Biographical and Bibliographic Information

Phillip Chung-Ming Yang

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

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

Other study and research opportunities:

Positions and Employment

1990-1993	Internal Medicine Resident, Department of Medicine University of California, Los Angeles, CA
1994 -1999	Cardiovascular Medicine Fellow, Division of Cardiovascular Medicine Stanford University School of Medicine, Stanford, CA
1999-2005	Clinical Instructor and Staff Physician, Division of Cardiovascular Medicine Stanford University School of Medicine, Stanford, CA
2005-2012	Assistant Professor, Division of Cardiovascular Medicine, Department of Medicine Stanford University School of Medicine, Stanford, CA
2012-present	Associate Professor, Division of Cardiovascular Medicine, Department of Medicine Stanford University School of Medicine, Stanford, CA

Other Experience and Professional Memberships

2002-Present	Fellow, American College of Cardiology
1998-Present	Attending physician, Cardiovascular Medicine, Stanford Hospital & Clinic
1999-2003	Attending physician, Echocardiography Laboratory, Palo Alto VA Medical Center
2002-Present	Attending physician, Echocardiography Laboratory, Stanford Hospital & Clinic
2002-Present	Attending physician, Cardiothoracic MR Service, Stanford Hospital & Clinic
2003-2009	Member, AHA National Center, Radiology, Surgery, and Imaging Study Section
2003-2009	Member, AHA Western Regional, Cellular and Molecular Physiology Study Section
2007-Present	Co-Director, Falk 3T Cardiovascular MRI Laboratory, Stanford University
2008-Present	Director, Cardiovascular Stem Cell Laboratory, Stanford University
2011-Present	Director, Cardiothoracic MRI Service, Stanford Hospital & Clinic

Honors

1989	*Cum Laude*, Yale University School of Medicine
1998	Young Investigator Award (YIA), American College of Cardiology (ACC)
2000	NIH/NHLBI, K23 Career Development Award
2004	YIA Finalist: Physiology, Pharmacology and Pathology, ACC, Senior Author
2005	YIA Finalist: Physiology, Clinical Investigation, ACC, Senior Author
2005	Vivien Thomas YIA, 1st Place, American Heart Association, Senior Author
2007	YIA Finalist: Physiology, Clinical Investigation, ACC, Senior Author
2007	Chair, "Multimodality Imaging in the Catheterization Laboratory", Symposium, ACC
2007	Chair, "Novel Insights from Cardiovascular Magnetic Resonance", Symposium, ACC
2007	Chair, "Magnetic Resonance Coronary Angiography", Symposium, ISMRM
2008	Chair, Symposium on Cardiac Imaging, Asean Congress of Cardiology, Hanoi, Vietnam
2008	Chair, Plenary Session and Closing Ceremony, ASEAN Congress of Cardiology, Hanoi, Vietnam

2009 Melvin Judkins YIA, 1st Place, American Heart Association, Senior Author
2010 Melvin Judkins YIA, 1st Place, American Heart Association, Senior Author
2011 ACC Annual Scientific Session Program Committee member
2011 ACC "Meet the Experts, Outcomes and Cost-Effectiveness of CV Imaging" Panelist
2011 Member, Executive Council, International Congress of Cardiology, Los Angeles, CA
2012 Melvin Judkins YIA, 1st Place, American Heart Association, Senior Author
2013 Co-Chair, "Cardiac MRI in CAD: Acute and Chronic Applications, Prognosis and Safety" ACC Scientific Sessions, San Francisco, CA
2013 Co-Chair, "Current Status and Future of Cardiac Cell Therapy", ACC Scientific Sessions, San Francisco, CA
2014 Chair, "Cardio Metabolic Disease" Gachon-Stanford Frontiers in Cardiovascular Medicine 2014, Incheon, South Korea
2014 Moderator, "Cardiovascular Seminar entitled iPSC-Derived Cardiomyocytes" AHA Scientific Sessions, Chicago, IL
2014 Moderator, "Mechanisms of Cell Therapy - A Perspective from Multi-center Clinical Trial Network" AHA Scientific Sessions, Chicago, IL
2014 Co-Chair and Organizer, Frontiers in Cardiovascular Medicine, Stanford-Gachon 2nd Annual Session, Incheon, Korea
2015 YIA Finalist: ACC, Senior Author
2015 Moderator, "Evaluation of Therapeutic Efficacy in Clinical Stem Cell Trial" AHA Scientific Sessions, Orlando, FL
2015 Co-Chair and Organizer, Frontiers in Cardiovascular Medicine, Stanford-Gachon 2nd Annual Session, Stanford, CA
2015 Visiting Professor in Regenerative Medicine, Jinan University, Guangzhou, China
2016 Co-Chair and Organizer, Frontiers in Cardiovascular Medicine, Stanford-Gachon 2nd Annual Session, Incheon, Korea
2017 Moderator, "Secretion and Paracrine-Based Signaling in Myocardial Injury and Repair" AHA Scientific Sessions, Los Angeles, CA

