, R., Shapiro, S., McLaughlin, V., Hill, N., Tapson, V., Robbins, I., Zwicke, D., Duncan, B., Frumkin, LR.: Sitaxsentan, a selective

ETA antagonist improves exercise capacity and NYHA functional class in pulmonary arterial hypertension (PAH). *Am J Respir Crit Care Med 2003;167:A440*.

37. Shapiro, S., Hill, W., Zwicke, D., Lobacz, D., Roscigno, R., Olson, JJ.: Successful management of infusion site pain associated with Remodulin (Treprostinil sodium) therapy. *Am J Respir Crit Care Med 2003;167:A441*.

38. Hill, NS., Barst, R., Vachiery, JL., Zwicke, D., Roscigno, R., Hess, D., Naeije, R.: Transitioning from intravenous (IV) epoprostenol to subcutaneous (SC) Trepostinil in patients with pulmonary hypertension. *Am J Respir Crit Care Med 2002;(abstract suppl-Intl Conf)165:B53.*

39. Goel, A., Rayel, R., Guda, N., Zwicke, D.L.: The value of troponin-1 as a screening tool for acute coronary syndromes. *Presented at the American College of Chest Physicians International Conference, 2001*.

40. Ahmad, A., Siegal R., Presberg K., Zwicke, D.: Role of Alprostadil (PGE1) in acute drug testing for pulmonary hypertension (PH*) J Am Coll Cardio 2000;35:287A*.

41. Zwicke, D.L., et al. Chronic Pulmonary Embolism is Frequently Missed as an Etiology for Pulmonary Hypertension. *CHEST Supplement, October, 1996. Vol. 110, #4, page 218S*.

42. Zwicke, D.L., et al.: Multi-disciplinary Approach to Diagnosis of Pulmonary Hypertension Provides Increased Accuracy in Diagnosis and Subsequent Treatment*. CHEST Supplement, October, 1996. Vol. 110, #4, page 28S.*

43. Zwicke, D.L.: Patient Controlled Analgesia Post Cardiac Surgery Results In Shorter Hospital Stays. *J Am Coll Cardiol 1995;25:396A*.

44. Jean, B., Al-Bitar, I., Zwicke, D.L., Port, S., Schmidt, D., Bajwa, T.: High Incidence of Renal Artery Stenosis in Patients with Coronary Artery Disease presented at the 42nd Annual Scientific Session of the American College of Cardiology, Anaheim, California, March 14-18, 1993. *J Am Coll Cardiol 1993;21(2):55A*.

45. Zwicke, DL., et al., GUSTO INVESTIGATORS.."A Global Randomized Trial of Aggressive Versus Standard Thrombolytic Strategies in 41, 021 Patients with Acute Myocardial Infarction." *International Federation of Biological Sciences, 4/93, Washington, D.C.*

46. Zwicke, DL., et al., Adenosine Study Group. Adenosine for Termination of Paroxysmal Supraventricular Tachycardia: Dose Ranging and Comparison with Verapamil. *CIRC, 80 (4): II631, 1989.*

47. Bashir, G., Zwicke, D.L., Gal, R.: Correlations Between Several Doppler Echocardiographic Methods and Contrast Angiography in Aortic Regurgitation. *CIRC, 78 (4): II433, 1988*.

48. Al-Bitar, I., Zwicke, D.L, Atassi, K., Gal, R., Schmidt, D., Port, S.: Combined Perfusion Function Imaging in the Diagnosis of Coronary Artery Disease. *J Med, 28(4), page 597, 1987.*

49. Zwicke, D.L., Gal, R., Port, S.: Noninvasive Diagnosis of Adult Patent Ductus Arteriosus. *Proceedings of the American College of Chest Physicians Annual Meeting, page 32, 1986.*

50. Zwicke, D.L., Niazi, I., Wagle, S., Reeves, W.R.: Reduced Transcutaneous Absorption of Nitroglycerine in Blacks. *CIRC 74(2):136, 1986*.

