## **Biographical and Bibliographic Information**

Phillip Chung-Ming Yang

Date of Birth: August 25, 1962 Citizenship: United States

Licensure: California State Medical License #G73144

 Telephone:
 (650) 498-8008

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 (650) 724-4034

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 phillip@stanford.edu

### A. Academic history:

## Colleges and universities attended, degrees received, dates:

9/1980-6/1984 B.A.S. East Asian Studies and Biology

Stanford University, Stanford, CA

9/1984-6/1985 M.A. East Asian Studies

Stanford University, Stanford, CA

9/1985-6/1989 M.D. Yale University

New Haven, CT

## Scholarships and honors:

1980 *Cum Laude*, Deerfield Academy

Deerfield, MA

9/1983 Senator, Association of Students

Stanford University, Stanford, CA

6/1984 University Honors, Biology and East Asian Studies

Stanford University, Stanford, CA

9/1988 Research Fellowship, Yale University School of Medicine

New Haven, CT

5/1989 *Cum Laude*, Yale University School of Medicine

New Haven, CT

#### Post-doctoral and residency training:

7/1989-6/1990\* Internship in Medicine, University of California

Los Angeles, CA

7/1991-6/1993 Residency in Medicine, University of California

Los Angeles, CA

7/1994-6/1997 Fellowship, Cardiovascular Medicine Program

Stanford University School of Medicine, Stanford, CA

7/1997-6/1999 Fellowship, Cardiac MRI Program
Stanford University School of Medicine, Stanford, CA

## Other study and research opportunities:

### Research Grants (*current*):

#### 9/01/09-8/31/13 NIH/NHLBI

1R01 HL097516-01

Comprehensive In Vivo MRI of Mouse Embryonic Stem Cell Myocardial Engraftment

The major goal of this project is to conduct comprehensive in vivo MRI of mESC engraftment

**Role: Principal Investigator** 

#### 1/30/12-1/29/13 Stanford Cardiovascular Institute

Seed Grant

STEM9 Stanford Consortium on Cardiovascular Differentiation
The major goal of this study is to generate a scalable platform to produce pluripotent stem cell derived electromechanically synchronous contractile tissue construct.

Role: Principal Investigator

#### 10/1/11-9/31/12 Stanford Cardiovascular Institute

Seed Grant

Novel In Vivo Manganese-Enhanced MRI Evaluation of Stem Cell Viability and Myocardial Restoration in Porcine Model of Ischemic Cardiomyopathy The major goal is to assess stem cell viability following delivery into the injured porcine myocardium using a novel cellular MRI contrast agent.

Role: Principal Investigator

#### 1/1/10-2/1/12 Boehringer-Ingelheim

The Effect of Telmisartan on Diabetic Cardiomyopathy: An in Vivo Magnetic Resonance Imaging Study

The major goal of this investigation is to determine the role of angiotensin receptor blocker in a murine diabetic cardiomyopathy model.

Role: Principal Investigator

#### 4/1/12 - 3/31/19 NIH/NHLBI

UM1 (HL-12-026)

Cell Characterization and Imaging for Regenerative therapies in Ischemic Diseases – Cardiovascular Cell Therapy Research Network

The goal of this proposal is to conduct a multicenter stem cell clinical trial to image the stem cells and their effects following acute myocardial infarction..

Role: **Co-Principal Investigator** PI: John Cooke

<sup>\*</sup> Dr. Yang spent a year in Japan from 7/1990 – 6/1991, helping with family matters.

## 12/1/11-11/30/12 CIRM

Disease Team Therapy Development Award

Human Embryonic Stem Cell-Derived Cardiomyocytes for Patients with End Stage Heart Failure

The goal of this proposal is to conduct a Phase I clinical trial to determine the safety of human embryonic stem cell derived cardiomyocytes for patients with end-stage heart failure.

Role: Investigator PI: Robert Robbins

### 7/1/11-6/30/15 NIH/NHLBI

2 T32 HL007846-11

Training in Cardiac Magnetic Resonance Imaging

The major goal is to provide comprehensive training in cardiac MRI for predoctoral electrical engineering students specializing in biomedical imaging.

Role: Investigator

PI: Dwight Nishimura

2/1/11-1/31/16 NIH/NHLBI

1P20HL101408-01

Using Genetics for Early Phenotyping & Prevention of HCM (HCMNet) The major goal of this clinical trial is to assess whether exercise reduces early subclinical manifestation of hypertrophic cardiomyopathy in genotype positive population.

Role: Investigator PI: Euan Ashley

9/30/10-9/29/13 NIH/AHRQ

1RO1HS019738-01

Comparative Outcomes Management with Electronic Data Technology (COMET)

The major goal of this trial to compare the cardiovascular outcome in sleep apnea patients using CPAP vs. oral appliance and to organize he findings into an electronic data-base.

Role: Director of Cardiovascular and Imagine Core PI: Clete Kushida

9/1/10-8/31/14 NIH/NHLBI

1P50HL084946

A 36-week, randomized, double-blind, parallel group study comparing the effects of ambrisentan monotherapy, tadalafil monotherapy, and combination therapy with tadalafil and ambrisentan in patients with pulmonary arterial hypertension associated with systemic sclerosis (ATPAHSS).

The major goal is to assess the cardiovascular effects of monotherapy vs. combination therapy in patients with SSc-PAH.

Role: Investigator PI: Roham Zamanian

9/25/09-9/24/12 Osiris Theraputics

A Phase II, Multi-center, Randomized, Double-blind, Placebo-controlled Study to Evaluate the Safety and Efficacy of PROCHYMAL Intravenous Infusion Following Acute Myocardial Infarction

The major goal is to conduct Phase II clinical trial to assess efficacy of Prochymal infusion in acute MI.

Role: Investigator PI: Alan Yeung

#### 9/1/09-8/31/14 NIH/NIAID

U19AI082719

A Randomized, Double-blind, Placebo-Controlled, Phase II Multicenter Trial of a Monoclonal Antibody to CD20 (Rituximab) for the Treatment of Systemic Sclerosis-Associated Pulmonary Arterial Hypertension - RESOTRE sub study: Right Ventricular Response to Rituximab in Systemic Sclerosis-Associated Pulmonary Arterial Hypertension – A Magnetic Resonance Imaging Substudy.

The major goal is to assess the cardiovascular effects of rituximab in patients with systemic sclerosis-associated pulmonary hypertension.

Role: Investigator PI: Mark Nicolls

## Research Grants (mentored):

#### 08/15/09-6/30/14 NIH/NHLBI

1K08HL097022-01 Mentored Clinical Scientist Award

Cardiac Magnetic Resonance to Detect Apoptosis In Vivo Using Magnetic Labeling

The major goal of this project is to synthesize and characterize a magnetically-labeled protein, designed to detect apoptosis in cells and tissue using MRI.

Role: Mentor

PI: Rajesh Dash

#### 07/1/11-6/30/15 NIH/NHLBI

2 T32 HL007846-11

Training in Cardiac Magnetic Resonance Imaging

The major goal is to provide comprehensive training in cardiac MRI for predoctoral electrical engineering students specializing in biomedical imaging.

Role: Investigator

PI: Dwight Nishimura

#### 12/1/08-11/30/13 NIH/NHLBI

T32 EB 009035

Multi-Disciplinary Training Program in Cardiovascular Imaging
The major goal is to provide a multi-disciplinary training program for post-doctoral fellows in cardiovascular imaging..

Role: Investigator PI: Dwight Nishimura

### Research Grants (pending):

#### 4/1/12 -3/31/16 NIH/NIBIB

R01 (PA-10-067)

Evaluation of Myocardial Restoration by Stem Cells Using Manganese Enhanced MRI (MEMRI)

The goal of this proposal is to identify the underlying mechanism of stem cell mediated myocardial restoration using a novel MEMRI technique.

Role: Principal Investigator

## Research Grants (past):

9/1/07-8/31/11 NIH/NHLBI

3R01 HL39297

Noninvasive Coronary Artery Imaging

The major goal of this project is to develop fast MR vessel imaging methods that address the challenges to coronary artery imaging

Role: Investigator PI: Dwight Nishimura

9/1/10-8/31/11 Stanford

VPUE Faculty Grant for Undergraduate Research

Nanoparticle-mediated enhancement of cardiovascular stem cell engraftment The major goal of this grant is to employ nanoparticles to enhance stem cell engraftment following transplantation into the murine myocardium.

Role: Principal Investigator

6/1/11-8/31/11 American Heart Association

Undergraduate Fellowship

Novel Tissue-Engineering Construct with Nanoparticles to Enhance Survival and Engraftment of Mouse Embryonic Stem Cells

The major goal of this grant is to bind small molecules to nanoparticles to increase myocardial engraftment of the stem cells.

Role: Mentor PI: Grace Do

6/1/11-8/31/11 American Heart Association

Undergraduate Fellowship

Immunoprivileged Induced Pluripotent Stem Cells Generated from Human

Placenta Stem Cells

The major goal of this study is to assess the persistence of the immunomodulatory effects following reprogramming of human placenta

mesenchymal stem cells into pluripotent stem cells.

Role: Mentor PI: Svetlana Lvalina

6/1/11-8/31/11 American Heart Association

Undergraduate Fellowship

Cardiac Differentiation of the Human Placenta Derived Induced Pluripotent

Stem Cell

The major goal of this study is to determine the most effecient method to differentiate human placental mesenchymal derived stem cells into cardiac cells and assess their restorative potential using murine myocardial injury model.

Role: Mentor PI: Michael Qian

6/1/11-8/31/11 Stanford VPUE

Major Student Grant

Novel Tissue-Engineering Construct with Nanoparticles to Enhance Survival and Engraftment of Mouse Embryonic Stem Cells

The major goal of this grant is to synthesize tissue-engineered construct with nanoparticles to enhance survival and engraftment of stem cells in the mouse heart.

Role: Mentor PI: Grace Do

6/1/11-8/31/11 Stanford VPUE

Minor Student Grant

The Effects of Nanographene Oxide Particles on the Viability and

Proliferation of Mouse Embryonic Stem Cells

The major goal of this grant is to assess biocompatibility of the nanographene oxide particles.

Role: Mentor PI: Grace Do

6/13/11-8/31/11 Stanford Bio-X

Undergraduate Summer Research Program

Immunoprivileged Induced Pluripotent Stem Cells Generated from Human

Placenta Stem Cells

The major goal of this grant is to determine if iPSCs derived from placental cells have immunopriveleged status and gauge their survival and restorative potential in a murine model

Role: Mentor PI: Svetlana Lyalina

7/1/10-7/30/11 Stanford

Dean's Fellowship

Robust Cardiac Differentiation Protocol of Embryonic Stem Cells
The major goal of this project is to employ MRI reporter gene to direct, identify, and select cardiac progenitor cells.

Role: Mentor PI: I-Ning (Elaine) Wang

9/1/10-8/31/11 Stanford

Katherine McCormick Fellowship

"Molecular MRI and Nanoparticle for Stem Cell Differentiation and Engraftment"

The major goal of this project is to assess the role of carbon nanoparticles and graphite oxide in providing biological scaffold for stem cell engraftment and differentiation.