Research Grants (*current*):

9/1/16-8/31/18 Novartis, Inc. Investigator Initiated Trial
LCZ696 and Exosomes Restore the Peri-Infarct Region in Advanced Heart Failure
The major goal is to evaluate the generation of the exosomes as a mechanism of action of LCZ696 in repairing the injured myocardium in advanced heart failure.
Role: **Principal Investigator**

9/1/16-8/31/17 California Institute for Regenerative Medicine DISC1-08650
Activation of patient-specific endogenous myocardial repair through the exosomes generated from the hypoxic iPSC-derived cardiomyocytes (iCMs)
The major goal is to circumvent the challenges of stem cell therapy through systematic analysis of the feasibility of a cell-free therapeutic paradigm generated from patient- and injury-specific iPSC-derivatives.

Role: **Principal Investigator**

4/1/16-9/30/17 NIH/SBIR 2 R44 EB019239-02
Tracking cardiac engraftment and viability of MiPSCs by MRI
The major goal is to develop a non-invasive and efficient technology for monitoring transplanted cells in the body using MRI.
Role: **Principal Investigator**

7/1/16-12/31/17 NIH/NHLBI/CCTRN UM1HL087318
The SENECA Trial: A Phase I, First-in-Human, Multicenter, Randomized, Double-Blinded, Placebo-Controlled Study of the Safety and Efficacy of Allogeneic Mesenchymal Stem Cells in Cancer Survivors With Anthracycline-Induced Cardiomyopathy
The primary purpose of this study is to examine the safety and feasibility of delivering allogeneic human mesenchymal stem cells by transendocardial injection to cancer survivors with left ventricular dysfunction secondary to anthracycline-induced cardiomyopathy.
Role: **Stanford Site Principal Investigator** PI: Lem Moye

12/1/15-2/28/19 NIH/NHLBI/CCTRN 4UM1HL087318
The CONCERT-HF Trial: Combination of Mesenchymal and C-kit+ Cardiac Stem Cells as Regenerative Therapy for Heart Failure
This is a phase II, randomized, placebo-controlled clinical trial designed to assess feasibility, safety, and effect of autologous bone marrow-derived mesenchymal stem cells and c-kit+ cardiac stem cells both alone and in combination, compared to placebo as well as each other, administered by transendocardial injection in subjects with ischemic cardiomyopathy.
Role: **Stanford Site Principal Investigator** PI: Lem Moye

6/1/13-3/31/17 NIH/NHLBI/CCTRN UM1 HL087318
The PACE Trial: Bone Marrow Derived ALDH Bright Cells in Intermittent Claudication
The purpose of this study is to find out if aldehyde dehydrogenase bright cells taken from a patient's bone marrow can be placed safely, via intramuscular injections, into their affected calf and lower thigh muscles and improve blood flow and/or peak walking time in patients experiencing pain associated with blocked blood vessels in the leg.
Role: **Stanford Site Principal Investigator** PI: Lem Moye

4/1/12 - 3/31/19 NIH/NHLBI 5UM1 HL113456-02
Cell Characterization and Imaging for Regenerative therapies in Ischemic Diseases – Cardiovascular Cell Therapy Research Network
The major goal of this project is to contribute to the clinical effort of the Cardiovascular Cell Therapy Research Network (CCTRN) through our

innovative approaches to in vivo imaging and induced pluripotent stem cell derived cardiomyocytes.
Role: **Principal Investigator**

4/01/16-03/31/21 NIH/NHLBI 1 K24 HL130553
Patient Oriented Research in Cardiovascular Regeneration
The major goal is to perform career development activities and mentor trainees in the design and conduct of novel stem cell therapy clinical trials.
Role: **Principal Investigator**

1/1/14-8/31/18 Mesoblast, Inc. 123973
A Double-blind, Randomized, Sham-procedure-controlled, Parallel-group Efficacy and Safety Study of Allogeneic Mesenchymal Precursor Cells in Patients With Chronic Heart Failure Due to Left Ventricular Systolic Dysfunction of Either Ischemic or Non-ischemic Etiology
The purpose of this study is to evaluate the efficacy and safety of allogeneic mesenchymal precursor cells for the treatment of chronic heart failure.
Role: **Principal Investigator**

9/1/15-8/31/17 General Electric Company AW623514
Clinical Trial of Comprehensive Characterization of the Peri-Infarct Region employing ASL & T1 Mapping
This clinical research study will assess the role of T1-map, manganese-enhanced MRI, and ASL in assessing the peri-infarct region in patients with ischemic cardiomyopathy.
Role: **Principal Investigator**