51. Zwicke, D.L., Bobzien, W.F., Wagner, E.H.: Emergency Department Triage of the Ambulatory Patient - A Prospective Study. *Proceedings of the University Association for Emergency Medicine, page 15, 1982.*

52. Zwicke, D.L., Donohue, J.F., Wagner, E.H.: Use of Emergency Department Observation Unit in the Treatment of Acute Asthma. *Proceedings of the University Association for Emergency Medicine, page 10, 1982.*

53. Arnold, A., Zwicke, D., Kappel, D.: Anticoagulation and Percutaneous Intervention: Do Gender Differences Persist? *Transcatheter Cardiovascular Therapeutics Meeting, 10/05, Washington DC, Poster Presentation.*

Medicine Conference, St. Luke's Hospital. Milwaukee, WI.

RESEARCH EXPERIENCE

Clinical Trials - Principal Investigator

Medtronic	1. **DeliVery.** Purpose of this clinical trial is to evaluate the safety profile of the Model 10642 Implantable Intravascular Catheter portion of the PAH Implantable Vasodilator Therapy (PIVoT system. **Protocol G100017. (opened 2/10/12)**
Astellas Pharma	**Astellas.**
Aires Pharmaceutical	1. Phase 2, Multi-Center, Open-Label, Randomized, Parallel-Dose Study to Determine the Safety and Efficacy of AIR001 in Subjects with Who Group 1 Pulmonary Arterial Hypertension. **Protocol AIR001-CS05. (opened, 1-22-13).** 2. Phase 2, Multi-Center, Open-Label Study, to Evaluate the Intermediate/Long-Term Safety and Efficacy of AIR001 in Subjects with Who Group 1 Pulmonary Arterial Hypertension. **Protocol AIR-**

	001-CS06. (opened, 1-22-13)
Bayer HealthCare	1. **LEPHT.** Randomized, double-blind, placebo-controlled, parallel-group, multi-center study to evaluate the hemodynamic effects of Riociguat (Bay 63-2521) as well as safety and kinetics in patients with Pulmonary Hypertension associated with left ventricular systolic dysfunction. **Protocol 14308. (opened 7-27-11)** 2. **SOCRATES PRESERVED.** A randomized parallel-group, placebo-controlled, double-blind, multicenter dose finding phase II trial exploring the pharmacodynamic effects, safety and tolerability, and pharmacokinetics of four dose regimens of the oral sGC stimulator BAY 1021189 over 12 weeks in patients with worsening heart failure and preserved ejection fraction (HFpEF); **Protocol BAY 1021189/15829**; **(pending)** 3. **SOCRATES REDUCED.** A randomized parallel-group, placebo-controlled, double-blind, multicenter dose finding phase II trial exploring the pharmacodynamic effects, safety and tolerability, and pharmacokinetics of four dose regimens of the oral sGC stimulator BAY 1021189 over 12 weeks in patients with worsening heart failure and reduced ejection fraction (HFrEF); **Protocol BAY 1021189/15371**; **(pending)**
INO Therapeutics	1. **IKARIA.** Phase 2, Placebo-Controlled, Double-Blind, Randomized clinical trial to determine safety, tolerance and proof-of concept efficacy of inhaled Nitric Oxide (iNO) versus placebo as Add-on therapy in patients with PAH. **Protocol IK7001-PAH-201 (opened 6/20/12)**
Geno, LLC	1. **PHIANO.** A Phase 2, Open-Label, Dose-Escalation Study in Subjects with Pulmonary Arterial Hypertension, (PAH, WHO Group 1) and Pulmonary Hypertension secondary to Idiopathic Pulmonary Fibrosis (PH-IPF WHO Group 3) using Inhaled NITROsyl™. **Protocol # GeNO-P-2010-002 (opened 1-18-12)**
NHLBI (NIH)	1) Phosphodiesterase Type 5 Inhibition with Tadalafil Changes Outcomes in Heart Failure Protocol (PITCH-HF Study) **(pending)**
Novartis	1) A 24-week randomized placebo-controlled, double-blind multi-center clinical trial evaluating the efficacy and safety of oral QTI571 as an add-on therapy in the treatment of severe pulmonary arterial hypertension: Imatinib in Pulmonary arterial hypertension, a Randomized, Efficacy Study (**IMPRES Study) Protocol CQTI571A2301** ***(open)*** 2) An extension study to QTI571A2301 to evaluate long-term safety, tolerability and efficacy of oral QTI571 (imantinib) in the treatment of severe pulmonary arterial hypertension: IMPRES Extension Protocol CQTI571A2301E1 ***(open)***