Role: Mentor PI: I-Ning (Elaine) Wang

10/1/09-9/30/10

CIRM Research Fellowship Training Program

In vivo molecular and cellular MRI to detect human ESC induced teratoma formation

The major goal is to develop cellular and molecular MRI techniques for early detection of teratoma formation by the transplanted pluripotent stem cells Role: Mentor

PI: Jaehoon Chung

8/15/09-8/14/10

Center for Biomedical Imaging at Stanford

Seed Project

Molecular MRI for Differentiation, Imaging, and Selection of Cardiac Progenitor Cells

The major goal is to generate, image, and purify cardiac progenitor cells using molecular MRI differentiation reporter gene.

**Principal Investigator** 

10/1/08-9/30/10

Stanford University

Bio-X Award

Functional Assessment of Primary and Embryonic Stem Cell Derived Cardiomyocytes

The major goal is to assess contractile properties of mESC derived cardiomyocytes.

Co-Principal Investigator PI: Daniel Bernstein

6/1/07-5/31/10 California Institute for Regenerative Medicine

RS1-00326-1 SEED

*In Vivo Molecular MRI of hESC in Murine Model of Myocardial Infarction.* The major goal is to develop reporter gene-based *in vivo* MRI of hESC engraftment in ischemic murine myocardium.

**Principal Investigator** 

9/1/06-5/31/10 Baxter Healthcare

Pharmaceutical Development

A Double-Blind, Prospective, Randomized, Placebo-Controlled Study to Determine the Tolerability, Efficacy, Safety, and Dose Range of Intramyocardial Injections of G-CSF Mobilized Auto- - CD34+ Cells for Reduction of Angina episodes in Patients with Refractory Chronic Myocardial Ischemia (ACT34 – CMI).

The major goals of this project are to study the efficacy of autologous bone marrow stem cell transplant in patients with refractory angina. Investigator

2/5/07-1/31/10

NIH/NHLBI Career Enhancement Award in Stem Cell 1 K18 HL087198 Cellular and Molecular MRI of Stem Cell Viability

The major goal is to conduct *in vivo* cellular and molecular MRI to determine viability of mouse embryonic stem cells.

**Principal Investigator** 

7/1/07-6/30/09 American Heart Association

Post-Doctoral Fellowship

Cardiac Magnetic Resonance Imaging to Detect Apoptosis *In Vivo*The major goal is to develop targeted cellular and molecular MRI techniques to assess cell death following transplantation into the injured myocardium.

Mentor

PI: Rajesh Dash, MD, PhD

7/1/07-6/30/09

Stanford University Bio-X Interdisciplinary Initiatives Program Development of Novel Targeted Nanocrystal-Based *In Vivo* Magnetic Resonance Imaging (MRI) Contrast Agents

The major goal is to optimize recent advances in nanocrystal-based targeted MRI contrast agents to evaluate step cell biology at more fundamental cellular and molecular levels.

Investigator PI: Dwight Nishimura, PhD

2/29/08-2/28/09

Stanford Cardiovascular Institute

Seed Grant

Nuclear reprogramming for Vascular Regeneration in Critical Limb Ischemia
The major goal is to develop of induced pluripotent vascular stem cells.
Investigator
PI: John Cooke, MD, PhD

7/1/06-6/30/08 American Heart Association - California Affiliate 0665189Y

In Vivo Cellular and Molecular MRI of Stem Cell Viability

The major goal is to develop cellular and molecular techniques utilizing novel magnetic resonance imaging methods to assess stem cell viability following transplantation in the injured myocardium.

**Principal Investigator** 

7/1/07-6/30/08 Stanford University Dean's Fellowship

In Vivo Cellular MRI of Step Cell Viability Using Targeted Manganese-Based

Contrast Agent

The major goal is to develop *in vivo* cellular and molecular MRI techniques to assess stem cell viability utilizing manganese-based contrast agents following transplantation into the inured myocardium.

Mentor PI: Mayumi Yamada, MD

9/3/02-8/31/07 NIH/NHLBI 2 R01 HL39297

Noninvasive Coronary Artery Imaging

The major goal is to develop fast MR vessel imaging methods that address the

challenges to coronary artery imaging.

Investigator PI: Dwight Nishimura, PhD

8/1/03-7/31/07 NIH/NHLBI 1 R01 HL074332

Comprehensive Assessment of Valvular Function with MRI

The major goal is to develop rapid techniques to perform comprehensive assessment of valvular morphology, physiology, and disease using MRI.

Investigator PI: John Pauly, PhD

2/1/03-1/31/07 NIH/NHLBI R01 HL 067161

Integrated Myocardial Ischemia Assessment with MRI

The major goal is to develop and test an integrated myocardial contraction and perfusion assessment through rapid imaging and reconstruction techniques.

Investigator PI: John Pauly, PhD

10/1/05-9/30/06 Donald W. Reynolds Cardiovascular Research Center

Multi-modality Imaging of Myocardial Stem Cell Role Therapy

The major goal is to develop multi-modality imaging capability of stem cells

transplanted into murine myocardium.

**Principal Investigator** 

10/1/00-9/30/05 NIH/NHLBI 5 K23 EB002063

Comprehensive Assessment of Ischemic Heart Disease using MRI

The major goal is to enable imaging of coronary artery, stress wall motion, stress myocardial perfusion, and viability using real-time interactive MRI.

**Principal Investigator** 

# Medical Board eligibility or boards passed, with date(s):

1989		National Board of Medical Examiners, Diplomat
1993		A.B.I.M. Diplomate, Internal Medicine
1994		Japanese National Board of Medical Examiners, Diplomat
1999		A.B.I.M. Diplomate, Cardiovascular Disease
2009		A.B.I.M. Diplomate, Cardiovascular Disease Recertification
2004		Society for Cardiovascular Magnetic Resonance (SCMR), Cardiovascular Magnetic Resonance Imaging, Level III
2008		American Society of Echocardiography (ASE), Echocardiography, Level III
	Licensure	

### California Medical Board Lic. # G73144

1991 Drug Enforcement Agency Lic. # BY5953751 2001

# B. Employment history: List all academic and non-academic positions.

## Academic positions:

<ul> <li>7/1/04-1/31/05 Instructor in Medicine, Division of Cardiovascular Medicine Stanford University School of Medicine</li> <li>2/1/05-4/30/05 Acting Assistant Professor of Medicine (Cardiovascular Medicine) Stanford University School of Medicine, Stanford, CA</li> <li>5/1/05-4/30/08 Assistant Professor of Medicine (Cardiovascular Medicine) Stanford University School of Medicine, Stanford, CA</li> <li>5/1/08-8/31/08 Assistant Professor of Medicine (Cardiovascular Medicine) Stanford University School of Medicine, Stanford, CA</li> <li>9/1/08-4/30/12 Assistant Professor of Medicine (Cardiovascular Medicine) Stanford University School of Medicine, Stanford, CA</li> </ul>	9/1/02-6/30/04	Clinical Instructor, Division of Cardiovascular Medicine Stanford University School of Medicine, Stanford, CA
Stanford University School of Medicine, Stanford, CA  5/1/05–4/30/08 Assistant Professor of Medicine (Cardiovascular Medicine) Stanford University School of Medicine, Stanford, CA  5/1/08–8/31/08 Assistant Professor of Medicine (Cardiovascular Medicine) Stanford University School of Medicine, Stanford, CA  9/1/08–4/30/12 Assistant Professor of Medicine (Cardiovascular Medicine)	7/1/04-1/31/05	·
Stanford University School of Medicine, Stanford, CA  5/1/08–8/31/08 Assistant Professor of Medicine (Cardiovascular Medicine) Stanford University School of Medicine, Stanford, CA  9/1/08–4/30/12 Assistant Professor of Medicine (Cardiovascular Medicine)	2/1/05-4/30/05	` ` ` ` ` ` ` ` ` ` ` ` ` ` ` ` ` ` ` `
Stanford University School of Medicine, Stanford, CA  9/1/08–4/30/12 Assistant Professor of Medicine (Cardiovascular Medicine)	5/1/05-4/30/08	· · · · · · · · · · · · · · · · · · ·
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	9/1/08-4/30/12	· · · · · · · · · · · · · · · · · · ·

# Non-Academic positions:

7/01/95-8/31/02	Staff Physician, Division of Cardiovascular Medicine Stanford University School of Medicine, Stanford, CA
7/01/98-present	Attending physician, Cardiovascular Medicine In-Patient Service Stanford University Medical Center, Stanford, CA
7/01/98-present	Attending physician, Cardiovascular Medicine Clinic Stanford University Medical Center, Stanford, CA

2/01/02-present Attending Physician, Echocardiography Laboratory Stanford University Medical Center, Stanford, CA
 7/01/02-6/2003 Attending Physician, Echocardiography Laboratory Palo Alto Veterans Affairs Health Care System
 10/01/02-present Attending Physician, Cardiothoracic MR Service Stanford University Medical Center, Stanford, CA
 C. Public and professional service.

## International committees and task forces

2006-present	Member, Scientific Advisory Board, International Congress of Cardiology
2007	International Society for Magnetic Resonance in Medicine
	"Coronary MR Imaging" Symposium Co-Chair
2008	ASEAN Congress of Cardiology, Hanoi, Vietnam, Symposium on Cardiac
	Imaging, Chair
2008	ASEAN Congress of Cardiology, Hanoi, Vietnam, Plenary Session and
	Closing Ceremony, Chair
2010-present	Member, Scientific Advisory Board, International Academy of Cardiology
	and the annual World Congress on Heart Disease
2010-present	Medical Research Council, Expert Reviewer (Cardiovascular Medicine),
	London, UK
2011	Member, Executive Council, International Congress of Cardiology, Los
	Angeles, CA

## National committees and task forces:

2004-2009	AHA, National Grant Study Committee, Member
2004-2009	AHA, Western Region Grant Study Committee, Member
2004-2007	National Center for Space Biological Technologies (NASA), Board Member
2005	American College of Cardiology (ACC) Scientific Sessions; Co-Chair,
	Oral Session: Cardiovascular Magnetic Resonance Imaging: Emerging
	Clinical Trials and Outcome Data
2006	ACC "Potential New Gold Standards in Imaging?" Symposium Chair
2006	AHA, National Center Grant Study Section – Radiology and Surgery
2006	AHA, Western Regional Grant Study Section - Cardiovascular Molecular and
	Cellular Imaging
2007	ACC "Multimodality Imaging in the Catheterization Laboratory"
	Symposium Chair
2007	ACC "Novel Insights from Cardiovascular Magnetic Resonance"
	Symposium Chair
2009	NIH, ARRA Challenge Grant, Review Committee, Member
2010-2012	ACC Annual Scientific Session Program Committee, Member
2011	ACC "Meet the Experts, Outcomes and Cost-Effectiveness of CV Imaging"
	Panelist

2012 ACC "Imaging MRI Applications in Diastology, pulmonary Hypertension, and Congenital Heart Disease" Poster Discussant

## Local committees and task forces:

1/03-present Cardiac MRI Planning Committee, Member

Stanford University Medical Center, Stanford, CA

6/03-present Myocardial Restoration Working Group, Chair

Stanford Cardiovascular Institute, Stanford, CA

11/04-present Cardiovascular Applied Engineering Working Group, Member

Stanford Cardiovascular Institute, Stanford, CA

11/05-present Cell Therapy Committee, Chair

Stanford Cardiovascular Institute, Stanford, CA

9/07-present Steering Committee, Member

Stanford Cardiovascular Institute, Stanford, CA

9/07-present Bio-X, Member

Stanford University, Stanford, CA

9/08-present Institute for Stem Cell Biology and Regenerative Medicine, Member

Stanford University, Stanford, CA

8/10 Ph.D. Qualifying Committee Member, Mechanical Engineering (Gadryn

Higgs, MS)

1/11-present MD Admissions Multiple Mini Interview, Interviewer

Stanford University, Stanford, CA

## **Editorial Experience**:

#### Editorial Board

9/02-9/07 *Journal of Cardiovascular Magnetic Resonance* 

7/09-present World Journal of Stem Cells 10/11-present The Scientific World Journal

#### Reviewer

3/02-present	Circulation
6/03-present	Heart
9/03-present	Journal of the American Medical Association
6/04-present	Journal of the American College of Cardiology
6/04-present	Magnetic Resonance in Medicine
3/05-present	Lancet
6/06-present	Molecular Pharmacology
4/06-present	American Journal of Cardiology

1/09-present	Federation of American Society for Experimental Biology
1/09-present	NMR in Biomedicine
4/09-present	Journal of Molecular and Cellular Cardiology
2/11-present	Stem Cell Reviews and Reports

D. Post-degree honors and awards, if any. Include major invited papers and addresses, memberships in professional associations and learned societies.