9/1/15-7/31/19 NIH/NHLBI 1R01 HL127039-0
Coronary Magnetic Resonance Angiography
The major goal of this project is to develop and evaluate MRI methods for noninvasive imaging of the coronary arteries.
Role: Investigator PI: Dwight Nishimura

4/1/13-3/31/17 DR2A-05394
CIRM - Disease Team Therapy Development Award DR2A-05394
Human Embryonic Stem Cell-Derived Cardiomyocytes for Patients with End Stage Heart Failure
The goal of this proposal is to prepare for 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: Joseph Wu

Research Grants (*mentored*):

12/1/08–8/31/19 NIH/NIBIB T32 EB 009035
Multi-Disciplinary Training Program in Cardiovascular Imaging

The goal is a multi-disciplinary training program for post-doctoral fellows in cardiovascular imaging.
Role: Primary Mentor PI: Joseph Wu

Research Grants (*pending*):

7/1/17 – 6/30/22 AHA 17MERIT33630007
Translational Research of Exosome
The major goal is to characterize the exosomes and translate basic discoveries emerged prior innovation in visualizing stem cell biology in the injured myocardium.
Role: **Principal Investigator**

9/30/17 – 7/31/22 NIH DP1OD023963
Advanced characterization and translation of stem cell derived exosomes.
Role: **Principal Investigator**
The major goal test that exosomes salvage injured cardiomyocytes in the peri-infacrt region of the myocardium by simulating endogenous repair.

7/1/17 – 6/30/22 NIH R01HL132934
Autologous Exosomes for Endogenous Repair of the Injured Myocardium
Role: **Principal Investigator**
The major goal is to determine if the restorative mechanism of the induced contractile cardiomyocytes is mediated through the exosomes to salvage the injured myocardium in the peri-infarct region.

Research Grants (*past*):

10/1/13-9/30/16 General Electric Company Research Grant
3T Coronary MRA
The major goal is to evaluate novel methods for improved coronary MRA at 3T.
Role: Investigator PI: Michael McConnell

3/1/14-02/28/16 NIH/ University of Texas Health Sciences Center 008802S
Derivation of human iPSC derived cardiomyocytes from LVAD patients
The major goal is to generate iPSC-cardiomyocytes (iPSC-CMs) from LVAD patients and evaluate the genotypic and phenotypic fidelity of iPSC-CMs when compared to native CMs.
Role: **Principal Investigator**

5/1/14-4/30/16 NIH / University of Virginia U01HL117006-01A1
HCMR - Novel Predictors of Outcome in Hypertrophic Cardiomyopathy
The major goal is to establish imaging-based prognostic biomarker using MRI T1-map.
Role: Stanford Site Co-PI Stanford Site Co-PI: Euan Ashley

4/1/15 - 3/31/16 SNSF Bio/Medical Mini Seed Grant
TEM and DLS Analysis of Exosomal Effects in Cardiac Regenerative Medicine
The major goal is to identify and quantify the exosomes present in isolated in vitro samples of induced pluripotent cells.
Role: **Principal Investigator**

3/1/15-2/28/16 Stanford Women's Heart Health Seed Grant
Male vs. female human fetal amnion-derived mesenchymal stem cells (hAMSCs): Immunoprivilege, cardiomyocyte differentiation, and regenerative capability
The major goal is to compare the reprogramming yield and restorative effects of male vs. female hAMSCs into iPSC-cardiomyocytes (MiCMs) in the murine myocardial injury model.
Role: **Principal Investigator**

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

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 pre-doctoral electrical engineering students specializing in biomedical imaging.
Role: Mentor PI: Dwight Nishimura

7/1/14-2/28/14 NIH/NHLBI– Bell Biosystems, Inc 1R43EB019239-01
Tracking cardiac engraftment and viability of MiPSC by MRI
The major goal is to evaluate the effectiveness of using magneto-endosymbionts (ME) for MRI tracking of transplanted iPS cells in the myocardium.
Role: **Principal Investigator**

1/1/14-12/31/14 Stanford Spectrum Innovation Accelerator Seed Grant
First-in-Human Clinical Trial of Manganese-Enhanced MRI (MEMRI) to Assess Peri-Infarct Injury
The major goal is to conduct first-in-human clinical trial of novel manganese-enhanced MRI in patients with end-stage ischemic heart failure.
Role: **Principal Investigator**

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

9/1/09-8/31/14 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 Sub-study.
The major goal is to assess the cardiovascular effects of rituximab in patients with systemic sclerosis-associated pulmonary hypertension.
Role: Investigator PI: Mark Nicolls

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: **Primary Mentor** PI: Rajesh Dash