Actelion	1) **Seraphin OL.** Study in PAH patients receiving Remodulin (treprostinial sodium) by Interavenous or Subcutaneous Infusion. **Protocol AC-055-303.** **(opened 6-25-09)** 2) Single Patient Use Actelion Iloprost Clinical Trial: **AC-063A301.** A Multicenter, Double-blind, Randomized, Placebo-controlled, Crossover Study to Assess the Effects Of a Single Dose of Iloprost Power 15 on Exercise Capacity In Patients with Symptomatic Pulmonary Artery Hypertension ***(closed)*** 3) A Multicenter, Double-blind, Randomized Study comparing the Safety and Tolerability of Iloprost Inhalation solution delivered By I-neb utilizing Power disc-15 and Power disc-6 in Patients With Symptomatic Pulmonary Artery Hypertension. **Protocol # AC-055-302.** ***(closed)*** 3) **Seraphin** – A multicenter, double-blind, randomized, placebo Controlled, parallel group, event driven, Phase III study to assess the effects of ACT-064992 on morbidity and mortality in patients with symptomatic pulmonary arterial hypertension. Protocol Number AC-063A302. ***(closed)*** 4) **Griphon – Protocol #AC-065A302.** A multi-center, double-blind, placebo-controlled Phase 3 study to demonstrate the efficacy and safety of ACT-293987 in patients with pulmonary arterial hypertension. ***(open).***
Gilead	1) **Athena 1. Protocol GS-US-300-0117, Chiltern Study # 27748**. A Randomized, Multicenter Study of **A**mbrisentan and Sildenafil Combination **The**rapy in Subjects with Pulmo**n**ary **A**rterial Hypertension who have Demonstrated a Sub-Optimal Response to Sildenafil ***(closed).*** ***2.*** **Ambition – Protocol GS-US-300-0140**. A Randomized Multicenter Study of First-Line Ambrisentan and Tadalafil Combination Therapy in Subjects with Pulmonary Arterial Hypertension. ***(open)***
Sanofi-Aventis	1) **Crescendo** Comprehensive Rimonabant Evaluation Study of Cardiovascular Endpoints and Outcomes. Study relates to Abdominal Obesity. A randomized, multinational, multicenter, double-blind, placebo-controlled, two-arm parallel group trial of Rimonabant 20mg OD for reducing the risk of major cardiovascular events in abdominally obese patients with clustering risk factors. **Protocol #EFC5826** ***(closed)***
United Therapeutics // Lung LLC	1. A Multicenter, doubled-blind, randomized, placebo-controlled, Phase 3 study to assess the efficacy and safety of oral BPS-314d-MR Added-on to Treprostinil,/ **Protocol BPS-314d-MR-PAH-302.** **(opened:**

2. **ASPIRE.** Postmarketing observational study to assess respiratory tract adverse events in PAH patients treated with Tyvaso (treprostinil) Inhalation solution. **Protocol RIN-PH-403. (opened, 1/4/11)**

Freedom Studies:

1) A 16-Week, International, Multicenter, Double-Blind, Randomized, Placebo-Controlled Comparison of the Efficacy and Safety of Oral UT-15C Sustained Release Tablets in Combination with an Endothelin Receptor Antagonist and/or a osphodiesterase-5 Inhibitor in Subjects with Pulmonary Arterial Hypertension. Sponsor: United Therapeutics Corporation **Protocol Number: TDE-PH-301** ***(Complete)***
2) **Freedom M -** A 12-Week, International, Multicenter, Double-Blind, Randomized, Placebo-Controlled Comparison of the Efficacy and Safety of Oral UT-15C Sustained Release Tablets in Subjects with Pulmonary Arterial Hypertension. Sponsor: United Therapeutics Corporation. **Protocol Number: TDE-PH-302** ***(Closed)***
3) An Open-Label Extension Trial of UT-15C SR in subjects with Pulmonary Arterial Hypertension (extension of TDE-PH-301 and TDE-PH-301) Sponsor: United Therapeutics Corporation **Protocol Number: TDE-PH-304** ***(enrolling)***
4) An Evaluation of Biomarkers and Genetics in Subjects with Pulmonary Arterial Hypertension (sub-study of TDE-PH-302). **Protocol Number: TDE-PH 307.** Sponsor: United Therapeutics Corporation. ***(Closed)***
5) **Freedom EV.** A Phase III, International, Multi-Center, Randomized, Double-Blind, Placebo-Controlled, Event Driven Study to Compare the Time to First Clinical Worsening in Subjects ith Pulmonary Arterial Hyperension Receiving UT-15C in Combination with a PDE5-1 or ERA Compared ith a PDE5-1 or ERA Alone. **Protocol TDH-PH-310** . ***(enrolling)***
6) **Freedom EV OL.** An Open-Label Extension Study of UT-15C in Subjects with Pulmonary Arterial Hypertension – A Long-Term Follow-Up to Protocol TDE-PH-310. **Protocol TDH-PH-311** ***(enrolling)***
7) **Freedom C2** – A 16-Week, International, Multicenter, Double-Blind, Randomized, Placebo-Controlled Study of the Efficacy and Safety of Oral UT-15C Sustained Release Tablets in Subjects with

