

CURRICULUM VITAE

NAME **March, Keith L., M.D., Ph.D.**
BIRTHDATE: June 4, 1963

EDUCATION

UNDERGRADUATE:

1974 - 1975 Audited 6 Undergraduate hours
Mississippi College, Jackson, Mississippi

1975 - 1979 B.S., Chemistry/Biology
St. Francis College, Fort Wayne, Indiana
Valedictorian of class with a 4.0 grade point average

GRADUATE:

1979 - 1983 Ph.D., Chemistry with Highest Distinction
Indiana University
Awarded October 11, 1983
Thesis: "Electrostatic Interactions and Ion Binding in Trypsin, Bovine Pancreatic Trypsin Inhibitor, and Other Proteins"

1979 - 1985 Combined M.D./Ph.D. Degree
Indiana University School of Medicine
Awarded May 12, 1985
M.D. with Highest Distinction

POSTDOCTORAL:

1985 - 1988 Internal Medicine Resident
Indiana University Medical Center

1988 - 1990 Cardiology Clinical Fellowship
Indiana University Medical Center

ACADEMIC APPOINTMENTS

July 1990 - June 1995 Assistant Professor, Department of Medicine, Indiana University

July 1990 - Present Research Associate, Krannert Institute of Cardiology

Nov 1993 - Dec 1993 Visiting Scientist, Genetic Therapy, Inc., Gaithersburg, MD

July 1995 - Present Associate Professor, Department of Medicine, Indiana University

July 1999 - Feb 2002 Director, Indiana University Combined M.D./Ph.D. Degree Program

July 1999 - June 2003 Associate Professor, Department of Cellular and Integrative Physiology,
Indiana University

July 1999 - Present Director, Indiana Center for Vascular Biology and Medicine

July 2002 - June 2003 Associate Professor, Department of Biomedical Engineering,
Purdue University

July 2003 - Present Professor, Departments of Medicine and Cellular & Integrative

Physiology, Indiana University
Professor, Department of Biomedical Engineering, Purdue University
March 2004 - Present Cryptic Masons Medical Research Foundation Professor of Vascular
Biology Research

HOSPITAL APPOINTMENTS

Attending Physician, Indiana University Medical Center, Indianapolis, IN (1990-present)
Attending Physician, Roudebush VA Medical Center, Indianapolis, IN (1990-present)
Attending Physician, Wishard Health Services, Indianapolis, IN (1994-present)
Attending Physician, Clarian Health Partners, Indianapolis, IN (1997-present)

OTHER APPOINTMENTS AND PROFESSIONAL CONSULTANTSHIPS

1993 - 1994 Consultant, Biogel Technologies, Inc., Indianapolis, IN
1995 - 1996 Consultant, Burroughs-Wellcome Company, Research Triangle Park, NC
1996 - 1998 Member, Scientific Advisory Board, Cardiogenesis, Santa Clara, CA
1997 - 1998 Consultant, Cortrak/e-Med, Minneapolis, MN
1997 - 1998 Consultant, Schwarz Pharma, Monheim, Germany
1998 - 2000 Member, Scientific Advisory Board, Comedicus Inc., Minneapolis, MN
1998 - Present Consultant, Megabios/Valentis, San Francisco, CA
1999 - Present Consultant, Percardia, Nashua, NH
1999 - Present Cryptic Masons Medical Research Foundation Investigator
2000 - 2004 Consultant, Edwards Life Sciences, CA
2000 - 2002 Consultant, Boehringer-Ingelheim, Germany
2000 - Present Member, Scientific Advisory Board, BioCardia, Inc., San Francisco, CA
2001 - 2005 Consultant, Vascular Architects, Inc., San Jose, CA
2003 - Present Member, Scientific Advisory Board, Bioheart, Inc., Sunrise, FL
2004 - Present REI Ventures Fund Advisory and Health Care Advisory Board, Ann Arbor, MI
2004 - Present Springmill Ventures Advisory Board, Indianapolis, IN
2005 - Present Heron Capitol Advisory Board, Indianapolis, IN
2005 - Present Member, Scientific Advisory Board, V-Kardia, Minneapolis, MN

SPECIALTY BOARD STATUS

Board Certified, Internal Medicine
Board Certified, Cardiovascular Diseases

LICENSURE AND CERTIFICATION

National Board of Medical Examiners
Indiana State License: #01035290A
Second/Third Class Aviation Medical Examiner: #18555-4

PROFESSIONAL ORGANIZATIONS

1992 Full Member, American Society for Photobiology
1993 Member, American Federation for Clinical Research
1993 - Present Fellow, American College of Cardiology
1993 Member, American Heart Association, Council on Basic Sciences
2000 Associate Member, Bioelectromagnetics Society
2000 Member, Central Society for Clinical Research
2000 Member, North American Vascular Biology Organization

2001-Present Fellow, American Heart Association
 2002-Present Member, American Society of Gene Therapy
 2003 Member, American Physiological Society
 2005 Member, Alliance of Distinguished and Titled Professors
 2003 Member, International Fat Applied Technology Society

HONORS AND AWARDS

1979 - 1985 Insurance Medical Scientist Scholarship
 1981 Robert Chernin Award for Outstanding Graduate Research
 1983 Robert W. Bullard Outstanding Medical Science Student Award
 1983 Alpha Omega Alpha Medical Honor Society
 1984 John H. Edwards Fellowship for Highest Distinction as a Graduate Student
 1989 United States Catheter and Instrument, Inc. Cardiology Fellowship Award
 2005 The James O. Davis Distinguished Lecturer In Cardiovascular Science, Cardiovascular Day XII, University of Missouri-Columbia

FACULTY MENTORING ROLES

Kieran Mather, Medicine/Endocrinology – grant preparation
 Dongming Hou, Medicine/Cardiology – grant preparation
 Kevin Kerzee, Physiology – grant preparation
 Matthias Clauss, Physiology – grant preparation

TEACHING ASSIGNMENTS

1990 - Present Course #93 MC 720, Clinical Teaching as Attending Physician (Cardiology)
 Supervision of medical students, residents, and fellows in:
 Consultative Cardiology, VAMC, approx. 2 months/year, 250 hours /year
 Cardiology Clinic, VAMC, 12 months/year, 280 hours / year

1997 Problem Based Learning Activity, Freshman Medical Physiology Course
 1995 - 2003 Training Faculty, NIH T32 Grant, *Summer Undergraduate Training Program*
 (included in students below)

2005-Present Grand Rounds – Department of Medicine
 2005-Present Training Faculty Mentor, NIH T32 Grant, Training in Vascular Biology and Medicine

FELLOWS TRAINED (RESEARCH)

1991-1993 Irmina Gradus-Pizlo, M.D. (Post-doctoral Fellow)
Drug Delivery for Treatment of Angioplasty Restenosis
 1 first-author and 5 additional publications in peer-reviewed journals
 Current Position: Assistant Professor of Medicine, Indiana University,
 Patient Care and Conducting Research

1992-1993 Anthony J. Spaedy, M.D. (Cardiology Research Fellow)
Psoralen Photoactivation for Modulation of Vascular Proliferation in Rabbits
 Current Position: Private Practice of Cardiology

- 1993-1996 Khawar Mehdi, M.D. (Post-doctoral Fellow)
Gene & Drug Delivery into Arterial Tissue
 Presentation at International Meeting
 4 publications in peer-reviewed journals
 Recent Position: Scientist, Medtronic, Inc.
- 1993-1994 Michael Moran, M.D. (Cardiology Research Fellow)
Photoactivation for Treatment of Angioplasty Restenosis
 Current Position: Private Practice of Cardiology
- 1993-1994 Tony K. Nasser, M.D. (Cardiology Research Fellow)
Confocal Microscopic Evaluation of Vascular Microparticle Delivery
 1 first-author publication in a peer-reviewed journal
 Current Position: Private Practice of Cardiology
- 1994-1998 Li Fan, M.D. (Post-doctoral Fellow)
Transgenic Models of Smooth Muscle Proliferation
 American Heart Association Postdoctoral Fellowship Grant (Sponsor)
 1 first-author and 4 additional publications in peer-reviewed journals
 Current Position: Scientist, Eli Lilly & Company
- 1995-1997 Mario Pyles, M.D. (Cardiology Research Fellow)
Local Drug Delivery into Arterial Tissue
 1 first-author publication in *Circulation Research*
 Current Position: Private Practice of Cardiology
- 1995-1997 Sang Hong Baek, M.D., Ph.D. (Post-doctoral Fellow)
Adenoviral Approaches to Angiogenesis
 American Heart Association Postdoctoral Fellowship Grant (Sponsor)
 2 first-author and 1 additional publication in peer-reviewed journals
 Current Position: Assistant Professor, Catholic University, Seoul, Korea
- 1997-1998 Hans-Peter-Stoll, M.D. (Post-doctoral Fellow)
Local Drug and Radiation Delivery for Arterial and Myocardial Therapy
 Max Kade Foundation Postdoctoral Fellowship Grant (Sponsor)
 5 first-author and 1 additional publication in peer-reviewed journals
 Current Position: Scientist, Cordis/Johnson & Johnson, Inc.
- 1997-1999 Jürgen Sindermann, M.D. (Post-doctoral Fellow)
Transgenic Models of Vascular Injury
 NAVBO Young Investigator Award
 4 first-author and 1 additional publication in peer-reviewed journals
 Current Position: Cardiology Fellow, University of Münster, Germany
- 1998 - 2001 Dongming Hou, M.D. (Post-doctoral Fellow)
Local Drug and Radiation Delivery for Arterial and Myocardial Therapy
 North American Vascular Biology Organization Young Investigator Award
 1 first-author and 4 additional publications in peer-reviewed journals