9/01/09-8/30/14 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**

9/30/10-9/29/14 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

3/1/13 - 2/28/14 NIH/ University of Texas Health Sciences Center 008802S
Clinical and MR Imaging Assessments in Patients with Intermittent Claudication Following Injection of Bone Marrow Derived ALDH Bright Cells

The major goal is to conduct a clinical trial of patients with peripheral arterial disease and claudication pain using autologous ALDH bright bone marrow stem cells.
Role: **Principal Investigator**

1/7/13-1/6/14 Stanford Cardiovascular Institute Seed Grant
Arrhythmogenic Impact of Restorative Stem Cell Therapy in the Infarcted Porcine Myocardium"
The major goal of this study is to assess the role of stem cell therapy in reducing the arrythmogenecity in porcine myocardial injury model.
Role: Investigator PI: Rajesh Dash

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**

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

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

9/1/07-8/31/11 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: **Primary 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 Cell*s
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: **Primary Mentor** PI: Svetlana Lyalina

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: **Primary 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: **Primary 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: **Primary 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: **Primary 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: **Primary 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: **Primary 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: **Primary 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.
Role: **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.
Role: **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.
Role: **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.
Role: 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.
Role: **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.
Role: **Primary 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.
Role: **Primary 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.
Role: 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.
Role: 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.
Role: 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.
Role: **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.
Role: **Principal Investigator**

Clinical Trials:

STUDY: A Multicenter, Randomized Double-blind, Placebo-controlled, Phase 2 Study Evaluating the Safety and Efficacy of Different Doses of IW-1973 over 12 Weeks in Patients with Heart Failure with Preserved Ejection Fraction
ROLE: **Stanford Principal Investigator**
TYPE: Phase 2
SPONSOR: Ironwood Pharmaceuticals, Inc.
DATES:
NCT ID:

STUDY: A Phase 2, Randomized, Double-Blind, Placebo Controlled, Safety and Efficacy Study of Dutogliptin in Combination with Filgrastim in Early Recovery Post Myocardial Infarction
ROLE: **Stanford Principal Investigator**
TYPE: Phase 2
SPONSOR: Recardio Inc.
DATES:
NCT ID:

STUDY: Clinical Trial of Manganese-Enhanced MRI (MEMRI) to Assess Peri-Infarct Injury.
ROLE: **Principal Investigator**
TYPE: Phase 1/2
SPONSOR: General Electric
DATES: September 2015-December 2016
NCT ID: NCT02933034

STUDY: The DREAM-HF Trial: A Double-blind, Randomized, Sham-procedure-controlled, Parallel-group Efficacy and Safety Study of Allogeneic Mesenchymal Precursor Cells (CEP-41750) in Patients With Chronic Heart Failure Due to Left Ventricular Systolic Dysfunction of Either Ischemic or Nonischemic Etiology
ROLE: **Principal Investigator**
TYPE: Phase 3 Interventional
SPONSOR: Teva Pharmaceutical Industries
DATES: January 2014 to August 2018
SUBJECTS: Estimated enrollment: 1165 subjects; ongoing enrollment at Stanford
Enrollment Dates: from: 1/01/14 to: ongoing
NCT ID: NCT02032004

STUDY: The SENECA Trial: A Phase I, First-in-Human, Multicenter, Randomized, Double-Blinded, Placebo-Controlled Study of the Safety and Efficacy of

Allogeneic Mesenchymal Stem Cells in Cancer Survivors With Anthracycline-Induced Cardiomyopathy
ROLE: **Principal Investigator**
TYPE: Cardiovascular Cell Therapy Research Network (CCTRN) multi-institutional trial
SPONSOR: NHLBI / The University of Texas Health Science Center, Houston
DATES: June 2016 to July 2019
SUBJECTS: Estimated enrollment: 36 subjects
Enrollment Dates: from: 06/01/16 to: 01/1/19
NCT ID: NCT02509156

STUDY: The CONCERT-HF Trial: Combination of Mesenchymal and C-kit+ Cardiac Stem Cells as Regenerative Therapy for Heart Failure
ROLE: **Principal Investigator**
TYPE: Cardiovascular Cell Therapy Research Network (CCTRN) multi-institutional trial
SPONSOR: NHLBI / The University of Texas Health Science Center, Houston
DATES: October 2015 to February 2019
SUBJECTS: Estimated enrollment: 144 subjects; ongoing enrollment at Stanford
Enrollment Dates: from: 10/01/15 to: 2/28/19
NCT ID: NCT02501811

STUDY: The PACE Trial: Bone Marrow Derived ALDH Bright Cells in Intermittent Claudication
ROLE: **Principal Investigator**
TYPE: Cardiovascular Cell Therapy Research Network (CCTRN) multi-institutional trial
SPONSOR: NHLBI / The University of Texas Health Science Center, Houston
DATES: June 2013 to July 2016
SUBJECTS: Estimated enrollment: 80 subjects; ongoing enrollment at Stanford
Enrollment Dates: from: 6/01/13 to: 8/31/17
NCT ID: NCT01774097