	Pulmonary Arterial Hypertension. **Protocol Number: TDE-PH-308**. ***(Closed to enrollment)*** 8) **UT-15 P01:11.** A Multicenter, Uncontrolled, Open Study in Patients with Pulmonary Arterial Hypertension, Transitionsing from Intravenous Flolan® Therapy to Chronic subcutaneious **Remodulin™** (UT-15) Therapy. ***(completed)*** 9) **UT-15 P01:06.** An International, Multicenter, Uncontrolled, Open Evaluation Of Chronic UT-15 (**Remodulin®**) Plus Conventional Therapy In Patients With Pulmonary Hypertension: A Continuation Study (P01:06). ***(completed)*** 10) **Remodulin PVD** An Open-Label, 12-Week, Single Center, Investigator-Initiated Study of the Safety and Efficacy of Continuous Administration of Remodulin® (treprostinil sodium) Injection in Patients with Intractable Symptoms Due to Severe Peripheral Arterial Conditions Investigator Initiated IND #69,156. **(completed).** 11) **Remodulin PK**. A Dose Proportionality Pharmacokinetic Study in Pulmonary Arterial Hypertension Patients Receiving Remodulin® (treprostinil sodium) by Intravenous or Subcutaneous Infusion. **Protocol Number RIV-PH-409. (completed)**
CoTherix/Actelion Inc.	**Vision Study.** A Randomized, Double-blind, placebo-Controlled Study to Evaluate the Safety and Efficacy of the Addition of Inhaled Iloprost in Patients with Pulmonary Arterial Hypertension Receiving Oral Sildenafil ***(Closed)*** **Protocol Number C200-006**
Lilly	**PHIRST** studies: 1) A Randomized, Double Blind, Placebo Controlled Phase 3 Study of the Phosphodiesterase Type 5 (PDE5) Inhibitor Tadalafil in the Treatment of Patients with Pulmonary Arterial Hypertension. **H6D-MC-LVGY** ***(Closed)*** 2) A Double Blind, Extension Study to Evaluate the Long Term Safety and Efficacy of the Phosphodiesterase Type 5 (PDE5) Inhibitor Tadalafil in the Treatment of Patients with Pulmonary Arterial Hypertension **H6D-MD-LVGX** ***(Closed)*** Sponsor Lilly/ICOS partnership
Encysive	1) **STRIDE 3** study. A Long-Term, Open-Label Study to Evaluate the Safety of **Sitaxsentan** Sodium Treatment in Patients with Pulmonary Arterial Hypertension. Sponsor Pfizer (formerly Encysive), L. P. (formerly Texas Biotechnology, Inc.). **Protocol FPH03**. ***(Closed)*** 2) **STRIDE 2** studies: a) A Phase III, Randomized, Double-blind, Placebo-controlled Safety and Efficacy Study of **Sitaxsentan** Sodium Treatment with an Open-label Bosentan Arm in Patients with Pulmonary