Current Position: Assistant Research Professor, Dept. of Medicine, Indiana University

- 1999 - 2001 Mike Miller, Ph.D. (Post-doctoral Fellow)
Non-Invasive Myocardial Revascularization Using Targeted Proton Beam Irradiation for Induction of Angiogenesis
Presentation at International Meeting
Current Position: Post-doctoral Fellow, Dept. of Imaging Sciences, Indiana University,
- 2001 Sebastiaan CAM Bekkers, M.D. (Post-doctoral Fellow)
Therapeutic Arteriogenesis Using Locally Delivered MCP-1 in the Porcine Femoral Arterial System
Presentation at National Meeting
Current Position: Cardiology Fellow, Academic University, Maastricht, The Netherlands
- 2001 - 2002 Vipul Panchal, M.D. (Cardiology Research Fellow)
Modulation of Local Angiogenic Tone by Pericardial Fluid
Presentation at American College of Cardiology Meeting
Abstract chosen as one of the "Highlights of the Year"
- 2001 - 2003 Jalees Rehman, M.D. (Cardiology Research Fellow)
Regulation and Homing Mechanisms of Circulating Vascular Progenitor Cells
Multiple Presentations at International Meetings
Selected for Special Oral Presentation at ATVB Meeting
Abstract Chosen for First Place in Medical Fellows Competition
- 2003-Present Iyas Sheikhyousef, M.D. (Cardiology Research Fellow)
- 2005-Present Dmitry Traktuev, Ph.D. (Post-doctoral Fellow)

RESIDENTS TRAINED (RESEARCH)

- 1996 Sudha Shankar, MD
1998 Brian Bigelow, MD
1999 Scott Jones, MD, MS
2002 Rehan Karim, MD
2004 - Present Matthew W. Blanton, MD
2006 – Present Ivan Hadad, MD

STUDENTS TRAINED (RESEARCH)

- Summer 1991 Geoff Chidsey, (Medical Student)
Medical Student Research Program Scholarship Award (Sponsor)
Abstract presentation at national meeting
- Summer 1994 Julie Madison (Pre-Medical Student)
- Summer 1995 Julie Madison (Medical Student)
Author on publication in peer-reviewed journal

Summer 1996 Allison Becker (Pre-Medical Student)

Summer 1997 Kraig Kumfer (Pre-Medical Student)
Author on publication in peer-reviewed journal
 Meghan McCullers (Pre-Medical Student)

Summer 1998 Kraig Kumfer (Pre-Medical Student)
 Joe Klink (Pre-Medical Student)
 Vivek Gurudutt (Medical Student)
Author on publication in peer-reviewed journal
 Joanne Warrick (Pre-Medical Student)

1998 Alex Marsh (Master's Degree Student)
Intrapericardial Ethanol Delivery to Modulate Restenosis

Summer 1999 Ellen Klenk (Pre-Medical Student)
 Joe Klink (Pre-Medical Student)
 Ryan Venis (Medical Student)
 Stephanie Sequeira (Pre-Medical Student)

Summer 2000 Prashant Patel (Pre-Medical Student)
 Stephanie Sequeira (Pre-Medical Student)

Summer 2001 Amanda Blair (Pre-Medical Student)
 Prashant Patel (Pre-Medical Student)
 Kelly Montgomery (Medical Student)
 Pamela Cates (Pre-Medical/Master's Degree Student)
American Heart Association Student Scholar Research Grant (Sponsor)

Summer 2002 Casey McFall (Pre-Medical Student)
 Emily Judy (Pre-Medical Student)
 Rebecca Schiffmiller (Pre-Medical Student)

Summer 2003 Casey McFall (Pre-Medical Student)
 Udo Kaja (Pre-Medical Student)

2003 - Present Liying Cai (Graduate Student, PhD candidate, *Cellular & Integrative Physiology*)

Summer 2004 Sonal Jagasia (Pre-Medical Student)
 Neil Patel (Pre-Medical Student)
 Casey McFall (Pre-Medical Student)

Summer 2005 Allison Sturtevant (Medical Student)
 Neil Patel (PreMedical Student)

2006 Jason M. Edwards (Graduate Student, *Cellular & Integrative Physiology*)

THESIS COMMITTEES

2001-2003	Chad Geringer, candidate for Master's Degree in Genetics <i>Transcript Profiling of Hypoxic Human Vascular Endothelial Cells (HUVEC) with Affymetrix Oligonucleotide Arrays</i>
2002	Mike Murcia, candidate for Master's Degree in Chemistry
2002-present	Phil Abbosh, candidate for PhD (with MD) in Physiology <i>Gene Therapy for Thyroid Cancer</i>
2003-2004	Nicole Lohr, candidate for PhD, Medical College of Wisconsin <i>The Identification of Uniquely Expressed Proteins in a Model of Coronary Angiogenesis</i>
2003-2006	Eric Rodenberg, candidate for PhD in Cellular and Integrative Physiology <i>Development of a Biocompatible Small-Diameter Vascular Prosthesis Derived From Small Intestinal Submucosa</i>

PROFESSIONAL SERVICE SERVICE TO THE DISCIPLINE

STATE & REGIONAL

1990-Present	Member, Review Board for Medical Technology, Indiana Business Modernization and Technology Corporation
1999- Present	Purdue University NSF/IGERT Program on Therapeutic and Diagnostic Devices (PTDD) Advisory Committee
2003 - Present	Board of Directors, Methodist Research Institute
2004	Member, Steering Team, Indiana Biosensor Conference

NATIONAL & INTERNATIONAL

Training

1997	Workshop on Revascularization, State-of-the-Art, NIH, Bethesda, MD
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Research Review Committees

1991 - 1996	Member, American Heart Association (National): Molecular Biology of Muscle
1993 - 1994	Member, Veterans Administration Merit Review Grants: Cardiology Board
Feb 1997	Gene Transfer Study Section, NHLBI/NIH, Bethesda, MD
Feb 1998	Gene Therapy Program Project Review Committee, NHLBI, Bethesda, MD
Jan 1999	Gene Therapy Program Project Review Committee, NHLBI, Bethesda, MD
July 2000	Special Emphasis Study Section, Programs of Excellence in Gene Therapy, NIH, Bethesda, MD
Dec 2000	Clinical Cardiovascular Sciences Special Emphasis Panel, NIH, Bethesda, MD
Feb 2001	Cardiovascular and Renal Study Section, NIH, Bethesda, MD
May 2001	Gene Therapy Program Project Review Committee, NHLBI, Bethesda, MD
June 2001	"Parent" Program Project Review Committee, NHLBI, Bethesda, MD
June 2001	Cardiovascular and Renal Study Section, NIH, Bethesda, MD
Feb 2002	Gene Therapy Program Project Review Committee, NHLBI, Bethesda, MD
Nov 2002	Clinical Cardiovascular Sciences (CCVS) Study Section, NIH, Bethesda, MD
2003	Member, American Heart Association (National): Study Section in Vascular Biology
2004	External Advisor, "Gene Therapy for Vaso-Occlusive Disorders" Program Project Grant (PI Russell), Mayo Clinic, Rochester, MN

- 2004 External Advisor, "Vascular Biology: Exercise Training and Coronary Disease"
Program Project Grant (PI Laughlin), Univ. Missouri, Columbia, MO
- 2004 Member, Working Group on the Future Directions in Hypertension Research, NHLBI
Bethesda, MD
- Mar 2005 Clinical & Integrative Cardiovascular Science Study Section, NIH, Washington, DC
- June 2005 Vascular Cell and Molecular Biology Study Section, NIH, Bethesda, MD
- Jan 2006 Chairperson, Heart, Lung, and Blood Program Program Project Review Committee,
Chevy Chase, MD
- Mar 2006 Heart, Lung, and Blood Program Program Project "Parent" Committee,
Chevy Chase, MD
- 2006 Member, American Society of Gene Therapy, Cardiovascular Gene Therapy Committee
- 2007 Member, Gene & Cell Therapy Data and Safety Monitoring Board, NHLBI,
Bethesda, MD