# Professional associations and learned societies:

1996-present	American College of Cardiology, Member
1996-present	American Heart Association, Member
1998-present	International Society of Magnetic Resonance in Medicine, Member
1998-present	Society of Cardiovascular Magnetic Resonance, Member
2004-present	American College of Cardiology, Fellow

# **Honors and awards:**

3/1993	Solomon's Scholarship, UCLA Department of Medicine
6/1997	Physiology & Pharmacology Research Award, Cardiovascular Medicine Stanford University School of Medicine
3/1998	Young Investigator Award 2 <sup>nd</sup> Place, American College of Cardiology
6/1998	Edwin L. Alderman Award, Excellence in Research, Cardiovascular Medicine Stanford University School of Medicine
5/2000	NIH/NHLBI, K23 Career Development Award
5/2003	American Federation of Medical Research, Glaxo Smith Kline Scholar
3/2004	Young Investigator Award Finalist: Physiology, Pharmacology and Pathology, American College of Cardiology, Senior Author
6/2004	Division Teaching Award – Mentoring, Department of Medicine Stanford University School of Medicine
3/2005	Young Investigator Award Finalist: Physiology, Clinical Investigators Cardiology and Cardiovascular Surgery Competition, Senior Author
11/2005	Vivien Thomas Young Investigator Award, American Heart Association, Senior Author
3/2007	Young Investigator Award, Finalist, American College of Cardiology, Senior Author
2/2007	NIH/NHLBI, K18 Career Enhancement Award in Stem Cell Research
3/2007	Young Investigator Award, Finalist, ACC, Senior Author
3/2008	Judge, Young Investigator Awards Competition: Physiology, Pharmacology, and Pathology, ACC
11/2009	Melvin Judkins Young Investigator Award, 1 <sup>st</sup> Place, American Heart Association, Senior Author

11/2010 Melvin Judkins Young Investigator Award, 1<sup>st</sup> Place, American Heart

Association, Senior Author

11/2011 Melvin Judkins Young Investigator Award, Finalist, American Heart

Association, Senior Author

- E. A complete list of scholarly publications or other creative works. Distinguish between peer-reviewed and non-peer-reviewed publications. Group original works (e.g., books, articles, performances, exhibitions) separately from other materials (e.g., commentaries, reviews, editorials). Include page numbers.
- E.1. Peer-reviewed articles [48 total; 4 under review]
- E.1.A *Original research* (48 total: 4 under review)
  - 1. Yamauchi T, Raffin TA, **Yang PC**, Sikic BI: Differential protective effects of varying degrees of hypoxia on the cytotoxicities of etoposide & bleomycin. *Cancer Chemother Pharmacol* 1987; 19(4):282-286.
  - 2. **Yang PC**, Kerr AB, Meyer CH, Macovski A, Pauly JM, Hu BS. New real-time interactive cardiac magnetic resonance imaging system complements echocardiography. *J Am Coll Cardiol* 1998;32(7):2049-2056.
  - 3. Kaji S, **Yang PC**, Kerr A, Tang WH, Meyer C, Macovski A, Pauly J, Nishimura DG, Hu B. Rapid evaluation of left ventricular volume and mass without breath-holding using real-time interactive cardiac magnetic resonance imaging system. *J Am Coll Cardiol* 2001;38(2):527-533.
  - 4. Nayak KS, Pauly JM, **Yang PC**, Hu BS, Meyer CH, Nishimura DG. Real-time interactive coronary MRA. *Magn Reson Med* 2001;46(3):430-435.
  - 5. **Yang PC**, Meyer C, Terashima M, McConnell M, Kaji S, Macovski A, Pauly J, Nishimura D, Hu B. Spiral magnetic resonance coronary angiography with rapid real-time localization. *J Am Coll Cardiol* 2003; 41:1134-1141.
  - 6. Hope MD, de la Pena E, **Yang PC**, Liang DH, McConnell MV, Rosenthal DN. A visual approach for the accurate determination of echocardiographic left ventricular ejection fraction by medical students. *J Am Soc Ecocardiology* 2003 Aug; 16:824-831.
  - 7. Ho HK, Jang JJ, Kaji S, Spektor G, Fong A, **Yang PC**, Hu BS, Schatzman R, Quertermous T, Cooke JP. Developmental endothelial locus-1 (del-1), a novel angiogenic protein: its role in ischemia. *Circulation* 2004 Mar 16;109(10):1314-1319. [Role: Developed MRI-based assessment of angiogenesis and acquired and analyzed MRI data.]
  - 8. **Yang PC**, Nguyen PK, Shimakawa A, Brittain J, Hu BS, McConnell MV. Spiral MR coronary angiography at 1.5 Tesla vs. 3 Tesla clinical comparison. *J Cardiovasc Magn Reson* 2004; 6(4):877-884.

9. **Yang PC**, Santos JM, Nguyen, PK, Scott G, Engvall J, McConnell MV, Wright G, Nishimura DG, Pauly JM, Hu BS. Dynamic real-time architecture in magnetic resonance coronary angiography - a prospective clinical trial. *J Cardiovasc Magn Reson* 2004;6(4):885-894.

- 10. Terashima M, Meyer C, Keeffe B, Putz E, de la Pena-Armageur E, **Yang PC**, Hu B, Nishimura D, McConnell M. Noninvasive assessment of coronary vasodilation using magnetic resonance angiography. *J Amer Coll Cardiol* 2005 Jan 4;45(1):104-110. [Role: Developed MRI-based assessment of coronary vasodilation and assisted acquisition and analysis of MRI data.]
- 11. Cunningham CH, Arai T, **Yang PC**, McConnell MV, Pauly J, Conolly S. Positive contrast MRI of cells labeled with magnetic nanoparticles. *Magn Reson Med* 2005 May;53(5):999-1005.

  [Role: Developed and performed the experimental protocols to label and quantitate the
  - iron-oxide labeled mouse embryonic stem cells.]
- 12. Ptasek L, Price E, **Yang PC**. Early Diagnosis of Hemochromatosis-related Cardiomyopathy with Magnetic Resonance Imaging. *J Cardiovasc Magn Reson* 2005;7(4):689-692.
- 13. Terashima M, Hyon MS, de la Pena-Almaguer E, **Yang PC**, Hu BS, Nayak KS, Pauly JM, McConnell MV. High-Resolution Real-Time Spiral MRI for Guiding Vascular Interventions in a Rabbit Model at 1.5T *J Magn Reson Imag* 2005 Nov;22(5):687-90. [Role: Assisted in the development and clinical implementation of high-resolution, real-time spiral MRI]
- 14. Arai T, Kofidis T, Bulte JW, de Bruin J, Venook R, Berry G, McConnell MV, Quertermous T, Robbins R, **Yang PC**. Dual *in vivo* magnetic resonance evaluation of magnetically labled mouse embryonic stem cells and cardiac function at 1.5 t. *Magn Reson Med*. 2006 Jan;55(1):203-9.
- 15. Fenster BE, Chan FP, Yang E, Valantine H, McConnell MV, Berry GJ, **Yang PC.** Images in cardiovascular medicine. Cardiac magnetic resonance imaging for myocarditis: effective use in medical decision making. *Circulation* 2006 Jun 6;113(22):e842-3.
- 16. Kutschkaa I, Chen I, Kofidis T, Arai T, von Degenfeldd G, Sheikh A, Hendry S, Pearl J, Hoyt G, Sista R, **Yang PC**, Blau H, Gambhir SS, Robbins RC. Collagen matrices enhance survival of transplanted cardiomyoblasts and contribute to functional improvement of ischemic rat heart. *Circulation*. 2006 Jul 4;114 (1 Suppl):I167-73. [Role: Acquired and analyzed the MRI data of functional improvement of ischemic rat heart]

17. Tsukiji M, Nguyen P, Narayan G, Hellinger J, Chan F, Herfkens R, Pauly JM, McConnell MV, **Yang PC.** Peri-infarct ischemia determined by cardiovascular magnetic resonance evaluation of myocardial viability predicts future cardiovascular events in patients with severe ischemic cardiomyopathy. *J Cardiovasc Magn Reson*. 2006;8(6):773-9.

- 18. de la Pena E, Nguyen PK, Nayak KS, Yang PC, Rosenthal D, Hu B, Pauly J, McConnell M. Real-time color-flow CMR in adults with congenital heart disease. *J Cardiovasc Magn Reson* 2006; 8(6):809-815.
  [Role: Assisted in the development of the real-time color flow CMR and analyzed and acquired the data]
- 19. Seo WS, Lee JH, Sun X, Suzuki Y, Mann D, Liu Z, Terashima M, Yang PC, McConnell MV, Nishimura DG, Dai H. FeCo/graphitic-shell nanocrystals as advanced magnetic-resonance-imaging and near-infrared agents. *Nat Mater* 2006 Dec; 5(12):971-6. [Role: Transfected the mouse embryonic stem cells with the nanocrystals and acquired and analyzed the MRI data]
- 20. Pan D, Suzuki Y, Yang PC, Rockson SG. Indirect magnetic resonance lymphangiography to assess lymphatic function in experimental murine lymphedema. *Lymphat Res Biol*. 2006; 4(4):211-6. [Role: Acquired and analyzed the MRI data of the mouse tail to correlated with lymphatic function]
- 21. Yue P, Arai T, Terashima M, Sheikh AY, Cao F, Charo DN, Hoyt G, Robbins RC, Ashley EA, Wu J, **Yang PC**, Tsao PS. Magnetic resonance imaging of progressive cardiomyopathic changes in the *db/db* mouse. *Am J Physiol Heart Circ Physiol*. 2007 May; 292(5):H2106-18.

  [Role: Acquired and analyzed the changes in mouse cardiac function]
- 22. Suzuki Y, Zhang S, Drukker M, Yeung A, Robbins R, **Yang PC.** *In vitro* comparison of the biological effects of three transfection methods for magnetically labeling mouse embryonic stem cells with ferumoxides. *Magn Reson Med* 2007. 2007 Jun; 57(6):1173-9.
- 23. Yokota H, Heidary S, Katikireddy CK, Nguyen P, Pauly JM, McConnell MV, **Yang PC.** Quantitative characterization of myocardial infarction by cardiovascular magnetic resonance predicts future cardiovascular events in patients with ischemic cardiomyopathy. *J Cardiovasc Magn Reson.* 2008 Apr 9;10(1):17.
- 24. Li Z, Suzuki Y, Huang M, Cao F, Xie X, Connolly AJ, **Yang PC**, Wu JC. Comparison of reporter gene and iron particle labeling for tracking fate of human embryonic stem cells and differentiated endothelial cells in living subjects. *Stem Cells*. 2008 Apr; 26(4):864-73.