	Arterial Hypertension. **Protocol FPH02 (Completed)** b) An Open-Label Study to Evaluate the Long-Term Safety of Sitaxsentan Sodium Treatment in Patients with Pulmonary Arterial Hypertension**. FPH02-X** (in progress) Sponsor: Pfizer (formerly Encysive, L. P. (formerly Texas Biotechnology, Inc.) ***(completed).*** **3) STRIDE 1** studies: a) A Randomized, Double-Blind, Placebo-Controlled Safety and Efficacy Study of **Sitaxsentan** Sodium Treatment in Patients with Pulmonary Arterial Hypertension [**Protocol FPH01**]. (Completed) b) An Extension Study to Evaluate the Long-Term Safety and Pharmacokinetics of Sitaxsentan Sodium Treatment in Patients with Pulmonary Arterial Hypertension. [**Protocol FPH01-X**]. (Completed)
Pfizer	**1)** A Phase 3, Multi-Center, Randomized, Double-Blind, Placebo-Controlled, Safety and Efficacy Study of Sitaxsentan Sodium in Subjects with Pulmonary Arterial Hypertension. **Protocol # B1321001** ***(closed).*** **2)** A Phase 3, Multi-Center, Open label Study to Evaluate the Long-Term Safety of Monotherapy Sitaxsentan Sodium and Combination Therapy with Sitaxsentan Sodium and Sildenafil Citrate in Subjects with Pulmonary Arterial Hypertension. **Protocol B1321002** ***(closed).*** **3)** A Phase 3, Multi-Center, Randomized, Double-Blind, Efficacy and Safety Study of Monotherapy Sitaxsentan Sodium Versus Combination Therapy with Sitaxsentan Sodium and Sildenafil Citrate in Subjects with Pulmonary Arterial Hypertension who have completed study B1321001. **Protocol B1321003** ***(closed).*** **Sildenafil Studies (Pulmonary Hypertension Trials):** **1.** A multi-national, multi-center randomized, double-blind, double dummy, placebo controlled study to assess the efficacy and safety of 20, 40, and 80mg tid **sildenafil** in the treatment of pulmonary arterial hypertension in subjects aged 18 years and over. **Protocol Number: A148-1140** ***(completed)*** **2.** A multi-center, multinational, long-term extension study, to Assess the safety and toleration of subject optimized treatment regimens of oral sildenafil for pulmonary arterial hypertension in subjects who have completed Study A1481140. **Protocol Number A1481142** ***(completed)*** **3.** A multi-national, mutli-center, randomized, double-blind, Placebo controlled, parallel group study to assess the safety and efficacy of a subject optimized dose of **sildenafil** (20, 40, and

	80mg sildenafil TID) based on toleration, when used in combination with **intravenous prostacyclin** (epoprostenol) in the treatment of pulmonary arterial hypertension. **Protocol Number A1481141** ***(completed)*** **4.** A multi-center, multinational, long-term, open-label extension study, to assess thee safety of subject optimized treatment regimens of oral sildenafil when used in combination with intravenous prostacyclin (epoprostenol), for arterial hypertension who have completed study **A1481141. Protocol Number A1481153** ***(completed).***
Myogen, Inc.	**Ambrisentan Studies**: **1)** A Phase III, Randomized, Double-Blind, Placebo-Controlled, Multicenter, Efficacy Study of Ambrisentan in Subjects with Pulmonary Arterial Hypertension **Protocol No. AMB-320** ***(completed)*** **2)** A Long-Term Study of Ambrisentan in Pulmonary Arterial Hypertension Subjects Having Completed AMB-320 or AMB-321; **Protocol No. AMB-320E** ***(complete)*** **3)** A Phase II, Randomized, Double-Blind, Dose-Controlled, Dose-Ranging Multicenter Study of BSF 208075 (**ambrisentan**) Evaluating Exercise Capacity in Patients with Moderate to Severe Pulmonary Arterial Hypertension; **Protocol No. AMB-220** ***(completed)*** **4)** An Open-Label, Long-Term Study of Ambrisentan in Pulmonary Hypertension Subjects Having Completed Myogen Study AMB-220, **Protocol No. AMB-220E** ***(complete).***
Kos Pharmaceuticals	**IMPACT** (Impact of Medical Sub-Specialty on Patient Compliance to Teatment): 12 Week Open Label Study involvnig patients who receive Advicor as tretment for hyperlipidemia. 2001-2002 ***(Complete).***
Merck and Co.	**ISH Study.** A prospective, double-blind, randomized, parallel efficacy study of a **losartan** treatment regimen versus placebo in the treatment of patients with isolated systolic hypertension (231-00) **(Completed)** **A to Z Study**. A Multicenter, Randomized, Controlled, Double-Blind Trial to Investigate the Clinical Efficacy and Tolerability of Early Treatment with **Simvastatin** 40 mg Daily for 30 Days, Followed by Simvastatin 80 mg Daily Thereafter in Tirofiban-Treated Acute Coronary Syndrome Patients Who Have Been Randomized to Receive Enoxaparin or Unfractionated Heparin in Conjunction with Aspirin, and in Optimally-Treated ST Elevation Acute Coronary Syndrome Patients. ***(completed)***