Reviewer for Editorial Boards/Editorial Board Appointments

- 1991 - Present Circulation (ad hoc)
- 1992 - 1999 Assistant Editor, ACC Current Journal Review
- 1992 - Present Coronary Artery Disease (ad hoc)
- 1993 - Present Circulation Research (ad hoc)
- 1995 - Present Biophysical Journal (ad hoc)
- 2000 - Present Assistant Editor, American Journal of Physiology: Heart & Circulatory Section
- 2000 - Present Current Controlled Trials in Cardiovascular Medicine
- 2002 Nature Medicine (ad hoc)
- 2002 - 2008 Catheterization and Cardiovascular Interventions
- 2003 - 2004 Guest Issue Editor, American Journal of Physiology: Heart & Circulatory
Section
- 2006 *Cell Plasticity in the Cardiovascular System*
Editorial Board, Stem Cells

Reviewer for National Scientific Meetings

- 1992 - Present American Heart Association: Scientific Sessions, Category: Vascular Biology
- 1995 - Present American College of Cardiology: Scientific Sessions, Abstract Reviewer
Categories: Angioplasty, Restenosis
- 1997 Judging Committee, Young Investigators Awards Competition,
American College of Cardiology Scientific Sessions
- 2000 - Present American College of Cardiology: Annual Scientific Session Program Committee
Interventional Spotlight Planning Committee

SERVICE TO PATIENTS AND RELATED CLINICAL INSTITUTIONS

Cardiology Consult Service, Roudebush VAMC. Attending Physician. Supervise one Internal Medicine Resident and 2-3 medical students that evaluate patients with cardiovascular disorders. On average, 70-110 consults/month, 20-25 hours/week.

Cardiology Outpatient Clinic, Roudebush VAMC. Attending Physician. Supervise and teach medical and pharmacy students intermittently, as well as one student consistently in my role as a

Clinical Mentor in the Combined Degree Program. Approximately 8-12 patients / week, 5 hours / week.

COMMUNITY SERVICE

1997 Breakout Session Leader, American Heart Association Delegate Assembly, Indiana
1998 Faculty Coordinator, American Heart Association Krannert Research Tour
2000 Faculty Representative, Indiana University School of Medicine Office of Gift Development Campaign Brochure
2001 Guest, Sound Medicine, WFYI Public Radio, Cardiovascular Health and Stents
2001- Present Member, Development Committee, American College of Cardiology

UNIVERSITY SERVICE

ADMINISTRATIVE SERVICE

1999-2002 Director, Indiana University Combined MD, PhD Degree Program, 20% appointment
1999-Present Director, Indiana Center for Vascular Biology and Medicine

COMMITTEE SERVICE

DEPARTMENTAL

2001-Present Cardiovascular Board, Indiana Center of Excellence in Biomedical Imaging
2001 Search Committee for Division Chief, Pulmonary Medicine

SCHOOL

1995-1999 Combined Degree Program Committee
1999-2002 Chair, Combined Degree Program Committee
2003-Present MD/PhD Selection and Advisory Committee
2005-2006 School of Medicine Awards Committee
2005 Department of Medicine Research Committee
2006-Present Chair MD/PhD Selection and Advisory Committee

CAMPUS

1996 Guideline Development Committee for Faculty Council
Copyright & General Research Dissemination
1998-1999 Institutional Biosafety Committee, Research & Sponsored Programs
2001 Review Committee, Indiana University Center for Nursing Research
2002-Present Search and Screen Committee, Biomedical Engineering Endowed Chair
2003 Search and Screen Committee, Cellular & Integrative Physiology Chair
2003-Present Intellectual Property Task Force
2004- Present Search and Screen Committee, Cardiology Chief

SYSTEM

1995-1996 Technology Transfer Policy Committee

STUDENT SERVICE

1993 Medical Seek Day, Sponsor for Undergraduate Students
1995-Present Advisor for medical residents, 20 hours/year – approximately 3 yearly
1995-Present Interviewer for prospective medical interns.
2001-2002 Combined Degree (MD, PhD) Student Clinical Mentor:
Philip Abbosh – meet in cardiology clinic biweekly, with approximately
4 hours patient care exposure; provide advice and mentorship about
career pathways in academic medicine

OTHER PROFESSIONAL ACTIVITIES PRESENTATIONS

SCIENTIFIC MEETINGS INITIATED/ORGANIZED

“First Annual International Symposium on Local Cardiovascular Drug Delivery.” Cambridge, Massachusetts. 9/28-29/95. Organized by: **March KL**, Edelman E, Bailey S.

“Second Annual International Symposium on Local Cardiovascular Drug Delivery.” Cambridge, Massachusetts. 10/13-15/96. Organized by: **March KL**, Edelman E, Bailey S.

“Third Annual International Symposium on Local Cardiovascular Drug Delivery.” Washington, DC. 9/27/97. Organized by: **March KL**, Edelman E, Bailey S.

“Fourth Annual International Symposium on Molecular Cardiology.” Washington, DC. 10/6/98. Organized by: **March KL**, Edelman E, Bailey S, Epstein S.

“Fifth International Minicourse: Molecular Cardiology and Local Cardiovascular Therapeutics.” Washington, DC. 9/21/99. Organized by: **March KL**, Edelman E, Bailey S, Epstein S.

“Sixth International Minicourse: Molecular Cardiology and Local Cardiovascular Therapeutics.” Washington, DC. 10/18/00. Organized by: **March KL**, Edelman E, Bailey S.

INVITED PRESENTATIONS - SCIENTIFIC MEETINGS, RESEARCH INSTITUTES, AND UNIVERSITIES

"Post-Angioplasty Restenosis: Considerations for Novel Pharmacologic Approaches." 2/18/92, Purdue University Pharmacy Seminar, Indianapolis, IN.

"Post-angioplasty Restenosis: Local Drug Delivery and Local Photoactivation." 9/92, Gladstone Institutes of Atherosclerosis Research, San Francisco, CA.

"Vascular Smooth Muscle Proliferation: From Basic Observations to Therapeutic Approaches." 1/20/93, IU Physiology Seminar, Indianapolis, IN.

“The Effects of 8-Methoxypsoralen and Ultraviolet A Light on Vascular Smooth Muscle Cell Proliferation.” 1/22/94, Biomedical Optics International Symposium, Los Angeles, CA.

"Cardiovascular Gene Transfer by Recombinant Adenoviral Vectors: Pharmacokinetics of

Gene Delivery to Cardiovascular Cells." 3/31/94, American Society of Clinical Pharmacology and Therapeutics, Plenary Session Lecture, New Orleans, LA.

"Psoralens and Vascular Smooth Muscle Proliferation." 5/13/94, Restenosis Summit, Cleveland Clinic, Cleveland, OH.

"Pharmacokinetics of Adenoviral Gene Transfer to Cardiovascular Cells." 5/23/94, First International Meeting for Discoveries in Radiation for Restenosis, Andreas Gruentzig Center, Emory University, Atlanta, GA.

"Vascular Smooth Muscle Cell Cycle: Effects of Adenoviral Gene Transfer and Protease Inhibitors." 6/23/94, Glaxo Institute of Molecular Biology, Geneva, Switzerland.

"Pharmacokinetics of Adenoviral Gene Transfer in the Cardiovascular System." 10/21/94, University of Texas Health Science Center, Pharmacology Seminar Series, San Antonio, TX.

"Microparticle-Based Drug Delivery in Arterial Tissue." 10/25/94, Mallinckrodt Medical, St. Louis, MO.

"The Combination of 8-Methoxypsoralen and Ultraviolet Irradiation Inhibits Smooth Muscle Proliferation *in vitro* and *in vivo* After Angioplasty." 10/28/94, International Business Communications Restenosis Conference, Cambridge, MA.

"Molecular/Genetic Interventions to Prevent Restenosis." 11/16/94, Arteriosclerosis Council Postgraduate Seminar, American Heart Association 67th Scientific Sessions, Dallas, TX.

"Microparticulate and Adenoviral Approaches for Sustained Drug Delivery to Cardiovascular Tissue." 12/9/94, American Society for Artificial Internal Organs Cardiovascular Science and Technology Conference, Washington, DC.

"Vascular Smooth Muscle Gene Transfer: Adenoviral and Transgenic Approaches." 12/94, Northwestern University, Chicago, IL.

"Vascular Smooth Muscle Gene Transfer: Adenoviral and Transgenic Approaches." 1/2/95, University of Texas Medical Branch at Galveston, Galveston, TX.