[Role: Acquired and analyzed the MRI data of human embryonic stem cells]

25. Nguyen PK, Meyer C, Engvall J, **Yang PC**, McConnell MV. Noninvasive assessment of coronary vasodilation using cardiovascular magnetic resonance in patients at high risk for coronary artery disease. *J Cardiovasc Magn Reson* 2008 May 30;10(1):28 [Role: Assisted in the development and clinical implementation of high-resolution, real-time spiral MRI and in the acquisition and analysis of the MRI data]

- 26. Hung TC, Suzuki Y, Caffarelli A, Hoyt G, Sheikh AY, Yeung AC, Robbins RC, Bulte JWM, **Yang PC.** Multi-modality evaluation of the viability of stem cells delivered into different zones of myocardial infarction. *Circ Cardiovasc Imaging 2008;1:6-13.* (**Lead article of inaugural issue**)
- 27. Hendry SL, Vanderbogt K, Arai T, Dylla SJ, Drukker M, Sheikh AY, Kutschka I, Hoyt G, Connolly A, Pelletier M, Wu JC, Robbins RC, **Yang PC.** Multimodal evaluation of in vivo magnetic resonance imaging of myocardial restoration by mouse embryonic stem cells. *J Cardiovasc Thorac Surg* 2008 Oct;136(4):1028-1037.e1. (AHA Vivien Thomas YIA, 2006)
- Suzuki Y, Cunningham CH, Noguchi K, Yeung AC, Robbins RC, Yang PC. In Vivo Serial Evaluation of Super-Paramagnetic Iron-Oxide Labeled Stem Cells by Off-Resonance Positive Contrast. Magn Reson Med 2008 Dec;60(6):1269-75.
- 29. Uchida M, Terashima M, Cunningham C, Suzuki Y, Willits D, Willis A, Yang PC, Tsao P, McConnell M, Young M, Douglas T. A Human Ferritin Iron Oxide Nano-composite Magnetic Resonance Contrast Agent. *Magn Reson Med* 2008 Nov;60(5):1073-81. [Role: Developed and performed the experimental protocols to label the mouse embryonic stem cells with iron oxide nano-composite contrast agent.]
- 30. Chen I, Greve J, Gheysens O, Willmann J, Rodriguez-Porcel M, Chu P, Sheikh A, Faranesh A, Ramasamy P, **Yang PC**, Wu J, Gambhir S. Comparison of optical bioluminescence reporter gene and superparamagnetic iron oxide MR contrast agent as cell markers for noninvasive imaging of cardiac cell transplantation. *Mol Imaging Bio* 2009 May-Jun;11(3):178-87. Epub 2008 Nov 25. [Role: Developed and performed the experimental protocols to label the mouse embryonic stem cells with iron-oxide nanoparticles.]
- 31. Li Z, Lee A, Huang M, Chun H, Chun J, Chu P, Hoyt G, **Yang PC**, Rosenberg J, Robbins RC, Wu JC. Imaging survival and function of transplanted cardiac resident stem cells. *J Am Coll Cardiol* 2009 Apr 7;53(14):1229-40. [Role: Developed and performed the experimental protocols to label the human embryonic stem cells with iron-oxide nanoparticles and acquired and analyzed the MRI data.]
- 32. Haddad F, Zamanian R, Beraud AS, Schnittger I, Feinstein J, Peterson T, **Yang PC**, Doyle R, Rosenthal D. A novel non-invasive method of estimating pulmonary vascular resistance in patients with pulmonary arterial hypertension. *J Am Soc Echocardiogr*. 2009 May;22(5):523-9.
  - [Role: Assisted in developing the experimental protocol and analysis of the Echo data]

33. Balchandani P, Yamada M, **Yang PC**, Pauly J. Self-refocused spatial-spectral pulse for positive contrast imaging of cells labeled with SPIO nanoparticles. *Magn Reson Med* 2009 Jul;62(1):183-92.

- [Role: Developed and performed the experimental protocols to label the mesenchymal stem cells with iron-oxide nanoparticles and acquired and analyzed the MRI data.]
- 34. Yamada M., Gurney PT, Kundu P, Drukker M, Smith AK, Weissman IL, Nishimura D, Robbins RC, **Yang PC.** Manganese guided cellular MRI of human embryonic stem cell and human bone marrow stromal cell viability. *Magn Reson Med* 2009 Oct;62(4):1047-1054.
- 35. Nguyen PK, Scott G, Engvall J, Santos JM, McConnell MV, Wright G, Nishimura DG, Pauly JM, Hu BS, **Yang PC.** A two element phased array coil enabling widespread application of high resolution MR coronary angiography. *Open Cardiovasc Med J.* 2009; 1:30-38.
- 36. Cukur T, Yamada M, Overall WR, **Yang PC**, Nishimura DG. Positive contrast with alternating repetition time SSFP (PARTS): a fast imaging technique for SPIO-labeled cells. *Magn Reson Med.* 2010 Feb;63(2):427-37. [Role: Developed and performed the experimental protocols to label the mesenchymal stem cells with iron-oxide nanoparticles and acquired and analyzed the MRI data.]
- 37. Heidary S, Patel H, Yokota H, Gupta SN, Katikireddy C, Nguyen P, Pauly JM, Terashima M, McConnell MV, **Yang PC.** Quantitative Tissue Characterization of Infarct Heterogeneity in Patients with Ischemic Cardiomyopathy by Magnetic Resonance Predicts Future Cardiovascular Events. *J Am Coll Cardiol* 2010;55(24):2762-2768. (2010 **JACC Highlight Article**)
- 38. Mishra A, Velotta J, Brinton TJ, Wang X, Chang S, Palmer O, Sheikh A, Chung J, Yang PC, Robbins R, Fischbein M. RevaTen platelet-rich plasma improves cardiac function after myocardial injury. *Cardiovasc Revasc Med.* 2010 Oct 13. [Role: Developed and performed the MRI acquisition protocols to assess the protective effects of platelet-rich plasma in porcine model of myocardial injury and analyzed the MRI data.]
- 39. Nguyen P, Katikireddy CK, McConnell MV, Kushida C, **Yang PC.** Nasal Continuous Positive Airway Pressure Improves Myocardial Perfusion Reserve and Endothelial-Dependent Vasodilation in Patients with Obstructive Sleep Apnea. *J Cardiovasc Magn Reson.* 2010 Sep 3;12:50.
- 40. Dash R, Chung J, Chan T, Yamada M, Barral J, Nishimura D, **Yang PC**, Simpson PC. A molecular MRI probe to detect treatment of cardiac apoptosis in vivo. *Magn Reson Med*. 2011 Oct;66(4):1152-62. [Role: Assisted in developing the in vitro and in vivo experimental protocol of acquiring

and analyzing the MRI of cell apoptosis.]

41. Chung J, Kee K, Barrel JK, Dash R, Weissman IL, Robbins RC, Nishimura DG, Quertermous T, Reijo-Pera RA, **Yang PC.** In vivo molecular MRI of the embryonic stem cell survival kinetics following transplantation into the injured murine myocardium. Magn Reson Med *Magn Reson Med.* Nov;66(5):1374-1381. (**AHA Melvin Judkins YIA, 2009**)

- 42. Velotta JB, Kimura N, Chang SH Chung J, Itoh S, Rothbard J, **Yang PC**, Steinman L, Robbins RC, Fischbein MP. αB-Crystallin improves murine cardiac function and attenuates apoptosis in human endothelial cells exposed to ischemia-reperfusion. *Ann Thorac Surg* 2011 Jun;91(6):1907-1913. [Role: Acquisition and analysis of cardiac function, viability, and morphology, employing cardiac MRI.]
- 43. Dash R, Chung J, Ikeno F, Hahn-Windgassen A, Matsuura Y, Lyons JK, Tereamoto T, Robbins RC, McConnell MV, Yeung AC, Brinton TJ, Harnish PP, **Yang PC**. Dual Manganese-Enhanced and Delayed Gadolinium-Enhanced MRI Detects Myocardial Border Zone Injury in a Pig Ischemia-Reperfusion Model. *Circ Cardiovasc Imaging* 2011 Sep 1;4(5):574-82 (**AHA Melvin Judkins YIA, 2010**)
- 44. Chung J, Dash R, Kee K, Barral JK, Kosuge H, Robbins RC, Nishimura D, Reijo-Pera RA, **Yang PC**. Theranostic effect of serial manganese-enhanced magnetic resonance imaging of human embryonic stem cell derived teratoma. *Magn Reson Med* 2011 Dec 21. [Epub ahead of print]
- 45. Chan CT, Greene T, Chertow GM, Kliger AS, Stokes JB, Beck GJ, Daugirdas JT, Kotanko P, Larive B, Levin NW, Mehta RL, Rocco M, Sanz J, Schiller BM, Yang PC, Rajagopalan S. Determinants of Left Ventricular Mass in Patients on Hemodialysis: the Frequent Hemodialysis Network (FHN) Trials. *Circ Cardiovasc Imaging (accepted CIRCCVIM/2011/969923R3)* [Role: Acquisition and analysis of data, experimental design, and manuscript review]
- 46. Ge X, Toma I, Wang IE, Sebastiano V, Reijo-Pera R, **Yang PC**. Robust generation of induced pluripotent stem cells from human placental mesenchymal stem cells. *Stem Cells Dev (under review SCD-2011-0435)*
- 47. Heidary S, Wheeler MT, Bennett MV, Chung J, Pavlovic A, Parent M, Dash R, McConnell MV, Ashley EA, **Yang PC**., Cardiovascular Magnetic Resonance Imaging Elucidates Genotype-Phenotype Relationships in Patients with Hypertrophic Cardiomyopathy. *J Am Coll Cardiol Img (under review JIMG083011-0562)*.
- 48. Wang IE, Wang X, Anderson J, Ho M, Ashley E, Quertermous T, **Yang PC**. Apelin Enhances Directed Cardiac Differentiation of Mouse and Human Embryonic Stem Cells. *PlosOne (submitted)*

### E.1.B Case studies and reviews [3 total]

- 1. Ptaszek LM, Price E, **Yang PC**. Early Diagnosis of Hemochromatosis-related Cardiomyopathy with Magnetic Resonance Imaging. *J Cardiovasc Magn Reson* 2005;7(4):689-692.
- 2. Fenster BE, Chan FP, Yang E, Valantine H, McConnell MV, Berry GJ, Yang PC. Images in cardiovascular medicine. Cardiac magnetic resonance imaging for myocarditis: effective use in medical decision making. *Circulation* 2006 Jun 6; 113(22):e842-3.
- 3. Parent M, Valantine H, Hunt S, Haddad F, **Yang PC**. Genetic testing and non-invasive imaging modalities for diagnosis of acute cardiac allograft rejection *J Am Coll Cardiol* (*invited*, *pending submission JACC042611-1809*)