STUDY: Efficacy of EVP 1001-1 (SeeMore) in the Assessment of Myocardial Viability in Patients with Cardiovascular Disease
ROLE: **Principal Investigator**
TYPE: Safety/Efficacy Study
SPONSOR: General Electric
DATES: May 2013 to June 2013
SUBJECTS: 6 subjects
Enrollment Dates: from: 5/02/13 to: 6/27/13
NCT ID: NCT01989195

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

1991	California Medical Board	Lic. # G73144
2001	Drug Enforcement Agency	Lic. # BY5953751

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

Academic positions:

9/1/02-6/30/04	Clinical Instructor, Division of Cardiovascular Medicine Stanford University School of Medicine, Stanford, CA
7/1/04-1/31/05	Instructor in Medicine, Division of Cardiovascular Medicine Stanford University School of Medicine
2/1/05–4/30/05	Acting Assistant Professor of Medicine (Cardiovascular Medicine) 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
9/1/08–3/31/12	Assistant Professor of Medicine (Cardiovascular Medicine) Stanford University School of Medicine, Stanford, CA
4/1/12–present	Associate Professor of Medicine (Cardiovascular Medicine) Stanford University School of Medicine, Stanford, CA

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
7/01/06-present	Director, Cardiovascular Stem Cell Laboratory Stanford University Medical Center, Stanford, CA
7/01/10-present	Co-Director, Falk Cardiovascular MRI Laboratory Stanford University Medical Center, Stanford, CA
7/01/12-present	Director, Cardiothoracic MRI Program 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
2014-present	Co-Chair and Organizer, Stanford-Gachon University Annual Frontiers in Cardiovascular Medicine, Incheon, South Korea
2016-present	Co-Chair and Organizer, International Stem Cell and Precision Medicine Summit, Guangzhou, China.

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
2015	Co-Chair, AHA Stem Cell Working Group
2015	Veterans Affairs Office of Research and Development proposal reviewer
2015	Reviewer, Department of Defense, Cardiovascular Health of the Defense Health Program, Investigator-Initiated Research Award and the Technology/Therapeutic Development Award, Study Section
2015	Reviewer, SRA International, PRMRP PRE-CHD peer review panel
2015	Reviewer, NIH Clinical and Integrative Cardiovascular Sciences (CICS) Study Section, Center for Scientific Review
2015	NIH Cardiovascular and Respiratory Sciences IRG Special Emphasis Panelist "CVRS Member Conflicts and Continuous Submissions"
2016	Reviewer, NIH Clinical and Integrative Cardiovascular Sciences (CICS), Study Section, Center for Scientific Review
2016	Reviewer, Cardiovascular Studies – A (CARA) panel, VA BLCS Merit Review meeting
2016-2017	Reviewer, NIH Myocardial Ischemia and Metabolism (MIM) Study Section, Center for Scientific Review
2017	Reviewer, NIH Small Business Innovation Research (SBIR) Study Section, Center for Scientific Review

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

2002-2008	Editor, Journal of Cardiovascular Magnetic Resonance
2009-present	World Journal of Stem Cells
2011-present	The Scientific World Journal
2012-2015	Editor, World Journal of Translational Medicine
2013-2016	Editor, Journal of Transplantation & Stem Cell Biology
2013-2015	Editor, World Journal of Stem Cells
2015-Present	Editor, Circulation Research

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*
8/12-present	*Dataset Papers in Medicine, Cardiology section*

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 2nd 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, 1st Place, American Heart Association, Senior Author
11/2010	Melvin Judkins Young Investigator Award, 1st Place, American Heart Association, Senior Author

11/2011	Melvin Judkins Young Investigator Award, Finalist, American Heart Association, Senior Author
11/2012	Melvin Judkins Young Investigator Award, 1st Place, American Heart Association, Senior Author
7/2015	Visiting Professor, Regenerative Medicine, Jinan University, Guangzhou, China

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

E.1.A *Original research* (89 total; 2 in press, 1 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**)

28. 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, Kosuge H, Wang X, Weissman I, Robbins RC, Nishimura D, Quertermous T, Reijo-Pera RA, **Yang PC.** In vivo molecular MRI of cell survival and teratoma formation following embryonic stem cell transplantation into the injured murine myocardium. *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* 2012 Aug;68(2):595-9.

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* 2012 Mar;5(2):251-61. [Role: Acquisition and analysis of data, experimental design, and manuscript review]

46. Ge X, Toma I, Wang I, Sebastiano V, Liu J, Buttee MJ, Reijo-Pera R, **Yang PC**. Human amniotic mesenchymal stem cell-derived induced pluripotent stem cells may generate a universal source of cardiac cells. *Stem Cells Dev* 2012 Oct 10;21(15):2798-808.