"Vascular Smooth Muscle Gene Transfer: Adenoviral and Transgenic Approaches." 1/4/95, Harvard University/Beth Israel Hospital, Cambridge, MA.

"Pharmacokinetics of Adenoviral Gene Transfer in the Cardiovascular System." 1/19/95, Rhône-Poulenc-Rorer Research Center, Paris, France.

"What to Deliver." 1/20/95, Session 5: Intracoronary Drug Delivery, British Cardiovascular Intervention Society Advanced Angioplasty Meeting, London, England.

"Vascular Smooth Muscle Gene Transfer: Adenoviral and Transgenic Approaches." 1/23/95, Cambridge University, Cambridge, England.

"Combination of 8-Methoxypsoralen and Ultraviolet Light Inhibits Formation of Neointima After Angioplasty in the Pig." 2/6/95, International Society for Optical Engineering's Photonics West Conference, International Symposium on Optoelectronic, Microphotonic and Laser Technologies, Session on Photodynamic Therapy for Prevention of Restenosis, San Jose, CA.

"Residence Time and Retention Vehicles: Key Issues for Local Drug Delivery Systems." 2/24/95, Transcatheter Cardiovascular Therapeutics Conference, Washington, DC.

"Pericardial Gene and Drug Delivery." 5/95, Medtronic, Incorporated, Minneapolis, MN.

"Perivascular Adenoviral Delivery." 8/26/95, Klinikum Großhadern, Munich, Germany.

"PUVA and Microparticulate Approaches." 9/28/95, First International Symposium on Cardiovascular Drug Delivery, Cambridge, MA.

"Pericardial Delivery of Adenoviral Vectors." 9/29/95, First International Symposium on Cardiovascular Drug Delivery, Cambridge, MA.

"Local Drug Delivery in the Cardiovascular System." 10/27/95, IBC Restenosis Conference, Washington, DC.

"Ultraviolet A Light for Prevention of Restenosis." 1/11/96, Discoveries in Radiation for Restenosis, Emory University, Atlanta, Georgia.

"Psoralen Activation by Ultraviolet Light in Arterial Tissue." 1/28/96, SPIE Meeting, San Jose, CA.

"Psoralen Activation by Ultraviolet Light in Arterial Tissue." 2/12/96, Mayo Clinic, Rochester, MN.

"The Multicatheter Intramural Local Delivery Evaluation of Safety and Transfer (MILDEST): Preliminary Results", 2/16/96, and "Pericardial Gene and Drug Delivery." 2/17/96, 2nd European Meeting on Local Drug Delivery, Amsterdam, Holland.

"Gene Transfer in Cardiovascular Systems: Experimental Approaches and Therapeutic Applications." 2/23/96, St. Francis College, Ft. Wayne, IN

"The Multicatheter Intramural Local Delivery Evaluation of Safety and Transfer (MILDEST): Preliminary Results." 2/29/96, Transcatheter Cardiovascular Therapeutics Conference, Washington, DC.

"Methods for Local Gene Delivery in the Cardiovascular System." 3/7/96, NIH Research Conference, Initiations in Vascular Gene Transfer: Models of Disease and Therapy, Washington, DC.

"Site specific molecular therapies for coronary artery disease: Current and future approaches." 4/25/96, 45th Annual Cardiology Festival in San Antonio, San Antonio, TX.

"Vascular Tissue Transgenesis: Transgenic Mice and Local Delivery Approaches." 5/29/96, Children's Hospital Research Foundation and Graduate Program in Developmental Biology Seminar Series, Cincinnati, OH.

“Methods and Challenges for Local Gene Delivery in the Cardiovascular System.” 9/20-21/96, “The Revascularization State of the Art” Meeting, NHLBI Conference, Washington, DC.

“Endovascular vs. Perivascular Drug Delivery Approaches.” 10/12/96, STENT V Meeting, Fifth International and Interdisciplinary Symposium on Endoluminal Stents and Grafts, Washington, DC.

“Local Drugs and Gene Delivery in the Cardiovascular System.” 11/12/96, MDI, “The Future for Least Invasive Cardiovascular Therapies” Conference, New Orleans, LA.

“Local Drug Delivery: Advances and Limitations.” 6/7/97, First International Interdisciplinary Conference on Cardiovascular Medicine, Surgery, and Mechanics, Washington, DC.

“Vascular Tissue Transgenesis: Transgenic Mice and Local Delivery Approaches.” 9/5/97 Purdue University, Biochemistry & Molecular Biology Program Research Seminar, West Lafayette, IN.

“Genetic & Pharmacologic Modulation of Vascular Function by Pericardial Delivery.” Local Drug Delivery/Transcatheter Cardiovascular Therapeutics Conference, 9/24/97, Washington, DC.

“The APRAISE Antisense Trial.” 9/27/97, Transcatheter Cardiovascular Therapeutics Conference, Washington, DC.

“Systemic & Therapies for Restenosis.” 9/27/97, Transcatheter Cardiovascular Therapeutics Conference, Washington, DC.

“Key Delivery Issues for Adenoviral Mediated Gene Transfer in the Cardiovascular System.” 2/11/98, Cardiovascular Research Center Seminar, Department of Physiology, Medical College of Wisconsin, Milwaukee, Wisconsin.

“Gene Transfer to the Cardiovascular System: Novel Solutions for Critical Delivery Problems.” 2/17/98, Genetic Therapy, Inc., Gaithersburg, MD.

“Intrapericardial Nitric Oxide Donor Reduces Neointimal and Adventitial Thickening following Porcine Coronary Overstretch: Implications for Intrapericardial Delivery.” 2/27/98, Local Delivery Meeting (European), Geneva, Switzerland.

“Therapeutic Angiogenesis: Beyond Bypass Surgery.” 4/29/98, XIII World Congress of Cardiology, Rio de Janeiro, Brazil.

“Applications of Gene Therapy in Cardiovascular Disease.” 5/30/98, First Annual Meeting of American Society of Gene Therapy, Seattle, WA.

“Genetic and Pharmacologic Modulation of the Pericardial Space: Approaches to Cardiovascular Therapy and Angiogenesis.” 6/6/98, The 17th Sigrid Juselius International Symposium, Helsinki, Finland.

“Genetic and Pharmacologic Modulation of the Pericardial Space: Approaches to Cardiovascular Therapy and Angiogenesis.” 12/10/98, Vanguard Venture Partners Life Sciences CEO Forum, New Orleans, LA.

“Genetic and Pharmacologic Modulation of the Pericardium: Local Therapeutics of the Cardiovascular System.” 2/5/99, University of St. Francis, Fort Wayne, IN.

“Intrapericardial Delivery for Therapeutic Angiogenesis.” 6/8/99, Cardiology Research Foundation Angiogenesis & DMR Meeting, Washington, DC.

“Molecular Intervention – the Role of Protein vs. Gene Therapy.” 3/30/99, 3rd Interventional Cardiology Congress, Jerusalem, Israel.

“Local Modulation of Vascular Growth: Drugs, Genes and Energies.” 7/23/99, The Hope Heart Institute, Seattle, WA.

“Routes of Administration: Endovascular, Perivascular, Intra-Myocardial, Pericardial, and Others;” “Molecular Approaches to Restenosis by Impacting the Remodeling Process;” and “The New Field of Intrapericardial Diagnostics and Therapeutics.” 9/21-25/99, Transcatheter Coronary Therapeutics X, Washington, DC.

“Gene Therapy and the Future of Cardiac Care,” and “Local Delivery of Protein and Gene Agents: Comparisons and Contrasts.” 12/1-5/99, Challenges in Cardiovascular Therapeutics in the New Millennium, Cardiological Society of India 51st Annual Meeting, New Delhi, India.

“Clinical Gene Therapy and Gene Transfer: Are We Ready?” 1/13-14/00, Second Workshop on Angiogenesis and the Endothelium, Maastricht, The Netherlands.

“Alternative Ways of Delivery: Periadventitial and Pericardial Delivery.” 1/28/00, 6th International Local Drug Delivery & Radiation Meeting, Geneva, Switzerland.

“Vascular Tissue Transgenesis: Transgenic Mice and Local Delivery Approaches.” 3/21/00, MD/PhD Combined Degree Program Seminar Series, University of Illinois, Chicago, IL.

“Angiogenic Factors in the Pericardium: Patient Scope, Delivery Considerations, and Endogenous Modulators.” 3/27/00, FDA Angiogenesis Workshop, Laurel, MD.

“Local Drug and Gene Delivery in the Pericardial Space.” 4/1/00, Japanese Circulation Society, Osaka, Japan.

“Building Blood Vessels in Sickness and in Health.” 9/22/00, Central Society for Clinical Research (CSCR), Chicago, IL.