## E.2. <u>Non-peer-reviewed articles</u> [10 total, 1 in press]

- 1. **Yang PC**. Hypertrophic response in primary single-cell cultures of adult rat myocardial cells. Thesis, Yale University School of Medicine, May 1989.
- 2. **Yang PC**, McConnell M, Nishimura D, Hu B. Magnetic resonance coronary angiography: prospects for the future. *Curr Cardiol Rep* 2003;5(1):55-62.
- 3. Suzuki Y, Yeung AC, **Yang PC**. Cardiovascular MRI for stem cell therapy. *Curr Cardiol Rep* 2007;9(1):45-50.
- 4. Yamada M., **Yang PC**. (2008). In vitro labeling of human embryonic stem cells for magnetic resonance imaging. *J Vis Exp.* 2008 Aug 3;(17). pii: 827. doi: 10.3791/827.
- 5. Wang X., **Yang PC**. (2008). In vitro differentiation of mouse embryonic stem (mES) cells using the hanging drop method. *J Vis Exp*. 2008 Jul 23;(17). pii: 825. doi: 10.3791/825.
- 6. Pappas J, **Yang PC**. "Human ESC vs. iPSC—Pros and Cons" *J of Cardiovasc Trans Res* 2008; 1:96-99
- 7. Chung J., Yamada M., **Yang PC.** Magnetic Resonance Imaging of Stem Cells. *Current Protocols in Stem Cell Biology*. August 2009.
- 8. Chung J, **Yang PC.** Molecular Imaging of Stem Cell Transplantation in Myocardial Disease. *Curr Cardiovasc Imaging Rep.* 2010 Feb 3;3(2):106-112.
- 9. Kim PJ, **Yang PC.** Contrast Echocardiography: Finding Its Place in Stem Cell Therapy. *Minerva Cardioangiologica* 2011 Oct;59(5):491-497.
- 10. Kim PJ, **Yang PC**. Bone Marrow Cell Therapy in Clinical Trials: A Review of the Literature. *Reviews on Recent Clinical Trials* 2012 (under review)

- E.3. Books [0 total]
- E.4. <u>Book chapters</u> [5 total, 1 in press]
  - Yang PC, Poone M, Pohost G. (2004). Magnetic Resonance Imaging of the Heart in Coronary Disease. In: V. Fuster, E. Topol, E. Nabel (eds.). <u>Atherothrombosis and</u> <u>Coronary Artery Disease</u>, 2<sup>nd</sup> Ed. (Chap. 53). Philadelphia, PA: Lippincott Williams & Wilkins. [ISBN: 0781735831]
  - 2. Nguyen P, **Yang PC**. (2006) MR Angiography: Coronaries and Great Vessels. In: V. Dilsizian, G. Pohost (eds.), <u>Hybrid PET/CT and MRI</u> (Chap 6, pp. 118-154; 264 pps). Malden, MA: Blackwell Publishers. [ISBN: 1405124474]
  - 3. Sheikh AY, **Yang PC**, Wu JC, Robbins RC. (2007) Embryonic Stem Cells and Myocardial Regeneration In: A. Leri., P. Anversa, W. Frishman (eds.), <u>Cardiac Regeneration and Stem Cell Therapy</u>. (Chap. 11, 248 pps.) Malden, MA: Blackwell Publishers. [ISBN: 9781405148429]
  - 4. McGann CJ, **Yang PC**, McConnell MV. (2005) Magnetic resonance coronary angiography. In: E. Braunwald (ed.), <u>Harrison's Online</u>. New York, NY: McGraw-Hill.
  - 5. Dash R, **Yang PC.** (*in press*) Iron Oxide Applications in Cellular and Molecular Imaging of Myocardial Cell Death and Regenerative Strategies. In: A. Martinez (ed.) <u>Iron Oxides: Structure, Properties and Applications.</u> Hauppauge, NY: Nova Science Publishers.
- E.5. Book reviews [0 total]
- E.6. Abstracts [107 total]
  - 1. **Yang PC**, Kerr A, Liu A, Pauly J, Hardy C, Meyer C, Macovski A, Hu B. New real-time interactive magnetic resonance imaging system is useful in subjects with suboptimal echocardiographic studies. *J Am Coll Cardiol* 1997;29[Suppl A]:216A.
  - 2. **Yang PC**, Kerr AB, Liu AS, Pauly JM, Hardy C, Meyer CH, Macovski A, Hu BS. Real-time interactive cardiac MRI for patients with suboptimal echocardiographic studies. *Proceedings 5th ISMRM Mtg.*, (Vancouver), April 1997.
  - 3. **Yang PC**, Kerr A, Liu A, Pauly J, Hardy C, Meyer C, Macovski A, Hu B. Cardiac magnetic resonance imaging system reliably detects wall motion abnormality seen on echocardiography. *J Am Soc Echocardiogr* 1997;10:433.
  - 4. **Yang PC**, Kerr AB, Liu AC, Liang DH, Meyer CH, Pitlick PT, Macovski A, Pauly JM, Hu BS. Real-time interactive cardiac MRI examination should be considered for routine clinical evaluation of left ventricular function in select groups of patients. *Circ* 1997;96[Suppl I]:I-189.
  - 5. **Yang PC**, Kerr A, Liu A, Liang DH, Hardy C, Meyer C, Macovski A, Pauly J, Hu B. New real-time interactive cardiac magnetic resonance imaging system. *J Am Coll Cardiol* 1998;31[Suppl A]:3A-4A.

6. **Yang PC**, Kerr AB, Pauly JM, Hu BS. Real-time MR imaging of cardiac perfusion. *Proceedings 6<sup>th</sup> ISMRM Mtg*, [805] (Sydney), April 1998.

- 7. Rivas PA, Nayak KS, Kerr AB, **Yang PC**, Pauly JM, Nishimura D, Hu BS. Real-time interactive cardiac magnetic resonance imaging system with color flow mapping. *J Am Coll Cardiol* 1999;33(Suppl A): 478A.
- 8. Jang JJ, Ho HV, Spektor G, Kaji S, **Yang PC**, Hu BS, Fong A, Schatzman R, Quertermous T, Cooke JP. Developmentally regulated endothelial cell-locus-1 (Del1): A novel angiogenic protein; its role in ischemia. *Circ*1999;100(Suppl I):I-58.
- 9. Kaji S, Ho HV, **Yang PC**, Heeschen C, Cooke JP, Hu BS. Quantitative analysis of first-pass magnetic resonance perfusion imaging of a mouse model of therapeutic angiogenesis. *Circ* 1999;100(Suppl I):I-225.
- 10. Heeschen C, Ho H, Kaji S, Jang JJ, Stuehlinger M, Yang PC, Yang X, Hu BS, Cooke JP. Hypercholesterolemia impairs angiogenic response to hind limb ischemia: Role of ADMA. *Circ* 1999;100(Suppl I):I-473.
- 11. **Yang PC**, Meyer CH, Rivas PA, Macovski A, Pauly JM, Nishimura DG, Hu BS. Real-time interactive imaging enhanced high-resolution magnetic resonance coronary angiogram. *Circ* 1999;100(Suppl I):I-522.
- 12. Rivas PR, Nayak KS, Kerr AB, McConnell MV, **Yang PC**, Pauly JM, Nishimura DG, Hu BS. Evaluation of valvular regurgitation: Real-time color flow magnetic resonance imaging compared to echo. *J Am Coll Cardiol* 2000;35(Suppl A):453-454A.
- 13. Kaji S, Yang PC, Kerr AB, Meyer CH, Pauly JM, Hu BS. Complete evaluation of left ventricular volume and mass in less than 5 minutes with real-time interactive cardiac magnetic resonance imaging system. *J Am Coll Cardiol* 2000;35(Suppl A):464A.
- 14. Heeschen C, Ho HK, Jang J, Kaji S, **Yang PC**, Hu BS, Tsao P, Cooke JP. Nicotine is an agent of angiogenesis: role of nitric oxide and prostacyclin. *J Am Coll Cardiol* 2000;35(Suppl A):545-546A.
- 15. **Yang PC**, Meyer C, McConnell M, Kaji S, Terashima M, Macovski A, Pauly J, Nishimura D, Hu B. Real-time interactive imaging enhanced high-resolution magnetic resonance coronary angiogram. *Proceedings 9<sup>th</sup> ISMRM Mtg*, (Glasgow, Scotland), April 2001.
- 16. Kaji S, **Yang PC**, Meyer C, Pauly J, Hu B. Rapid evaluation of right ventricular volume and mass without breath-holding using real-time interactive cardiac magnetic resonance imaging system. *Proceedings 9<sup>th</sup> ISMRM Mtg*, (Glasgow, Scotland), April 2001.
- 17. Kaji S, Hargreaves B, **Yang PC**, Nishimura D, Hu B. Quantification of regional human leg Muscle perfusion using first-pass magnetic resonance imaging. *Proceedings 9<sup>th</sup> ISMRM Mtg*, (Glasgow, Scotland), April 2001.
- 18. **Yang PC**, Nayak K, Kaji S, Terashima M, Delapena E, Engvall J, Pauly J, Nishimura D, Hu B. Simultaneous evaluation of exercise-stress wall motion and myocardial perfusion using real-time interactive multislice MRI clinical validation. *J Cardiovasc Magn Reson* 2002;4:49.

19. DeLaPena E, Hope M, Terashima M, Wagner R, **Yang PC**, Liang D, McConnell M, Hu B. Real time MRI superior to echocardiography in the evaluation of patients with congestive heart failure. *J Cardiovasc Magn Reson* 2002;4:1.

- Terashima M, Yang PC, Hu B, DeLaPena E, Meyer C, Nayak K, Pauly J, Nishimura D, McConnell M. MRI of nitinol coronary stents: implications for assessing stent patency and guiding interventions. *J Cardiovasc Magn Reson* 2002;215:78.
- 21. Terashima M, **Yang PC**, DeLaPena E, Hu B, McConnell M. Vascular injury induces immediate and delayed contrast enhancement, remodeling, and atherosclerosis. *J Cardiovasc Magn Reson* 2002;218:80.
- 22. DeLaPena E, Nayak K, Terashima M, **Yang PC**, Pauly J, Liang D, Hu B, McConnell M. Assessment of extracardiac abnormalities in congenital heart disease with real-time color-flow MRI. *J Cardiovasc Magn Reson* 2002;311:167.
- 23. De La Pena-Almaquer E, Nayak KS, Masahiro Terashima, **Yang PC**, Pauly JM, Liang DH, Hu BS, McConnell MV. Real-time color flow magnetic resonance imaging of congenital heart disease. *Proceedings 10th ISMRM Mtg*, [90] (Honolulu), May 2002.
- 24. Santos JM, Wright G, **Yang PC**, Pauly JM. Adaptive Architecture for real-time imaging systems. *Proceedings 10th ISMRM Mtg*, [468] (Honolulu), May 2002.
- 25. Hargreaves B, Meyer CH, Yang PC, Hu BS, Nishimura D. Spiral SSFP coronary artery imaging. *Proceedings 10th ISMRM Mtg*, [1589] (Honolulu), May 2002.
- 26. **Yang PC**, Meyer C, Terashima M, Engvall J, Kaji S, McConnell M, Macovski A, Pauly J, Nishimura D, Hu BS. Real-time enhanced high resolution magnetic resonance coronary angiography. *Proceedings 10th ISMRM Mtg*, [1600] (Honolulu), May 2002.
- 27. Terashima M, De La Pena-Almaquer E, Nayak KS, Pauly JM, **Yang PC**, Hu BS, McConnell MV. High-resolution real-time and color-flow MRI of nitinol stents. *Proceedings 10th ISMRM Mtg*, [1789] (Honolulu), May 2002.
- 28. **Yang PC**, Nguyen P, Shimakawa A, Brittain J, Hu B, McConnell M. Initial experience with spiral MR coronary angiography at 3T: anatomic coverage, image quality, and susceptibility artifacts. *J Cardiovascular Magn Reson* 2003;5(1):19-20
- 29. Nguyen PK, Nayak KS, Narayan G, Liang DH, Schnittger I, Pauly JM, McConnell MV, Hu BS, **Yang PC**. Dobutamine stress MR with spiral real time SSFP reliably detects wall motion abnormalities. *J Cardiovascular Magn Reson* 2003;5(1):68-69.
- 30. Nguyen PK, Santos J, Scott G, Engvall J, McConnell MV, Meyer C, Connolly S, Nishimura DG, Pauly JM, Hu BS, **Yang PC**. Adaptive real-time MR coronary angiography first prospective clinical trial. *J Cardiovascular Magn Reson* 2003;5(1):228-229.
- 31. Narayan G, Nguyen P, Engvall J, Nayak K, **Yang PC,** Hu B. Rapid (<10 secs), complete, 4D assessment of LV/RV volumes using SSFP in heart failure patients. . *J Cardiovasc Magn Reson* 2003;5(1):277-278.
- 32. Engvall J, Narayan G, Nguyen P, Nayak K, **Yang PC**, Hu B. Use of SSFP in real-time MRI improves SNR, CNR, and wall motion assessment. *J Cardiovasc Magn Reson* 2003;5(1):300-301.