47. 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* 2012;7(6):e38328. Epub 2012 Jun 1.

48. Hare JM, Bolli R, Cooke JP, Gordon DJ, Henry TD, Perin EC, March KL, Murphy MP, Pepine CJ, Simari RD, Skarlatos SI, Traverse JH, Willerson JT, Szady AD, Taylor DA, Vojvodic RW, **Yang PC,** Moyé LA and for the Cardiovascular Cell Therapy Research Network (CCTRN). Phase II Clinical Research Design in Cardiology : Learning the Right Lessons Too Well: Observations and Recommendations From the Cardiovascular

Cell Therapy Research Network (CCTRN). *Circulation.* 2013;127:1630-1635. [Role: Analysis of data and manuscript review]

49. Chan CT, Green T, Chertow GM, Kliger AS, Beck GJ, Daugirdas JT, Kotanko P, Larive B, Levin NW, Mehta RL, Rocco M, Sanz J, **Yang PC,** Rajagopalan S. Effects of Frequent Hemodialysis on Ventricular Volumes and Left Ventricular Remodeling : the Frequent Hemodialysis Network (FHN) Trials. *Clin J Am Soc Nephrol.* 2013 Aug 22. [Role: Acquisition and analysis of data, experimental design, and manuscript review]

50. Lancellotti P, Nkomo VT, Badano LP, Bergler J, Bogaert J, Davin L, Cosyns B, Coucke P, Dulgheru R, Edvardsen T, Gaemperli O, Galderisi M, Griffin B, Heidenreich PA, Nieman K, Plana JC, Port SC, Scherrer-Crosbie M, Schwartz RG, Sebag IA, Voigt JU, Wann S, **Yang PC**. European Society of Cardiology Working Groups on Nuclear Cardiology and Cardiac Computed Tomography and Cardiovascular Magnetic Resonance and the American Society of Nuclear Cardiology, Society for Cardiovascular Magnetic Resonan. Expert consensus for multi-modality imaging evaluation of cardiovascular complications of radiotherapy in adults: a report from the European Association of Cardiovascular Imaging and the American Society of Echocardiography. *Eur Heart J Cardiovasc Imaging.* 2013 Aug;14(8):721-40.

51. Hare JM, Bolli R, Cooke JP, Gordon DJ, Henry TD, Perin EC, March KL, Murphy MP, Pepine CJ, Simari RD, Skarlatos SI, Traverse JH, Willerson JT, Szady AD, Taylor DA, Vojvodic RW, **Yang PC**, Moyé LA; Cardiovascular Cell Therapy Research Network. Phase II clinical research design in cardiology: learning the right lessons too well: observations and recommendations from the Cardiovascular Cell Therapy Research Network (CCTRN). *Circulation.* 2013 Apr 16;127(15):1630-5 [Role: Acquisition and analysis of data, experimental design, and manuscript review]

52. Ingle RR, Wu HH, Addy NO, Cheng JY, **Yang PC**, Hu BS, Nishimura DG. Nonrigid autofocus motion correction for coronary MR angiography with a 3D cones trajectory. Magn Reson Med. 2013 Sep 4. doi: 10.1002/mrm.24924. [Epub ahead of print] PMID: 24006292 [Role: Acquisition and analysis of data, experimental design, and manuscript review]

53. Wang IE, Robinson JT, Do G, Hong G, Gould DR, Dai H, **Yang PC.** Graphite Oxide Nanoparticles with Diameter greater than 20 nm are Biocompatible with Mouse Embryonic Stem Cells and can be used in a Tissue Engineering System. *Small*. 2014 Apr;10(8):1479-84. doi: 10.1002/smll.201303133.

54. Shiran H, Zamanian RT, McConnell MV, Liang DH, Dash R, Heidary S, Lakshmi S, Wu JC, Haddad F, **Yang PC**. Relationship between Echocardiographic and Magnetic Resonance Derived Measures of Right Ventricular Size and Function in Patients with Pulmonary Hypertension. *J Am Soc Echocardiogr.* 2014 Apr;27(4):405-12. doi: 10.1016/j.echo.2013.12.011

55. Burridge PW, Metzler SA, Nakayama KH, Abilez OJ, Simmons CS, Bruce MA, Matsuura Y, Kim PJ, Wu JC, Butte M, Huang NF, **Yang PC.** Multi-cellular interactions sustain long-term contractility of human pluripotent stem cell-derived cardiomyocytes. *Am J Transl Res* 2014;6(6):724-735.