#00-21E	ApexPro Telemetry System and Clinical Information Center (CIC)
INTRO-AMI	A Pilot Phase II Safety and Efficacy Evaluation of **Integrilin** in Patients Receiving Low Dose and Standard Dose **Alteplase** for Acute Myocardial Infarction. ***(completed)***
AMISTAD II	A Randomized, Double Blind, Placebo controlled, Multicenter Trial to Evaluate the Efficacy and Safety of **Adenosine** as an Adjunct to Reperfusion Therapy in the Treatment of Acute Myocardial Infarction. ***(completed)***
VALIANT	**Valsartan** in Acute Myocardial Infarction, A Multinational, Multicenter, Double Blind Randomized Active-Controlled Parallel Group Study Comparing the Efficacy and Safety of Long Term Treatment with Valsartan, Captopril, and Their Combination in High Risk Patients after Myocardial Infarction. ***(completed)***
GUSTO IV	A Phase III, Randomized, Open Label Trial Evaluating the Efficacy and Safety of **ReoPro** in Combination with Reduced Dose **Retevase**, r-PA for the Treatment of Acute Myocardial Infarction. ***(completed)***
INVEST TRIAL	International **Verapamil** SR-**Trandolapri**l Study. Step therapy treatment of hypertension in CAD patients. ***(completed)***
ASTRA/ZENECA	**Atorvastatin Study. PROTOCOL 0025 (and extensions 0029, and 0034).** A 24-week Randomized Double Blind Multicenter Trial to Evaluate the Efficacy and Safety of Starting and Maximum Doses of **ZD4522** vs **Atorvastatin** in the Treatment of with High Risk Hypercholesterolemic Subjects. ***(completed)***
ASSENT II TRIAL	A Phase III, Double Blind, Parallel Group, International Trial of Single Bolus TNK-Tissue Plasminogen Activator (**TNK-t-PA**) Versus Accelerated Infusion **of rt-PA Alteplase** in AMI. ***(Completed)***
GUSTO I	International Randomized Thrombolytic Trial of **t-PA** and **Streptokinase**. ***(Completed)***
ICI Pharmaceuticals	ATKAS TRIAL. Assessment of Treatment with **Lisinopril** in Cardiomyopathy. ***(Completed)***
NIASPAN TRIAL	Study of **Niaspan** in Patients with Hyperlipidemia. ***(Completed)***
Hoffmann-LaRoche	**2nd SYMPHONY Study.** A Phase III Multicenter, International Randomized, Double-blind, Aspirin-controlled Trial to Evaluate the Safety and Efficacy of two Regimens of **Xubix**™(sibrafiban Ro 48-3657)(an Oral Platelet Glycoprotein IIb/IIIa Receptor Antagonist) as Therapy for the Long-term Prevention of Secondary Vascular Events in Patients after an Acute Coronary Syndrome. ***(Completed)***
Protocol #0927B2-917-US	Evaluation of the Presence of Cardiac Valvular Abnormalities in Obese Patients Prior to and After Treatment with **Anorexigens** as Assessed by Echocardiography. ***(Completed)***
	18 lead EKG study in detection of acute MI's. ***(Completed)***
	Clinical trial of temporary DDD pacemaker. ***(Completed)***

Adenosine Trials	2 clinical trials (phase II) in use of IV **Adenocard** for treatment of SVT. A-1 and A-2 studies. ***(Completed)***
	Phase III topical absorption of **nitrate**. ***(Completed)***