33. Carrillo A, Shankaranarayanan A, Santos J, Nayak K, **Yang PC**, Hu b, Wright G, Brittain J. Localized measurement, display, and adaptation of functional information through a real-time interface. *J Cardiovasc Magn Reson* 2003;5(1):282-283.

- 34. Engvall J, Scott G, Santos J, Nguyen P, Amitai M, McConnell M, Pauly J, Nishimura D, Hu B, **Yang PC**. MR coronary angiography using a novel 2-element phased-array coil: improved image quality and anatomic coverage. *J Cardiovasc Magn Reson* 2003;5(1):290-291.
- 35. **Yang PC**, Nguyen PK, Shimakawa A, Brittain J, McConnell MV, Hu BS. Spiral magnetic resonance coronary angiography with real-time localization at 3T. *J Am Coll Cardiol* 2003;41(Suppl A):423A.
- 36. Nguyen PK, Santos J, Scott G, Engval J, Wright G, McConnell MV, Meyer C, Nishimura D, Pauly J, Hu BS, **Yang PC**. Adaptive real-time architecture in magnetic resonance coronary angiography: Clinical study. *J Am Coll Cardiol* 2003;41(Suppl A):468A.
- 37. **Yang PC**, Nguyen PK, Santos J, Scott G, Engval J, Wright G, McConnell MV, Meyer C, Nishimura D, Pauly J, Hu BS. Adaptive real-time architecture in magnetic resonance coronary angiography. *J Investig Med* 2003;51:2.
- 38. Narayan G, Bulte J, Arai T, Hu B, McConnell M, **Yang PC**. Real-time imaging of transplantation of iron-oxide labeled mouse lymphocytes into ex-vivo porcine heart. *Proceedings 11th ISMRM Mtg*, 366 (Toronto), July 2003.
- 39. Nguyen PK, Santos J, Scott G, Engval J, Wright G, McConnell MV, Meyer C, Nishimura D, Pauly J, Hu BS, **Yang PC**. Adaptive real-time MR coronary angiography prospective clinical trial. *Proceedings 11th ISMRM Mtg*, 729 (Toronto), July 2003.
- 40. Nguyen PK, Nayak KS, Narayan G, Liang DH, Schnittger I, Pauly JM, McConnell MV, Hu BS, **Yang PC**. Dobutamine stress MR with real-time spiral SSFP pilot clinical study. *Proceedings 11th ISMRM Mtg*, 1598 (Toronto), July 2003.
- 41. Nguyen PK, Shimakawa A, Brittain J, Hu BS, McConnell MV, **Yang PC**. Spiral MR Coronary Angiography at 1.5T and 3T: A Comparison of Image Quality, Coverage, SNR, and Susceptibility Artifacts. *Proceedings 11th ISMRM Mtg*, 1619 (Toronto), July 2003.
- 42. Nguyen P, Meyer C, Engvall J, **Yang PC**, McConnell M. Assessment of coronary vasodilation by MRA in patients at high-risk for coronary artery disease. *Proceedings* 11th ISMRM Mtg, 1627 (Toronto), July 2003.
- 43. Santos J, **Yang PC**, Cunningham C, Nayak K, Hu B, McConnell M, Brittain J, Pauly J. High resolution spiral MRCA with real-time localization at 3T. *J Cardiovasc Magn Reson* 2004;6(1):121-122.
- 44. Carrillo A, Shankaranarayanan A, Johnson JW, Santos JM, McConnell MV, Yang PC, Brittain JH, Hu BS. Integrated real-time cardiac imaging environment. *J Cardiovasc Magn Reson* 2004;6(1):388-389.
- 45. Nguyen PK, Nayak KS, Cunningham CH, Santos JM, Pauly JM, Hu BS, McConnell MV, **Yang PC**. Real time coronary MR angiography at 3T. *J Cardiovasc Magn Reson* 2004;6(1):414-415.

46. Carrillo A, Shankaranarayanan, McConnell MV, **Yang PC**, Brittain JH, Hu BS. High-resolution dynamic ventricular assessment in a clinical real-time environment. *J Cardiovasc Magn Reson* 2004;6(1):444-445.

- 47. Arai T, de Bruin J, Kofidis T, Venook R, McConnell MV, Quertermous T, Robbins R, **Yang PC**. *In vivo* magnetic resonance evaluation of the effects of mouse embryonic stem cells on cardiac function. *J Am Coll Cardiol* 2004;43(Suppl A):532A.
- 48. Arai T, Bulte J, Mcconnell M, Greve J, **Yang PC.** In vitro MR assessment of proliferating SPIO-labeled mouse embryonic stem cells. *Proceedings 11th ISMRM Mtg*, 505 (Kyoto), May 2004.
- 49. **Yang PC**, Caffarelli A, Arai T, Greve J, Bulte J, Kofidis T, Quertermous T, McConnell M, Robbins R. *In vivo* MR evaluation of the timing of mouse embryonic stem cell transplantation at 4.7T *Proceedings 11th ISMRM Mtg*, 506 (Kyoto), May 2004.
- 50. Tsukiji M, Nguyen P, Narayan G, Hellinger J, Chan F, Herfkens R, McConnell M, Yang PC. Peri-infarct ischemia determined by comprehensive MR evaluation of Myocardial viability and stress perfusion predicts future cardiovascular events in patients with severe ischemic cardiomyopathy. J Am Coll Cardiol 2005:45:Suppl A:446A
- 51. Arai T, Kutschka I, Hendry S, Sheikh A, Chen I, McGann C, Terashima M, Greve J, McConnell M, Robbins R, **Yang PC**. *In vivo* MR evaluation of embryonic cardiomyoblast tissue graft in rodent acute myocardial infarction model of heterotopic heart transplantation. *Proceedings 13<sup>th</sup> ISMR Mtg*, (2645) (*Florida*), *May 2005*.
- 52. Arai T, Hendry S, Dylla S, Yamane T, Terashima M, Greve J, McGann C, McConnell M, Weissman I, Conolly S, Robbins R, **Yang PC.** *In vivo* MR evaluation of the restorative effects of 3 MESC Types in Mouse Model of Acute Myocardial Infarction. *Proceedings* 13<sup>th</sup> ISMR Mtg, (2703) (Florida), May 2005.
- 53. Cunningham C, Arai T, McConnell M, Pauly J, Terashima M, **Yang PC**, Conolly S. Positive contrast MRI of cells labeled with magnetic nanoparticles. *Proceedings 13<sup>th</sup> ISMR Mtg*, (2618) (*Florida*), *May 2005*.
- 54. Tsukiji M, Nguyen P, Hellinger J, Chan F, Herfens R, McConnell M, **Yang PC.** Assessment of peri-infarct ischemia through comprehensive evaluation of stress perfusion and myocardial viability predicts adverse events in patients with severe ischemic cardiomyopathy. *Proceedings 13<sup>th</sup> ISMR Mtg*, (1628) (Florida), May 2005.
- 55. Hendry S, Arai T, Dylla S, Drukker M, Sheikh A, Kutschka I, Hoyt G, Connolly A, Pelletier M, Wu J, **Yang PC**, Robbins R. Myocardial restoration with embryonic stem cell transplantation in a murine model of myocardial infarction model. Circulation 2005:122:Suppl II:376
- 56. Tsukiji M, Nguyen P, Hellinger J, Chan F, Herfkens R, McConnell M, **Yang PC**. Magnetic resonance imaging of myocardial viability predicts future cardiovascular events in patients with severe ischemic cardiomyopathy. Circulation 2005:122:SupplII:469
- 57. Kutschka I, Kofidis T, Chen I, Arai T, Sheikh A, Hendry S, Pearl J, Hoyt G, Connolly A, **Yang PC**, Gambhir S, Robbins R. Collagen matrices enhance survival of embryonic cardiomyoblasts following transplantation into ischemic rat hearts. Circulation 2005:122:SupplII:741

58. Yue P, Arai T, Hsieh B, Greve J, McConnell M, Tsao P, **Yang PC**. The natural history of cardiomyopathy in the db/db mouse. J Cardiovasc Magn Reson 2006.

- 59. Yue P, Arai T, Hsieh B, Ashley E, **Yang PC**, Tsao PS. Magnetic resonance-based evaluation of cardiac hypertrophy in the db/db mouse, J Am Coll Cardiol 2006:47: Suppl A: 144A
- 60. **Yang PC**, Krishnan M, Zhang S, Arai T, Quertermous T, Weissman I, Wu J, Drukker M, Robbins R. Novel MRI reporter gene for determination of cell viability. *Proceedings of the 14<sup>th</sup> ISMRM Mtg*, 180 (Seattle), May 2006.
- 61. **Yang PC**, Ikeda S, Fenster B, Hendry S, Zhang S, Drukker M, Weissman I, Tsao P, Robbins RC. Multimodality validation and mechanistic explanation of functional restoration of murine model of myocardial infarction by mouse embryonic stem cells. *Proceedings of the 14<sup>th</sup> ISMRM Mtg*, 554 (Seattle), May 2006.
- 62. Suzuki Y, Cunningham CH, Drukker M, **Yang, PC**. *In vitro* evaluation of cellular engraftment parameters of 3 transfection methods to label mouse embryonic stem cells using ferumoxides. *Proceedings of the 14<sup>th</sup> ISMRM Mtg*, 1871 (Seattle), May 2006.
- 63. Cunningham CH, Conolly SM, Chen IY, Suzuki Y, **Yang PC**, McConnell MV, Gambhir SS, Pauly JM. Off-resonance spin echos for probing the cellular microenvironment. *Proceedings of the 14<sup>th</sup> ISMRM Mtg*, 2487 (Seattle), May 2006.
- 64. Terashima M, Uchida M, Cunningham CH, Suzuki Y, **Yang PC**, Tsao PS, Young MJ, Conolly SM, Douglas T, McConnell MV. Protein cage nanoparticles as cellular MRI contrast agents. *J Cardiovasc Magn Reson*. 2007;9(2):302-303.
- 65. Gurney PT, **Yang PC**, Hu BS, Nishimura DG. Whole-heart coronary angiography using a 3D cones trajectory and alternating -TR balanced SSFP. *Cardiovasc Magn Reson*. 2007;9(2):339-340.
- 66. Suzuki Y, **Yang PC**. Positive Contrast to Evaluate Stem Cell Viability and Proliferation Using off-resonance magnetic resonance imaging. *Cardiovasc Magn Reson*. 2007;9(2):471-472.
- 67. Suzuki Y, Hung TC, Urashima T, Hoyt G, Sheikh A, Lee DP, Yeung AY, Robbins RC, **Yang PC**. Evaluation of the viability of stem cells delivered into different zones of myocardial infarction and the resultant myocardial restoration. *J Am Coll Cardiol* 2007;49(9 Suppl A):83A.
- 68. Suzuki Y, Cunningham CH, Yeung AC, Robbins R, Conolly S, **Yang PC**. *In vivo* magnetic resonance imaging of stem cell viability. *J Am Coll Cardiol* 2007;49(9) Suppl A):158A.
- 69. Yokota H, Katikireddy C, Nguyen P, Pauly JM, McConnell MV, **Yang PC**. Quantitation of myocardial infarction by cardiac magnetic resonance imaging predicts future cardiovascular events in patients with ischemic cardiomyopathy. *J Am Coll Cardiol* 2007;49(9 Suppl A):422A.
- 70. Gurney PT, **Yang PC**, Hargreaves BA, Nishimura DG. Free-breathing coronary angiography using alternating –TR balanced SSFP and a 3D cones trajectory. *Proceedings of the 15<sup>th</sup> ISMRM Mtg*, 20 (Berlin), May 2007