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134. Tada Y, Heidary S, Tachibana A, Sano H, Neofytou E, Dash R, Wu J, **Yang PC.** Cardiac viability in the periinfarct region quantified by T1 mapping following manganese-enhanced MRI (MEMRI) is associated with LV remodeling post-myocardial infarction (MI SCMR 2017 Scientific sessions, Washington DC, February 2017.
135. Fujii T., Perin E, Murphy MP, **Yang PC**, Henry TD, Moye LA, Bettencourt JL, Ebert RF, Lima JA. Arterial Anatomy and Functional Performance in Peripheral Artery Disease: Cardiovascular Cell Therapy Research Network Patients With Intermittent Claudication Injected With ALDH Bright Cells: CCTRN PACE. *American Heart Association Scientific Sessions*. Anaheim, CA, November, 2017.
136. Tada Y, Heidary S, Tachibana A, Zaman J, Neofytou E, Dash R, Wu J, Yang PC. T1-map of the Peri-infarct Region (PIR) Delineated by Manganese-enhanced MRI (MEMRI) Predicts Left Ventricular (LV) Dysfunction. *American Heart Association Scientific Sessions*. Anaheim, CA, November, 2017.
137. Davidson SJ, Henry TD, Chugh AR, **Yang PC**, Traverse JH. Does the Presence of Microvascular Obstruction on Cardiac MRI Following Myocardial Infarction Create a More Favorable Target for Intracoronary Stem Cell Delivery? *American Heart Association Scientific Sessions*. Anaheim, CA, November, 2017.
138. Sano H, Heidary S, Tada Y, Tachibana A, Santoso MR, Dash R, **Yang PC.** T1-Mapping of Manganese-enhanced MRI in Patients with Ischemic Cardiomyopathy Detects the Peri-Infarct Region. *American Heart Association Scientific Sessions*. Anaheim, CA, November, 2017.
139. Jung JH, Santoso M, **Yang PC**. Exosomal miR-106a-363 cluster from the hypoxic human iPSC-derived cardiomyocytes restore the autologous ischemic cardiomyocytes. *American Heart Association Scientific Sessions*. Anaheim, CA, November, 2017.

140. Fu X, Sano H, von Bornstaedt D, Woo J, **Yang PC.** Therapeutic Efficacy of the Exosomes Derived From Human Induced Pluripotent Stem Cells (iPSCs) vs. Human Induced Pluripotent Stem Cells-Derived Cardiomyocytes (iCMs) in Murine Myocardial Injury Model *American Heart Association Scientific Sessions*. Anaheim, CA, November, 2017.
141. Spath NB, Tavares A, Gray GA, Dweck M, Newby D **Yang PC**, Jansen MA, Semple SI**.** Manganese-enhanced T1 mapping in preclinical myocardial infarction: validation with 18F-FDG PET/MR. *Cardiac Magnetic Resonance 2018.* Barcelona, Spain, February 2018.

E.7. Invited presentations [78 total]

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”, 17th 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”, 17th Asean Congress of Cardiology, Hanoi, Vietnam, October 2008.
35. “MR Coronary Angiography”, 17th 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”, 5th 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
52. "Human amniotic mesenchymal stem cells derived induced pluripotent stem cells may be a promising cell source for allogeneic iPSCs transplantation therapy", International Society for Stem Cell Research 10th Annual Meeting, Yokohama, Japan.
53. "The Big Squeeze: Reconstructing the Myocardial Tissue", Stanford Cardiovascular Institute Member Retreat, September 2012, Stanford, CA.
54. "Cardiovascular Stem Cells - The Beat Goes On... or Does It?", Cardiovascular Medicine Grand Rounds, October 2012, Stanford, CA
55. "Evaluation of the Peri-Infarct Injury and Stem Cell Therapy", AZE Symposium, Washington, DC, February 2013
56. "In Vivo Molecular Imaging of Cardiovascular Stem Cells", Sangamo Biosciences, Richmond, CA May 2013
57. "Found in Translation: Cardiovascular Stem Cells", Frontiers in Cardiovascular Medicine, Stanford University, Stanford, CA May 2013
58. "In Vivo Imaging of Cardiovascular Stem Cells", Symposium on Stem Cell Therapy and Cardiovascular Innovations. Madrid, Spain, June 2013
59. "Cardiovascular Imaging End-Points in Stem Cell Clinical Trials" Cardiovascular Cell Therapy Research Network Coordinator Meeting, Houston, TX, October 2013.
60. "In Vivo Pluripotent Stem Cell Tracking - Positron Emission Tomographic Reporter Gene in iPSC-derived Cardiomyocytes" NHLBI Cardiovascular Cell Therapy Research Network Symposium on Cardiovascular Regenerative Medicine September, Bethesda, MD, September 2013
61. "Manganese-enhanced MRI of Peri-Infarct Viability and Stem Cell Engraftment 3. Cardiovascular Imaging End-Points in Stem Cell Clinical Trials" NHLBI Cardiovascular Cell Therapy Research Network Symposium on Cardiovascular Regenerative Medicine, Bethesda, MD, September 2013
62. "Stem Cell Translation: Truth or Myth" Gachon-Stanford Frontiers in Cardiovascular Medicine 2014, Gachon University Gil Medical Center, Incheon, Korea, July 2014
63. "Manganese-enhanced MRI detects sustained engraftment and restorative potential of human placental stem cells after ischemic injury." Magnetic Resonance Angiography 26th Annual International Conference, Rome, Italy, September 2014
64. "Regenerative Medicine - New Frontiers in Cardiology" Stanford Transpacific Interdisciplinary Cardiology Forum, Stanford, CA, October 2013
65. "Novel analysis of the peri-infarct region using MRI" CCTRN Steering Committee Fall Meeting, Bethesda, MD, October, 2014