“The Molecular Cardiology Symposium: Principles, Targets and Therapeutic Interventions.” (Co-Moderator) 10/18/00, Transcatheter Cardiovascular Therapeutics (TCT), Washington, D.C.

“Perivascular & Intrapericardial Delivery.” 1/26/01, American Heart Association (AHA) Scientific Conference on Therapeutic Angiogenesis and Myocardial Laser Revascularization, Sante Fe, NM.

“Delivery Methods: Does it Matter?” and “Pericardial Delivery.” 2/5/01 and 2/7/01, Cardiovascular Radiation Therapy V and Restenosis Forum, Washington, D.C.

“Clinical Application of Angiogenesis.” 3/5/01, Society of Cardiovascular & Interventional Radiology (SCVIR), San Antonio, TX.

“Therapeutic Angiogenesis: Biological and Mechanical Approaches.” (Discussion Co-Chair) 3/20/01, American College of Cardiology (ACC), Orlando, FL.

“A Novel Approach to the Administration of a Del-1 Gene Medicine to Pig Myocardium for the Treatment of Coronary Artery Disease.” 5/31/2001, American Society of Gene Therapy, Seattle, WA.

“Highly Efficient Myocardial transduction via Retrograde Coronary Venous Delivery of Plasmid Vectors.” 2/7/02, Cardiovascular Radiation Therapy VI and Restenosis Forum, Washington, D.C.

“Intrapericardial Modulation of the Coronary Vasculature; Endogenous Physiology and Opportunities for Therapy,” and “Myocardial Angiogenesis using Non-viral Approaches.” 4/18-19/02, Korean Society of Circulation, Seoul, Korea.

“Gene Therapy in Cardiovascular Disease.” 5/2/02, Spanish Atherosclerosis Society Meeting, Salamanca, Spain.

“Pericardial and Perivascular Delivery of Drugs and Biologics: Accessing the Interstitial Space” and “Adipose Stromal Cells.” 9/27/02, Transcatheter Cardiovascular Therapeutics, Washington, DC.

“Circulating Modulators of Vascular Biology in Obesity and Exercise: Hepatocyte Growth Factor and Angiogenic Cells.” 1/31/03, Amylin Pharmaceuticals, San Diego, CA.

“Adipose Stromal Cells for Cardiac and Therapeutics: Taking Advantage of Lost Fat.” 2/14/03, Joint Interventional Meeting, Rome, Italy.

“Restenosis Following Stenting with Drug-Eluting Stents” and “The Drug-Eluting Stent Summit.” 9/16-18/2003, Transcatheter Cardiovascular Therapeutics, Washington, DC.

"Gene to the Heart: Alternative to Direct Injection" , Speaker for Symposium, "Genetic & Cell Therapies for Cardiovascular Disease", 10/25/2003, Mayo Clinic, Rochester, MN.

“Adipose Derived Stromal Cells”, American Heart Association Scientific Sessions, 11/2003, Orlando, FL.

“Intrapericardial Therapeutics for Myocardial & Vascular Repair: Myth or Reality?”, American College of Cardiology Annual Meeting, 03/2004, New Orleans, LA.

“Stem Cells & Progenitor Cells: Biology, Physiology & Therapeutic Applications”, Experimental Biology 04/17-21/2004, Washington, DC.

“Angiomyogenesis”, “Collateral Vessel Development”, “Cellular-Based Strategies to Enhance Collateral Formation”, Cardiovascular Research & Therapeutics, 05/5-7/2004, Washington, DC.

“Adipose tissue derived cells: Cardiomyogenic and angiogenic potential.”, 06/05/04, Speaker for Cardiovascular Researchers at Tulane University, New Orleans, LA

“Ischemic heart disease management via pericardial therapeutics”, 09/24/04. Pericardial Therapeutics Summit, Minneapolis, MN

“Treating All Vulnerable Plaque Simultaneously: An Application for Intra-pericardial Delivery?”, 03/23/05, Interventional Cardiology 2005, The International Symposium, Snowmass Village, CO

Chair, “Stem Cells and the Modification of Vascular Functions”, 04/03/05, International Congress of Physical Sciences, San Diego, CA

“Adipose Stromal Cells for Collateral Artery Promotion”, 04/08/05, DetourSils '05 Scientific Symposium, Sils-Maria, Switzerland

“Angiogenesis Mediated by Adipose-Derived Stromal Cells: How Fat Can Be Good for Vessels?”, 04/29/05, Angioplasty Summit 2005-TCT Asia Pacific, Seoul, Korea

Speaker for Cardiovascular/Vascular Ischemia Seminar at Aastrom Biosciences, Inc, 06/06/05, Ann Arbor, MI

“Adipose Derived Stem Cells in Angiogenesis and Tissue Repair: Biology and Therapeutic Potential, How Fat Can Be Good.” 06/15/05, M.D. Anderson Cancer Center, Houston, TX

INVITED SEMINARS - CONTINUING MEDICAL EDUCATION

"Antihypertensive Therapy - Considerations Beyond Hydraulics." 6/1/91, Family Medicine Lecture, Indianapolis, IN.

"Management of Acute Myocardial Infarction Beyond Thrombolysis." 6/27/91, Union Hospital Grand Rounds, Terre Haute, IN.

"Vascular Smooth Muscle Proliferation: From Basic Observations to Therapeutic Approaches." 1/20/93, IU Physiology Seminar, Indianapolis, IN.

"Post Angioplasty Restenosis: Considerations for Novel Pharmacologic Approaches." 3/20/93, 150th Anniversary Lecture Series, University of Montreal Notre-Dame Hospital, Montreal, Canada.

"Antihypertensive Therapy - Considerations Beyond Hydraulics." 10/1/93, Krannert Family Practice Update, Indianapolis, IN.

"Future Approaches to Post-Angioplasty Restenosis." 10/6/93, Cath Lab 2000 Conference, Bloomington Hospital, Bloomington, IN.

"Post Angioplasty Restenosis: Possible Local Pharmacologic Approaches." 1/21/94, Bloomington Hospital Grand Rounds, Bloomington, IN.

"Hypertension - Current Guidelines for Treatment." 2/24/94, IU Family Medicine Grand Rounds, Indianapolis, IN.

"Hypertension - Current Treatment Approaches." 2/28/94, Union Hospital Cardiology Grand Rounds, Terre Haute, IN.

"Hypertension: Considerations Beyond Hydraulics." 2/8/95, Union Hospital Cardiology Grand Rounds, Terre Haute, IN.

"Hypertension: Considerations Beyond Hydraulics." 2/14/95, Northwestern University Cardiology Grand Rounds, Chicago, IL.

"Current Research in Invasive Cardiology." 2/27/95, Akron City Hospital Cardiology Grand Rounds, Cleveland, OH.

"Local Genetic Interventions Targeting Vascular Disease." 3/31/95, Yale University Cardiology Grand Rounds, New Haven, CT.

"Local Gene Therapy: New Therapeutic Possibilities in Cardiology." 8/95, Ball Memorial Hospital Cardiology, Grand Rounds, Muncie, IN.

"Genetic Manipulation of the Vascular System: From Transgenic Mice to Local Adenoviral Vector Delivery." 4/29/96, Indiana Vascular Society, Indianapolis, IN.

"Genetic Manipulation of the Vascular System: From Transgenic Mice to Local Adenoviral Vector Delivery." 6/17/96, Indiana University School of Medicine, Endocrine Research Conference, Indianapolis, IN.

"Vascular Tissue Transgenesis: Transgenic Mice and Local Delivery Approaches." Division of Cardiology Grand Rounds, 3/12/97, University of Louisville Health Sciences Center, Louisville, KY.

"Vascular Tissue Transgenesis: Transgenic Mice and Local Delivery Approaches." 10/23/97, Loyola Cardiology Grand Rounds, Chicago, IL.

"Drug Delivery Strategies for Coronary Gene Therapy and Angiogenesis." 6/12/99, Winona Hospital Conference, Indianapolis, IN

"Therapeutic Modulation and Endogenous Function of the Pericardial Space: Approaches to Restenosis and Angiogenesis." 10/99, Cardiovascular Research Conference, Krannert Institute of Cardiology, Indianapolis, IN.

"Intrapericardial Therapeutics and Diagnostics." 10/3/99, Mercy Heart Institute Conference, Farmington, PA.

“Therapeutic Modulation and Endogenous Function of the Pericardial Space: Approaches to Restenosis and Angiogenesis.” 2/8/00, Indiana University Center for Diabetes Research, Indianapolis, IN.

“Drug Delivery Strategies for Coronary Gene Therapy and Angiogenesis.” 2/8/00, Indiana University Center for Diabetes Research, Indianapolis, IN.