71. Yokota H, Katikireddy C, Nguyen P, Pauly JM, McConnell MV, **Yang PC**. Comprehensive quantitation of myocardial infarct size by cardiac magnetic resonance imaging predicts future cardiovascular events in ischemic cardiomyopathy patients considered for revascularization. *Proceedings of the 15<sup>th</sup> ISMRM Mtg*, 851 (Berlin), May 2007

- 72. Lee JH, Seo WS, Terashima M, Suzuki Y, **Yang PC**, McConnell MV, Nishimura DG, Dai H. FeCo/graphic carbon-shell nanocrystals as MRI contrast agents for cellular and vascular imaging. *Proceedings of the 15<sup>th</sup> ISMRM Mtg*, 858 (Berlin), May 2007
- 73. Gurney PT, **Yang PC**, Hargreaves BA, Nishimura DG. Direct respiratory tracking and motion correction for free-breathing whole-heart coronary angiography. *Proceedings of the 15<sup>th</sup> ISMRM Mtg*, 871 (Berlin), May 2007
- 74. **Yang PC**, Xie E, Kundu P, Stein W, Drukker M, Weissman I, Wu J, Robbins R. *In vivo* molecular MRI of mouse embryonic stem cell viability. *Proceedings of the 15<sup>th</sup> ISMRM Mtg*, 1173 (Berlin), May 2007
- 75. Yamada M, Kundu P, Drukker M, Weissman IL, Robbins RC, **Yang PC.** Manganese guided cellular MRI of human embryonic stem cell viability. *Proceedings of the 15<sup>th</sup> ISMRM Mtg*, 1198 (Berlin), May 2007
- 76. Santos JM, Kerr AB, Lee D, McConnell MV, **Yang PC**, Hu BS, Pauly JM. Comprehensive valve evaluation system. *Proceedings of the 15<sup>th</sup> ISMRM Mtg*,2551 (Berlin), May 2007
- 77. Katikireddy C, Nguyen P, Won C, Cardell C, Nichols D, Lary E, McConnell MV, Holmes TH, Kushida CA, **Yang PC**. Multimodality cardiovascular imaging detects improvement of subclinical microvascular dysfunction with continuous positive airway pressure therapy in patients with obstructive sleep apnea: A prospective, randomized, duble-blinded study. *AHA Scientific Sessions* (Florida), Nov 2007
- 78. Sheikh AY, Doyle TC, Sheikh MK, Cao F, Ransohoff K, **Yang PC**, Robbins RC, Fischbein M, and Wu JC. Gated micro CT scanning: An emerging tool for longitudinal assessment of murine cardiac remodeling. *AHA Scientific Sessions* (Florida), Nov 2007
- 79. Yamada M, Gurney PT, Stein W, Kundu P, Smith A, Robbins RC, **Yang PC**. Manganese guided cellular MRI enables evaluation of human stromal cell viability. *Proceedings of the 11<sup>th</sup> annual SCMR Scientific Sessions* (Los Angeles) Feb 2008
- 80. Yamada M, Gurney PT, Kundu P, Robbins RC, **Yang PC**. Manganese guided cellular MRI of human embryonic stem cell viability. *Proceedings of the 11<sup>th</sup> annual SCMR Scientific Sessions* (Los Angeles) Feb 2008
- 81. Yamada M, Gurney PT, Stein William, Kundu, P, Smith Alan, Robbins RC, **Yang PC**. Manganese guided cellular magnetic resonance imaging enables evaluation of human stromal cell viability. *Proceedings of the 16<sup>th</sup> ISMRM Mtg* (Toronto), May 2008
- 82. Yamada M, Gurney PT, Kundu P, Robbins RC, **Yang PC**. Manganese guided cellular MRI of human embryonic stem cell viability. *Proceedings of the 16<sup>th</sup> ISMRM Mtg* (Toronto), May 2008

83. Santos J, Kerr A, Lee D, McConnell MV, **Yang PC**, Hu BS, Pauly J. Real-time and cardiac gated CINE MR doppler. *Proceedings of the 16<sup>th</sup> ISMRM Mtg* (Toronto), May 2008

- 84. Balchandani P, Pauly J, **Yang PC**, Yamada M, Spielman D. Self-refocused spatial-spectral pulse pair for positive contrast imaging of cells labeled with superparamagnetic iron-oxide (SPIO) nanoparticles. *Proceedings of the 16<sup>th</sup> ISMRM Mtg* (Toronto), May 2008
- 85. Dash R, Chan T, Yamada M, Paningbatan M, Myagmar B, Swigart P, Simpson P, **Yang PC.** Cardiac magnetic resonance of targeted annexin-iron oxide labeling detects cardiac cell death *in vivo* after doxorubicin and myocardial infarction. *J Cardiovasc Magn Reson* 2009, 11(Suppl A):08, January 2009)
- 86. Chung J, Kee K, Perra RR, Yang PC, Viability imaging of stem cell using a MRI reporter gene and MEMRI. *J Cardiovasc Magn Reson*, 11(Suppl A):P181, January 2009
- 87. Chung J, Kee K, Pera RR, Yang PC. A Novel MRI Reporter Gene to Determine Stem Cell Viability *J Am Coll Cardiol*, 2009, 53(10, Suppl A):0922-4
- 88. Dash R, Chan T, Yamada M, Paningbatan M, Myagmar B, Swigart P, **Yang PC**, Simpson P. Magnetic Resonance Imaging With Targeted Iron-Oxide Labeling Detects Differential Cardiac Cell Survival After Doxorubicin and Myocardial Infarction in Culture and In Vivo. *J Am Coll Cardiol*, 2009, 53(10, Suppl A): 0922-7
- 89. Patel H, Heidary S, Yokota H, Katikreddy C, Nguyen P, Pauly JM, Terashima M, McConnell MV, **Yang PC.** Quantitative Tissue Characterization of Infarct Heterogeneity in Patients with Ischemic Cardiomyopathy by Magnetic Resonance Predicts Future Cardiac Events. *Proceedings of the 17<sup>th</sup> ISMRM Mtg*, 479 (Honolulu), April 2009
- 90. Cukur T, Yamada M, Overall WR, **Yang PC**, Nishimura DG. Fast Positive-Contrast Imaging of SPIO-Labeled Cells with Low-Angle Alternating-TR SSFP. *Proceedings of the 17<sup>th</sup> ISMRM Mtg*, 803 (Honolulu), April 2009
- 91. Dash R, Chan T, Yamada M, Paningbatan M, Swigart O, Myagmar B, Simpson PC, **Yang PC**. Cardiac Magnetic Resonance to Detect Cell Death in Vivo. *Proceedings of the* 17<sup>th</sup> ISMRM Mtg, 881 (Honolulu), April 2009
- 92. Chung J, Barral JK, Weissman I, Robbins RC, **Yang PC.** Early in Vivo Manganese-Enhanced MRI (MEMRI) Detection of Embryonic Stem Cell Induced Teratoma Formation. *Proceedings of the 17<sup>th</sup> ISMRM Mtg*, 884 (Honolulu), April 2009
- 93. Chung J, Kee K, Barral JK, Dash R, Weissman I, Quertermous T, Robbins RC, Nishimura DG, Reijo-Pera RA, **Yang PC**. In vivo Kinetics of Embryonic Stem Cell Viability Following Transplantation Into the Injured Murine Myocardium. *Circulation*. 2009;120:S310-S311.
- 94. Heidary S, Terashima M, Dash R, **Yang PC**, Froelicher VF, McConnell MV. Comprehensive Cardiac MRI Protocol of Athletes' Hearts at 3T: Preliminary Results. 13<sup>th</sup> SCMR Scientific Sessions, (Phoenix, AZ) January 2010

95. Dash R, Chung J, Barral J, Nishimura D, Simpson PC, **Yang PC.** Cardiac magnetic resonance detection of dynamic apoptotic signaling in vivo following anti-apoptotic therapy. *13<sup>th</sup> SCMR Scientific Sessions*, (Phoenix, AZ) January 2010