66. “Cellular and molecular analysis of the patient-specific iPSC-derived cardiomyocytes” CCTRN Steering Committee Fall Meeting, Bethesda, MD, October, 2014
67. “In Vivo Visualization of Stem Cell Therapy” AHA Scientific Sessions, Chicago, IL, November, 2014
68. "Translation of Cardiovascular Stem Cells", Jinan University, China, June, 2015
69. "Clinical and Commercial Promise of Stem Cell Therapy" Saliai, Inc., China, June 2015
70. “Myocardial Viability in Cell Therapy” AHA Scientific Sessions, Orlando, FL, November, 2015
71. “Regenerative Medicine: iPSC Derived Cardiomyocytes”. Frontiers in Cardiovascular Medicine 2nd Annual Session, Stanford, CA, July, 2015
72. "Cardiac MRI and Stem Cell Therapy" Molecular Medicine of the Heart Master Program in the Graduate School of Biomedical Sciences, Rutgers University, Newark, NJ, December, 2015
73. "Cardiovascular MRI: Myth or Truth" Department of Cell Biology and Molecular Medicine Seminar Series Rutgers University, Newark, NJ, December, 2015.
74. "Research Progress of Stem Cell and Precision Medicine in USA", Keynote Speech, First International Stem Cell and Precision Medicine Summit, Guangzhou, China, March, 2016.
75. “Exosomes: an alternative to iPSC-derivatives to restore the injured heart” Anesthesiology Conference, Stanford, May, 2016
76. “Personalized Regenerative Medicine” Frontiers in Cardiovascular Medicine 3rd Annual International Symposium, Gachon University Gil Ya Lee Medical Center, Incheon, South Korea, July, 2016.
77. “Translation of iPSC-derived Exosomes”, 4th Annual Midwest Conference on Cell Therapy and Regenerative Medicine, University of Kansas, Kansas, September, 2016.
78. “Stem Cell Therapy without Stem Cells?” Stanford Cardiology Grand Rounds, Stanford, CA, October, 2016.
79. “iPS cells as a model of disease and potential therapy for the failing heart” Human iPCS as Disease Model: Future is Here?”, Seminar, AHA Scientific Sessions, November, 2016
80. “Autologous iPSC-derived Exosome for Precision Diagnosis of Cardiovascular Disease” Center for Precision Health and Integrated Diagnostics Seminar, Stanford, CA, May, 2017.
81. “Precision Medicine and Personalized iPSC-derived Exosomes", Keynote Speech, First International Stem Cell and Precision Medicine Summit, Guangzhou, China, May, 2017.
82. “Exosomes from iPSC-derived Cardiomyocytes for Heart Failure Therapy”, Grand Rounds, Department of Medicine, Guangdong Provincial Hospital of Chinese Medicine, 2nd Affiliated Hospital of Guangzhou University of Chinese Medicine, May, 2017.

83. "Exosomes and Stem Cell Therapy", Frontiers in Cardiovascular Medicine, Stanford-Gachon 4th Annual International Symposium, July 2017.
84. "Precision Intelligent Care of the Elderly", Frontiers in Cardiovascular Medicine, Stanford-Gachon 4th Annual International Symposium, July 2017.
85. "What are the Questions" Exosome Roundtable, The International Symposium on Cardiovascular Regenerative Medicine, Houston, TX, September, 2017.
86. "Imaging of Heart Failure: Cardiac MRI" AHFTC Lecture Series, Stanford, CA, October 2017.
87. "Rapid Translation of Personalized Medicine through Patient-specificiPSC-derived Exosomes" American Heart Association Frontiers in Stem Cells, Los Angeles, CA, November 2017.
88. "Precision Medicine for Heart Failure: Exosomes from iPSC-derived Cardiomyocytes" Keynote Address, IndieBio Stem Cell Therapy Event, San Francisco, CA, February 2018.

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**, Dash R. MRI Evaluation of Heterogeneous Tissue. U.S. Patent Pending No. 14/992,847.