"Intrapericardial Therapy." 3/23/01, Division of Cardiology Grand Rounds, Harvard Medical School, Boston, MA.

"Pericardial and Perivascular Approaches to Modulating the Coronary System." 5/14/01, Division of Cardiology Grand Rounds, Indiana University School of Medicine, Indianapolis, IN.

“Modulation of the Coronary Vascular System by Local Gene and Drug Delivery: Perivascular and Pericardial Approaches.” 2/20/02, Renal Research Conference, Indiana University School of Medicine, Indianapolis, IN.

Meet the Professor, Undergraduate Summer Research Program, 6/14/02, Indiana University School of Medicine, Indianapolis, IN.

12/4/02, Medicine Grand Rounds, Kansas University Medical College, Kansas City, KS.

"New Concepts about Vascular Biology." 1/8/03, Medicine Grand Rounds, Indiana University School of Medicine, Indianapolis, IN.

“Modulating Vascular Structures – Approaches from Biotechnology to basic Fitness Training.” 2/3/03, Endocrinology Research Seminar, Indiana University School of Medicine, Indianapolis, IN.

“The Future of Interventional Cardiology.” 2/26/03, St. Francis Hospital & Health Centers Grand Rounds, Indianapolis, IN.

“Modulating Vascular Structures – Approaches from Biotechnology to basic Fitness Training.” 3/10/03, Cardiovascular Research Conference, Indiana University School of Medicine, Indianapolis, IN.

Cardiology Grand Rounds, 02/11/2004, Tulane University, New Orleans, LA

“The Current Status on Angiogenesis Therapy on Heart Disease.” 01/26/05, Lafayette Medical Education Foundation, Lafayette, IN

“Progenitor Cells in Therapeutic and Endogenous Vascular Remodeling: Interventions from Local Delivery to Exercise” 02/21/05, Keynote Speaker for Cardiovascular Day, University of Missouri, Columbia, MI

“Treating All Vulnerable Plaque Simultaneously: An Application for Intra-pericardial Delivery?”, 03/23/05, Interventional Cardiology 2005, The International Symposium, Snowmass Village, CO

Chair, “Stem Cells and the Modification of Vascular Functions”, 04/03/05, International Congress of Physical Sciences, San Diego, CA

“Adipose Stromal Cells for Collateral Artery Promotion”, 04/08/05, DetourSils '05 Scientific Symposium, Sils-Maria, Switzerland

“Angiogenesis Mediated by Adipose-Derived Stromal Cells: How Fat Can Be Good for Vessels?”, 04/29/05, Angioplasty Summit 2005-TCT Asia Pacific, Seoul, Korea

Speaker for Cardiovascular/Vascular Ischemia Seminar at Aastrom Biosciences, Inc, 06/06/05, Ann Arbor, MI

“Adipose Derived Stem Cells in Angiogenesis and Tissue Repair: Biology and Therapeutic Potential, How Fat Can Be Good.” 06/15/05, M.D. Anderson Cancer Center, Houston, TX

“Adipose Stromal Cells Are an Abundant Source of Progenitor/Stem Cells for Vascular Growth and Repair” 09/30/05, BMES Annual Fall Meeting, Baltimore, MD

“Cell Therapy for Angiogenesis and Myocardium Rescue”, 12/06/05, Symposium on the Advancement of Acute Coronary Syndrome Evaluation & Strategy, Beijing, China

“Local cell delivery in the cardiovascular system: therapeutic potential and practical challenges”, 12/20/05, Medtronic Forum, Minneapolis, MN

“Adipose-Derived Cells”, 01/19/05, International Conference on Cell Therapy for Cardiovascular Diseases, New York, NY

“Cell Therapy for Angiogenesis and Myocardial Rescue”, 01/30/06, University of Minnesota, Minneapolis, MN

“Update on Pending Adipose Stem Cell Studies – Porcine MI, Human MI, and Human PVD”, 02/17/06, Cellular Therapies Summit, Indianapolis, IN

“Adipose-Derived Stem Cells Are an Abundant Population for Repair of Ischemic Cardiovascular Tissues”, 02/23/06, Molecular Medicine Tri-Conference, San Francisco, CA

“Adipose-Derived stem Cells in Angiogenesis and Tissue Repair: Biology and Therapeutic Potential. How Fat Can Be Good”, 03/29/06, Grand Rounds Presentation, Lilly Research Laboratories, Indianapolis, IN

“Adipose-Derived Stem Cells in Tissue Repair: Moving from Cell Therapy to Targets”, 04/14/06, Lilly Symposium on Applications of Stem Cells in Drug Discovery, Indianapolis, IN

“Alternative sources of CD34+ endothelial progenitor cells”, 05/04/06, 2006 International Society of Cellular Therapy, Berlin, Germany

“Which way to go for angiogenesis: Genes or Cells?”, 05/05/06, 2nd Munich Symposium “New Frontiers in Cardiology”, Munich, Germany

“Adipose Derived Stem Cells in Angiogenesis and Tissue Repair: Biology and Therapeutic Potential. How fat can be good.” 05/26/2006, Center for Vascular Remodeling and Regeneration, University of Pittsburgh, Pittsburgh, PA

“Adipose Derived Stem Cells in Angiogenesis and Tissue Repair: Biology and Therapeutic Potential, How Fat Can Be Good”, 09/29/06, Distinguished BME Seminar Series, University of Virginia, Charlottesville, VA

“Exercise-induced increase in circulating endothelial progenitor cells and monocyte-derived angiogenic cells”, 10/20/06, DetourSils ‘06

INVITED SEMINARS - LAY AUDIENCES

"New Approaches to Heart Disease in the 1990's." 12/11/91, Indiana American Heart Association Affiliate Breakfast, Indianapolis, IN.

"New Approaches to Heart Disease in the 1990's." 2/25/93 - Indianapolis Sunrise Sertoma Club, Indianapolis, IN.

“Why Support the American Heart Walk?” 6/12/98 - Eli Lilly & Company, Indianapolis, IN.

“Research in Vascular Biology and Medicine.” 10/16/99, Grand Council of Cryptic Masons, Moose Jaw, Saskatchewan, Canada

“Research in Vascular Biology and Medicine.” 11/2/99, Grand Council of Cryptic Masons, Wichita, KS.

“Research in Vascular Biology and Medicine.” 9/9/00, Grand Council of Cryptic Masons, Wilmington, DE

“Research in Vascular Biology and Medicine.” 10/20/00, Grand Council of Cryptic Masons, Washington, D.C.

"Research in Vascular Biology and Medicine." 12/5/00, Cryptic Masons, Indianapolis, IN.

“Gene Therapy and the Heart.” 5/20/2001, Sages Program, Second Presbyterian Church, Indianapolis, IN.

"Research in Vascular Biology and Medicine." 08/01, Cryptic Masons, Indianapolis, IN.

"Research in Vascular Biology and Medicine." 12/01, Cryptic Masons, Indianapolis, IN.

"Research in Vascular Biology and Medicine." 03/02, Cryptic Masons, Indianapolis, IN.

"Research in Vascular Biology and Medicine." 05/20-22/2004, 134th Grand Assembly of the Grand Council of Cryptic Masons of Minnesota in St. Cloud, MN.

Keynote Speaker for Northeast Conference of CMMRF, 09/12/04, Farmington, CT

“Adult Stem Cell Research” 03/02/05, The Mid-North Shepherd’s Center, Indianapolis, IN

Speaker for CMMRF East Central Region Conference, 03/12/05, Lexington, KY

“Adult Stem Cell Research”, Speaker for Legatus, 06/16/05, Indianapolis, IN

United States Patents Issued/Allowed

Total Licensing Income to Indiana University > \$10.1 Million

Light activation of photoactivatable compounds to reduce restenosis after angioplasty.

1. Method for Preventing Restenosis Following Reconfiguration of Body Vessels. U.S. Patent #5,116,864. Issued May, 1992.

Catheter-based delivery of sustained-release compounds using microparticles to modulate vessel proliferation and reduce restenosis.

2. Method for Delivery of Smooth Muscle Cell Inhibitors. U.S. Patent #5,171,217. Issued December, 1992.

Non-surgical suture-based closure of vascular openings such as after catheterization.

3. Apparatus and Method for Positive Closure of an Internal Tissue Membrane Opening. Patent #5,304,184. Issued April, 1994.
4. Apparatus and Method for Positive Closure of an Internal Tissue Membrane Opening. U.S. Patent #5,476,469. Issued December, 1995.
5. Apparatus and Method for Positive Closure of an Internal Tissue Membrane Opening. U.S. Patent #5,720,757. Issued February 24, 1998.
6. Apparatus and Method for Positive Closure of an Internal Tissue Membrane Opening. U.S. Patent #5,810,850. Issued September 22, 1998.
7. Apparatus and Method for Positive Closure of an Internal Tissue Membrane Opening. U.S. Patent #6,132,440. Issued October 17, 2000.
8. Apparatus and Method for Positive Closure of an Internal Tissue Membrane Opening. U.S. Patent #6,348,059. Issued 2002.