- 96. Matsuura Y, Chung J, Dash R, Ikeno F, Lyons J, McConnell MV, Yang PC. 3D Delayed Enhancement MRI of Myocardial Infarction in Pig Hearts. *The 66th Annual Scientific Congress of JSRT*, (Yokohama, Japan) April 2010
- 97. Chung, Dash R, Kee K, Barral J, Weissmann I, Nishimura D, Robbins R, Reijo Pera R, **Yang PC.** Theranostic effect of serial MEMRI on the hESC induced teratoma. 19<sup>th</sup> ISMRM Scientific Meeting & Exhibition (Stockholm, Sweden) May 2010
- 98. Dash R, Chung J, Matsuura Y, Ikeno F, Lyons J, Teramoto T, Yeung AC, McConnell MV, Brinton TJ, Harnish P, and **Yang PC.** Manganese-Enhanced MRI Combined with Delayed enhancement MRI detects injured border zone myocardium in a pig ischemia-reperfusion model. *ISMRM Scientific Meeting & Exhibition*, 4372 (Stockholm, Sweden) May 2010
- 99. Wang IE, Chung J, **YangPC.** Apelin Enhances Cardiac Differentiation of Human Embryonic Stem Cells. *Circulation*. 23 November 2010;122:A20270
- 100. Dash R, Chung J, Hahn-Windgassen A, Matsura Y, Ikeno F, Lyons J, Teramoto T, Yeung AC, McConnell MV, Brinton TJ, Harnish P, **Yang PC.** Detection of Injured Border Zone Myocardium Using Manganese-Enhanced and Delayed-Enhanced MRI in a Pig Ischemia-Reperfusion Model. *Circulation*, 23 November 2010; 122: A12435.
- 101. Toma I, Qian M, Kim PJ, Chung J, Gong Y, Dash R, Robbins RC, Harnish P, **Yang PC.** Dual Manganese- and Delayed-Enhanced MRI Detects Myocardial Border Zone Viability *ISMRM Scientific Meeting & Exhibition* (Montreal, Canada) May 2011
- 102. Wang I, Robinson JT, Do G, Gould DR, Dai H, **Yang PC.** Graphite Oxide Nanoparticles with Diameter Greater than 20 NM is Biocompatible to Mouse Embryonic Stem Cells and Can be Used in a Tissue Engineering System. *ISSCR 9<sup>th</sup> Annual Meeting* (Toronto, Canada) June 2011.
- 103. Ge X, Toma I, Wang I, Sebastiano V, Reijo-Pera R, **Yang PC.** Robust Generation of Induced Pluripotent Stem Cells From Human Amniotic Mesenchymal Stem Cells. *ISSCR 9<sup>th</sup> Annual Meeting* (Toronto, Canada) June 2011.
- 104. Ge X, Toma I, Wang I, Sebastiano V, Reijo-Pera R, **Yang PC.** Reprogramming Of human Placenta derived Mesenchymal Stem Cells Into Spontaneously Contractile Cardiomyocytes. *American Heart Association Scientific Sessions* (Orlando, Florida) November 2011.
- 105. Heidary S, Wheeler MT, Bennett MV, Chung J, Pavlovic A, Parent M, Dash R, McConnell MV, Ashley EA, **Yang PC.** Cardiovascular Magnetic Resonance Imaging Elucidates Genotype-Phenotype Relationships in Patients with Hypertrophic Cardiomyopathy. *American Heart Association Scientific Sessions* (Orlando, Florida) November 2011.
- 106. Dash R, Toma I, Ikeno F, Lyons JK, Heidary S, Parent M, Wang IE, Ge X, Lam J, Kim PJ, Nakagawa K, Lyalina S, Do G, McConnell MV, Yeung A, Harnish P, Robbins RC, Chung J, Yang PC. Manganese-Enhanced MRI Detects Live Human Amnion-derived

Mesenchymal Stem Cells In Vivo After Transplantation and Restoration of Myocardial Function in a Pig Ischemia-Reperfusion Injury Model. 15<sup>th</sup> SCMR Scientific Sessions (Orlando, Florida) February 2012

107. Dash R, Lam J, Toma I, Simpson PC, Gong Y, Robbins RC, Yang PC. In Vivo Detection and Treatment of Ischemia-Induced Cardiac Apoptosis Using an MRI-Detectable Molecular Probe and an Alpha-Adrenergic Receptor Agonist. 15<sup>th</sup> SCMR Scientific Sessions (Orlando, Florida) February 2012

## E.7. <u>Invited presentations</u> [51]

- 1. "Forward Viewing Intravascular Ultrasound Catheter", Japanese Society of Echocardiography, Kobe, Japan, July 1997.
- 2. "Real-Time Interactive Cardiac MRI", Cardiology Grand Rounds, Kobe General Hospital, Kobe, Japan, July 1997.
- 3. "Real-Time MRI", Society of Cardiovascular MR, Atlanta, GA, January 1999.
- 4. "Cardiac MRI", Guidant Corporation, Santa Clara, CA, September 2001.
- 5. "Real-Time Enhanced High-Resolution Coronary MRA", XIII Annual International Workshop on MR Angiography, Madison, WI, September 2001.
- 6. "Simultaneous Evaluation of Exercise-Stress Wall Motion and Myocardial Perfusion Using Real-time Interactive Multislice MRI Clinical Validation", Society of Cardiovascular MR, Orlando, FA, January 2002.
- 7. "Coronary MRA", II International Workshop Clinical Imaging in the evaluation of the Ischemic Heart Disease, Rome, Italy, April 2002.
- 8. "MR Coronary Artery Imaging and Intervention", Guidant Corporation, Santa Clara, CA August 2002.
- 9. "Comprehensive Diagnosis of Ischemic Heart Disease using MRI", Grand Rounds, Division of Cardiovascular Medicine, Keck School of Medicine, University of Southern California, August 2002.
- 10. Adaptive Real-Time Architecture Pilot Study of Dynamic Pulse Sequence Reconfiguration and Coil Switching in MR Coronary Angiography", XIII Annual International Workshop on MR Angiography, Essen, Germany, October 2002.
- 11. "Comprehensive Diagnosis of Ischemic Heart Disease Using MRI", Grand Rounds, Division of Cardiovascular Medicine, University of Alabama, January 2003.
- 12. Spiral MR Coronary Angiography at 3T: Image Quality and Susceptibility Artifacts. Using Real-Time Interactive Multislice MRI Clinical Validation", Society of Cardiovascular MR, Orlando, FA, January 2003.
- 13. "Cardiovascular MR: Do we need comprehensive diagnosis of ischemic heart disease", Grand Rounds, National Heart Center, National University of Singapore, Singapore, February 2003.

14. "Cardiovascular MRI: Clinical utility and potential", Grand Rounds, St. Francis Hospital, San Francisco, CA, June 2003.

- 15. "Clinical Case Conference: Drums of the Congo", Department of Internal Medicine Grand Rounds, Stanford University School of Medicine, Stanford, CA August 2003.
- 16. "Comprehensive diagnosis of ischemic heart disease using MR the next frontier", Division of Cardiology, University of California, San Diego, CA September 2003.
- 17. "Cardiovascular MR from Molecule to Man", Cardiovascular Medicine Forum, 2003, Kawasaki University School of Medicine, Kawasaki, Japan.
- 18. "Cardiac MRI: present and future", Department of Medicine Grand Rounds, Alta Bates Hospital, Oakland, CA February 2004.
- 19. "Comprehensive Diagnosis of Ischemic Heart Disease using MRI", Division of Cardiovascular Medicine Grand Rounds, Stanford University Medical Center, Stanford, CA July 2004.
- 20. "Cardiac MRI Man to Molecule", Guidant Corporation, Santa Clara, CA, August 2004.
- 21. "Coronary Magnetic Resonance Angiography: What's Needed to Be Clinically Viable?", American College of Cardiology, Orlando, FL, March 2005.
- 22. "How to Perform Noninvasive angiography", American College of Cardiology, Orlando, FL, March 2005.
- 23. "Dual *in vivo* MR evaluation of mouse embryonic stem cells and their functional effects in mouse model of myocardial infarction", International Congress of Cardiology, Vancouver, Canada, August 2005.
- 24. "*In vivo* cellular and molecular MRI of magnetically labeled stem cells: a need for a positive contrast", Society of Molecular Imaging, Cologne, Germany, September 2005.
- 25. "Vascular wall and plaque evaluation", Society for Cardiovascular MR, Los Angeles, CA, September 2005.
- 26. "Cardiac MRI vs. Echocardiography", Society for Cardiovascular MR, Los Angeles, CA, September 2005.
- 27. "Comprehensive *in vivo* MRI of stem cells at 4.7 T", 17<sup>th</sup> International Angiography Workshop, Beijing, People's Republic of China September 2005.
- 28. "Non-invasive coronary artery imaging using MRI", Symposium, American Heart Association, Dallas, Texas, November, 2006.
- 29. "MRI and the evaluation of Coronary Artery Disease", Symposium, Update in Cardiology, Dallas, Texas, November, 2006
- 30. "Key issues for good MR coronary angiography", Society for Cardiovascular MR, Rome, Italy, February 2007.
- 31. "Molecular imaging of stem cell viability", Cardiomyopathy Conference, Stanford, CA, February 2007

32. "Cellular and molecular MRI of stem cells", Physiology, Biophysics & Systems Biology (PBSB) Seminar Series, Cornell University - Weill Medical College, New York, NY, June 2007.

- 33. "Past, present, and future of coronary imaging", Medtronic Vascular, Santa Rosa, CA, March 2008.
- 34. "In Vivo Cellular and Molecular MRI of Stem Cells", 17<sup>th</sup> Asean Congress of Cardiology, Hanoi, Vietnam, October 2008.
- 35. "MR Coronary Angiography", 17<sup>th</sup> Asean Congress of Cardiology, Hanoi, Vietnam, October 2008.
- 36. "In Vivo Cellular and Molecular MRI of Embryonic Stem Cell Survival and Proliferation", 19th Great Wall International Congress of Cardiology, Beijing, China, October 2008.
- 37. "Cellular and Molecular MRI of Stem Cell Survival", 5<sup>th</sup> Annual In Vivo Molecular Imaging, Cambridge Healthtech Institute, La Jolla, CA, November 2008
- 38. "Stem Cells in the Heart: What is happening to them?" Cardiology Grant Rounds, Stanford University, Stanford, CA, May 2009.
- 39. "In Vivo Cellular and Molecular MRI of stem cells in the heart." NESCI International Stem Cell Conference, Newcastle Upon Tyne, UK, September 2009.
- 40. "Coronary MRA" Echo Seoul and Cardiac Imaging Conference, Seoul, South Korea, September 2010
- 41. "Cardiac MRI Predicts Future Cardiac Events in Patients with Ischemic Cardiomyopathy" Echo Seoul and Cardiac Imaging Conference, Seoul, South Korea, September 2010
- 42. "Detection of Injured Border Zone Myocardium Using Manganese-Enhanced and Delayed-Enhanced MRI in a Pig Ischemia-Reperfusion Model", American Heart Association, Chicago, IL, November 2010
- 43. "Cardiac Stem Cells" 15th Conference on Health Care of the Chinese in North America, Los Angeles, CA, October 2010
- 44. "Futuristic Applications of MRI: Stem Cell Imaging and Beyond" American College of Cardiology Scientific Session, New Orleans, LA, April 2011
- 45. "ACC Meet the Experts: Panelist" American College of Cardiology Scientific Session, New Orleans, LA, April 2011
- 46. "MRI and Other Imaging Technologies" Heart Rhythm 2011, San Francisco, CA
- 47. "Cardiac MRI and Sleep Apnea: Comprehensive Diagnosis of the Myocardium?" Sleep Grand Rounds, Stanford, CA, November 2011
- 48. "Magnetic Resonance Imaging of Cardiac Stem Cells" American heart Association Scientific Sessions, Orlando, FL, November 2011.
- 49. Visiting Professor in Residence, "Bench to Bedside: Stem Cell Imaging in the Heart" Nakagami Hospital, Ryukyu University, Okinawa, Japan, December 2011.

50. "CMR in Myocardial Viability" SCMR Physician Pre-conference, Orlando, FL, February 2012

51. "Imaging: MRI Applications in Diastology, Pulmonary Hypertension, and Congenital Heart Disease: Poster Discussant", American College of Cardiology Scientific Session, Chicago, IL, March 2012

### F.8. Patents [5 total, 1 pending]

- 1. Yang PC. Protective Cover for Hypodermic Needle. U.S. Patent No. PO3 4625,1989.
- 2. **Yang PC**. Protective Cover and Connector for Hypodermic Needle. U.S. Patent No. PO3 5125,1989.
- 3. Liang DH, Yang PC, Koolwal A, Park B. Ultrasound image generation method in medical application, involves calculating t-statistic value for each image point and producing enhance image without ultrasound echo amplitudes. U.S. Patent No. US2006030777-A-1, 2/02/2006.
- 4. **Yang PC**. T-statistic method for suppressing blood artifact in ultrasound imaging U.S. Patent No. S04-114/PROV, US2006030777-A1 2004.
- 5. **Yang PC.** Manganese Enhanced MRI for Stem Cell Derived Teratoma (*pending*)