Catheter for intravascular drug delivery separating mechanisms of contact with vessel wall and infusion of drug.

9. Method and Apparatus for Intravascular Drug Delivery. Patent #5,306,250. Issued April, 1994

Approach to enhance the efficiency and diminish the toxicity of gene therapy.

10. Use of Polyols for Improving the Introduction of Genetic Material into Cells. U.S. Patent #5,552,309. Issued September 3, 1996.

Use of the pericardial space to perform gene delivery for treatment of the heart and blood vessels.

11. Pericardial Delivery of Therapeutic and Diagnostic Agents. U.S. Patent #5,797,870. Issued August 25, 1998.

Combination therapy with lasers or other energy systems in conjunction with proteins or genes and polymers to enhance therapy for the heart.

12. Therapeutic and Diagnostic Agent Delivery. U.S. Patent #5,840,059. Issued November 24, 1997.
13. Therapeutic and Diagnostic Agent Delivery. U.S. Patent # 5,997,525. Issued December 07, 1999.
14. Therapeutic and Diagnostic Agent Delivery. U.S. Patent # 6,224,584. Issued May 01, 2001.

Energy – tissue interaction approaches to modulate blood vessel growth.

15. Method of Treating Cardiovascular Disease by Angiogenesis. U.S. Patent # 6,200,259. Issued November 22, 2000.
16. Method of Treating Cardiovascular Disease by Angiogenesis. U.S. Patent # 6,371,905. Issued April 16, 2002.
17. Novel Radioisotopic Method for Irradiation of Coronary Arteries to Suppress Restenosis. U.S. Patent # 6,267,717. Issued 2001.
18. Intrapericardial Delivery of Anti-Microtubule Agents. U.S. Patent # 6,333,347. Issued December 25, 2001.
19. Apparatus and Method for Treating a Body Structure with Radiation. U.S. Patent # 6,267,717. Issued July 31, 2001.
20. Apparatus and method for positive closure of an internal tissue membrane opening. U.S. Patent # 7,0060,078. Issued June 13, 2006.

GRANTS AND FELLOWSHIPS

ACTIVE FUNDING

Veteran's Administration Merit Review Award, *Adipose-Derived Pluripotent Cell Differentiation and Vascular Modulation*, \$800,000, 2005 – 2010, Principal Investigator.

National Institutes of Health (T32), *Training in Vascular Biology & Medicine*, \$1,153,371, 2005-2010, Principal Investigator.

National Institutes of Health (R01), *Adipose Stromal Cells in Vascular Repair and Hematopoiesis*, \$1,856,685, 2004-2009, Principal Investigator

National Institutes of Health (SBIR), *Proteomic Analyses of Cardiovascular Disease States Using Ion Mobility Spectrometry Approaches*, \$50,000, 2005 – 2006, Principal Academic Investigator

Fairbanks Institute. *Indianapolis Predictive Cardiovascular Health Project*, \$10,500,000, 2006-2011, PI, Biologics; Overall co-investigator (PI-Miller).

Guidant Foundation. *Biomedship, Program in Biomedical Entrepreneurship*. \$500,000, 2006-2008
Co-Principal Investigator (Co-PIs, Wodicka, Folta).

National Institutes of Health (R01), *Role of NF1 in angiogenesis and vascular smooth muscle*.
\$1,839,776, 2005-2010, Co-Investigator (PI-Ingram).

National Institutes of Health (R01), *Exercise, Diabetes & Coronary Smooth Muscle Ca²⁺*, \$428,388,
2005-2010, Co-Investigator (PI-Sturek).

Eli Lilly & Company, Inc., *Utilizing the Multipotency of Human Adipose Stromal Cells*, \$437,139,
2003-2007, Principal Investigator.

National Institutes of Health (T32), *Summer Undergraduate Training Program in Physiology*, Mentor .

Cell Factor Technologies, Inc., *Phase II - Adipose Stromal Cells for Wound Repair - Phase II*.
\$67,179, 2005-2006., Principal Investigator.

Cell Factor Technologies, Inc. *Stem Cell Mediated Angiogenesis Trial*. \$455,685, 2005-2007. Co-
Investigator (Murphy).

Cell Factor Technologies, Inc. *Adipose Stromal Stem Cells for Myocardial Repair*. \$652,582, 2005-
2007, Principal Investigator.

Center for Biomaterials & Advanced Technologies. *Cell delivery to promote reperfusion in a mouse
Ischemic Hindlimb Model*. \$68,500, 2005, Principal Investigator.

CBR2 Joint Pilot Grant, Indiana University-Purdue University. *Engineering Extracellular Matrices to
Facilitate Progenitor Cell Survival and Differentiation Following Delivery into Tissues*, \$50,000, 2006
(Co-PI, Sherry Voytik-Harbin),

Baxter Healthcare Corporation, *Preclinical Research Agreement*, \$49,850, 2006

Baxter Healthcare Corporation, *Evaluation of CD34+ cell efficacy in a rat permanent LAD occlusion
model: Impact of changes to Isolex components*, \$152,496 2006-2007

PENDING FUNDING

National Institutes of Health (SBIR), *Proteomics of Cardiovascular Disease States Using Antibody
Library Detection Methods*, Principal Academic Consultant

National Institutes of Health (SBIR), *Use of Expanded Adipose Stem Cells in Peripheral
Angiogenesis*, Principal Academic Investigator

National Institutes of Health (SBIR), *Protein Target Prediction Using Disordered Region
Conformational Modeling*, Academic Consultant

National Institutes of Health (SBIR), *Engineered Matrices in Tissue Repair Cell Survival Following
Cardiovascular Delivery*, Principal Academic Investigator

National Institutes of Health (SBIR), Coronary Luminal Quantitation via Novel Electric Field Methods, Academic Co-Investigator

PAST FUNDING

Medtronic, Inc. *Intrapericardial Delivery Of Nitric Oxide To Induce Angiogenesis In The Hypercholesterolemic Pig Coronary Ischemic Model*, \$176,724, 2004-2006, Co-Investigator (Hou).

Advanced Cardiovascular Systems, *Development of a Drug Delivery System for Treatment of Angioplasty, Restenosis*, \$653,485, 1990 – 1996, Principal Investigator

American Heart Association, *Vascular Smooth Muscle Gene Transduction by Adeno-associated Virus Vectors*, \$50,000, 1991 – 1993, Principal Investigator

Veteran's Administration Research Advisory Group, *Calpain Activation in Vascular Smooth Muscle Proliferation*, \$75,500, 1991 – 1993, Principal Investigator

Advanced Cardiovascular Systems, *Phototherapy for Treatment of Angioplasty, Restenosis*, \$195,372, 1993-1994, Principal Investigator

Veteran's Administration Merit Review Award, *Vascular Smooth Muscle Immortalization and Cell Cycle Control*, \$314,900, 1993-1996, Principal Investigator

Genetic Therapy, Inc., *Cardiovascular Genetic Therapeutics*, \$187,110, 1994-1996, Principal Investigator

Wellcome Research Laboratories, *Multicenter Intramural Delivery Catheter Evaluation of Safety and Transfer (includes support as core laboratory for drug delivery analysis)*, \$42,000, 1995, Principal Investigator

Cordis Corporation, *Evaluation of Approaches for Intramural Vascular Delivery and Retention of Agents*, \$200,872, 1995-1996, Principal Investigator

Cordis Corporation, *Evaluation of Microporous Infusion Catheter Delivery*, \$22,000, 1995-1996, Principal Investigator

American Heart Association, *Transgenic Models of Smooth Muscle Proliferation*, \$66,000, 1995-1998, Sponsor

American Heart Association, *Adenoviral Approaches to Angiogenesis*, \$66,000, 1995-1998, Sponsor

National Institutes of Health, *Nonimmune Defense against Tuberculosis in the Lung*, \$1,474,000, 1995-2000, Co-Investigator (Principal Investigator, Dr. William Martin)

Cryptic Masons Atherosclerosis Fund, *Arterial Growth Regulation and Gene Transfer*, \$240,000, 1995-2001, Mentor

Chiron Corporation, *Evaluation of Pericardial Drug Delivery for Cardiovascular Therapeutic Application*, \$150,000, 1996-1997, Principal Investigator

Max Kade Foundation, *Vascular Response to Injury and Pharmacologic and Genetic Modulation of this Response*, \$40,000, 1996-1997, Principal Investigator

PDT, Inc., *Evaluation of SNET2 in Restenosis*, \$51,739, 1996-1997, Principal Investigator

eMed Corporation, *Utility of Iontophoresis in Local Coronary Drug Delivery*, \$60,000, 1997, Principal Investigator

Cardiogenesis, Inc., *Transmyocardial Revascularization (TMR) and Cardiac Innervation*, \$167,358.50 1997-1998, Principal Investigator

Veteran's Administration Merit Review Award, *Vascular Smooth Muscle Immortalization and Cell Cycle Control*, \$283,500, 1997-2000, Principal Investigator

Schwarz-Pharma, *Endovascular Drug Delivery of AS-c-myc*, \$40,900, 1998, Principal Investigator

Angiotech, *Intrapericardial Delivery of Taxol to Prevent Restenosis*, \$50,000, 1998, Principal Investigator

Megabios, *Plasmid-based Gene Therapy to Prevent Restenosis*, \$78,000, 1997-1998, Principal Investigator

Guidant, Inc., *Ga-68 Positron Radiation to Prevent Restenosis*, \$63,991.00, 1997-1998, Principal Investigator

American Heart Association Student Scholar Research Grant, *Intramyocardial Cell Engraftment via retrograde Coronary Venous Delivery*, \$2,000, 2001, Sponsor

National Institutes of Health (R01), *Smooth Muscle Diversity and Cell Cycle Control*, \$783,945, 1997-2002, Principal Investigator

National Institutes of Health (R21), *Non-Invasive Myocardial Revascularization Using Targeted Proton Beam Irradiation for Induction of Angiogenesis*, \$188,924, 1998-2002, Principal Investigator

National Institutes of Health (SBIR), *Ultrasound Assisted Transmural Drug Delivery*, \$422,675, 2000 – 2002, Principal Academic Investigator

Percardia, Inc., *Ventricular Arterial Bypass Revascularization*, \$379,428, 2000-2002, Principal Investigator

Valentis, Inc., *Retrograde Coronary Delivery of Plasmids for Myocardial Angiogenesis*, \$283,000, 2000 – 2002, Principal Investigator

Boehringer-Ingelheim, *Therapeutic Arteriogenesis Using Locally Delivered MCP-1 in the Porcine Femoral Arterial System*, \$100,000, 2000-2002, Principal Investigator

Pfizer, Inc., *Effects of Statins on Circulating Endothelial Progenitor Cells*, \$39,500, 2002, Principal Investigator

Edwards Life-Sciences, *Retrograde Coronary Delivery of Plasmids for Myocardial Angiogenesis*, \$205,000, 2003-2004, Principal Investigator

Venomatrix, Inc, *Interstitial Retrograde Venous Cell Delivery*, \$214,465, 2003-2006, Principal Investigator

U.S. Civilian Research & Development Foundation, *Angiogenesis Control by the Urokinase System: Biochemical Mechanisms and Gene Therapy Approaches to Ischemia*, \$80,000, 2003-2005, Principal Investigator.

Cell Factor Technologies, Inc.. *Phase I – Adipose Stromal Cells for Wound Repair*. \$32,568, 2005. Principal Investigator. The major goal of this project is to process fat and isolate stem cells.

Veteran's Administration Merit Review Award, *Molecular Mechanisms Directing Artery Remodeling*, \$744,500, 2000 – 2005, Principal Investigator

PRINT AND ELECTRONIC PUBLICATIONS

TEACHING

REFEREED TEXT CHAPTERS AND BOOKS

1. **March KL**. The History of the Computer and Applications and Social Impacts of the Computer. In: Ohme PA, Woodall DB, Leggett MA, eds. *A Course in Basic Programming*. Mississippi College Press. 1976; 121-131.
2. Singh JP, **March KL**. Inhibitors of Vascular Smooth Muscle Cell Proliferation as Therapy for Restenosis Following PTCA: Current Agents and Approaches. In: Vogel J, King S, eds. *Interventional Cardiology: Future Directions*, 2nd Edition. Mosby Year Book. 1993; 535-546.
3. Hathaway DR, Adam LP, Wilensky RL, **March KL**. An Overview of the Structure and Function of Vascular Muscle. In: Willerson JT, Cohn JN, eds. *Cardiovascular Medicine*. Churchill Livingstone. 1995; 1042-1052.
4. **March KL**, ed. *Gene Transfer in the Cardiovascular System: Experimental Approaches and Therapeutic Implications*. Boston: Kluwer Academic Publishers. 1997.
5. Hathaway DR, **March KL**. Vascular Biology. In: Kelley WN, ed. *Textbook of Internal Medicine*, 3rd Ed. Philadelphia: Lippincott-Raven. 1997; 66-72.
6. Hou DM, **March KL**. The Intrapericardial Approach for Therapeutic Angiogenesis. In: Kornowski, L, Epstein S, Leon M, eds. *Handbook of Myocardial Revascularization*. London: Martin Dunitz Publishers. 1999; 189-200.

7. Sindermann J, Adam L, **March KL**. Molecular and Cellular Physiology of Differentiated Vascular Smooth Muscle. In: Willerson JT, Cohn JN, eds. Cardiovascular Medicine, 2nd Ed. Churchill Livingstone. 2000; 1275-1285.
8. Sindermann JR, Babij P, Köbbert C, Klink JC, Ebbing J, Plenz G, **March KL**. Transgenic mouse models of smooth muscle cell cycle reentry: implications for adaptive arterial remodeling. In: Heinle H, Schulte H, von Eckardstein A (Eds.). Vaskuläre Inflammation und endotheliale Dysfunktion. Köhler, Tübingen, Germany, 2005. pp. 67-71.
9. Rehman J, **March KL**. Stem Cells and Cardiovascular Disease. In: Runge M, Patterson C, eds. Textbook of Molecular Cardiology. London: Martin Dunitz Publishers. 2005; 5:71-80.
10. Bailey S, **March KL**. Lessons from NonStent Based Local Drug Delivery. In: Stone GW, Leon MB, eds. Textbook of Coronary Stenting. New York City: CRF Publications. In Preparation.

RESEARCH, SCHOLARSHIP, OR CREATIVE ACTIVITIES

REFEREED RESEARCH MANUSCRIPTS

1. Friend SH, **March KL**, Hanania GI, Gurd FR. Charge-Site Communication in Proteins: Electrostatic Heme Linkage of Azide Binding by Sperm Whale Myoglobin. Biochemistry. 1980 Jun 24; 19(13):3039-47.
2. **March KL**, Maskalick DG, England RD, Friend SH, Gurd FR. Analysis of Electrostatic Interactions and Their Relationship to Conformation and Stability of Bovine Pancreatic Trypsin Inhibitor. Biochemistry. 1982 Oct 12; 21(21):5241-51.
3. Matthew JB, Gurd FR, Garcia-Moreno B, Flanagan MA, **March KL**, Shire SJ. pH-Dependent Processes in Proteins. CRC Crit Rev Biochem. 1985; 18(2):191-7.
4. Garcia-Moreno B, Chen LX, **March KL**, Gurd RS, Gurd FR. Electrostatic Interactions in Sperm Whale Myoglobin: Site Specificity, Roles in Structural Elements, and External Electrostatic Potential Distributions. J Biol Chem. 1985 Nov 15; 260(26):14070-82.
5. Hathaway DR, **March KL**. Molecular Cardiology: New Avenues for the Diagnosis and Treatment of Cardiovascular Disease. J Am Coll Cardiol. 1989 Feb; 13(2):265-82.
6. **March KL**, Sawada SG, Tarver RD, Kesler KA, Armstrong WF. Current Concepts of Left Ventricular Pseudoaneurysm: Pathophysiology, Therapy, and Diagnostic Imaging Methods. Clin Cardiol. 1989 Sep; 12(9):531-40.
7. Hathaway DR, **March KL**, Lash JA, Adam LP, Wilensky RL. Vascular Smooth Muscle: A Review of the Molecular Basis of Contractility. Circulation. 1991 Feb; 83(2):382-90.
8. Wilensky RL, **March KL**, Hathaway DR. Direct Intraarterial Wall Injection of Microparticles Via a Catheter: A Potential Drug Delivery Strategy Following Angioplasty. Am Heart J. 1991 Oct; 122(4 Pt 1):1136-40.

9. **March KL**, Wilensky RL, Hathaway DR. Novel Drug and Device Combinations for Targeted Prevention of Restenosis. *Cardio Intervention*. 1992; 2:11-26.
10. **March KL**, Patton BL, Wilensky RL, Hathaway DR. 8-Methoxypsoralen and Longwave Ultraviolet Irradiation are a Novel Antiproliferative Combination for Vascular Smooth Muscle. *Circulation*. 1993 Jan; 87(1):184-91.
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