Stanford

Sean M. Wu

Associate Professor of Medicine (Cardiovascular Medicine) and, by courtesy, of Pediatrics

Medicine - Cardiovascular Medicine

CLINICAL OFFICES

- **Institute of Stem Cell and Regenerative Medicine**
  265 Campus Dr Rm G1120A
  Lokey Stem Cell Research Bldg
  Stanford, CA 94305
  Tel (650) 724-4498 **Fax** (650) 724-4689

ACADEMIC CONTACT INFORMATION

- **Administrative Contact**
  Francesca Mae G. Tongco - Cardiovascular Institute
  Email ftongco@stanford.edu
  Tel (650) 736-9206

Bio

BIO

Sean M Wu, MD, PhD is a board certified cardiologist who specializes in treating men and women with cardiac diseases such as coronary artery disease, cardiac valve disorder, rhythm disorders, and cardiac preventive management.

Dr. Wu also conduct research in cardiac developmental biology/congenital heart disease, stem cell biology and translation of stem cells into new treatments for congenital heart disease, adult heart failure and rhythm disorders.

In addition to completion of residency program and board certification in internal medicine, Dr. Wu has also completed a 3-year ACGME-accredited fellowship in cardiovascular disease with board certification and additional clinical training in echocardiography at Massachusetts General Hospital and cardiac developmental biology research training at Boston Children's Hospital/Harvard Medical School in Boston, MA.

CLINICAL FOCUS

- Cardiovascular Disease

ACADEMIC APPOINTMENTS

- Associate Professor, Medicine - Cardiovascular Medicine
- Associate Professor (By courtesy), Pediatrics
- Member, Bio-X
- Member, Cardiovascular Institute
- Member, Maternal & Child Health Research Institute (MCHRI)

ADMINISTRATIVE APPOINTMENTS

- Chair, Faculty Search Committee, Basic Sci & Enginr (BASE) Program, Moore Heart Center, LPCH, (2018-2019)
- Associate Member, Stanford Diabetes Research Center, (2017- present)

- Section Editor, Current Cardiology Reports, (2016- present)
- Associate Professor of Medicine (with tenure) and (by courtesy) Pediatrics, Stanford University, (2016- present)
- Editorial Consultant, Journal of American College of Cardiology: Basic to Translational Science, (2015- present)
- Guest Editor, Journal of Cardiovascular Development and Differentiation, (2015- present)
- Consulting Editor, Circulation Research, (2015-2019)
- Editorial Board - General, Circulation Research, (2014- present)
- Section Editor, Current Treatment Options in Cardiovascular Medicine, (2013-2017)
- Assistant Professor of Medicine, Stanford University, School of Medicine, (2012-2015)
- Associate Editor, BMC Cardiovascular Disease, (2011-2014)
- Organizing Committee, NIH/NHLBI Cardiovascular Regenerative Medicine Symposium, (2011-2013)
- Editorial Board, Frontiers in Pharmacology and Smooth Muscle Biology, (2010-2013)
- Editorial Board, World Journal of Stem Cell, (2009-2012)
- Assistant Physician, Massachusetts General Hospital, (2009-2012)
- Assistant Professor of Medicine, Harvard Medical School, (2009-2012)
- Editorial Board, Clinical Medicine Insights: Cardiology, (2007-2012)
- Director, Mouse Microinjection Core, Massachusetts General Hospital, (2007-2012)
- Instructor in Medicine, Harvard Medical School, (2006-2009)

HONORS AND AWARDS

- Sanford and Joan Weill Scholar, Stanford Cardiovascular Institute (2020-)
- 2018 Kenneth D. Bloch Memorial Lecturer in Vascular Biology, American Heart Association (2018)
- Consulting Editors of the Year, Circulation Research (2018)
- Established Investigator Award, American Heart Association (2017-2021)
- Superior Editorial Consultant, Circulation Research (2017)
- Elected Member, American Society for Clinical Investigation (ASCI) (2016)
- Cardiovascular Medicine Division Teaching Award, Department of Medicine, Stanford University School of Medicine (2015)
- NIH Director's Pioneer Award, National Institutes of Health, Office of the Director (2014-2019)
- David Lawrence Stein Award, American Heart Association-Western Affiliate (2014)
- Endowed Faculty Scholar, Child Health Research Institute/ Lucile Packard Foundation for Children's Health (2013-2018)
- Seed Grant Award (Co-Recipient with Dr. Beth Pruitt), Stanford Cardiovascular Institute (2013-2014)
- SPARK Research Award, Division of Cardiology, Massachusetts General Hospital (2010-2011)
- Fellow, American College of Cardiology (2010)
- Progenitor Cell Biology Consortium, Co-Principal Investigator, NIH/NHLBI (2009-2016)
- NIH Director's New Innovator Award, National Institutes of Health, Office of the Director (2008-2013)
- Seed Grant Recipient, Harvard Stem Cell Institute (2008-2010)
- Young Investigator Competitive Award in Cardiovascular Medicine, GlaxoSmithKline Education and Research Foundation (2007-2009)
- de Gunzburg Family Scholar, Massachusetts General Hospital (2006)
- K08 Mentored Clinical Scientist Award, NIH/NHLBI (2005-2011)
- Abstract of Distinction, Research Symposium - Massachusetts General Hospital (2005)
- NIH/NHLBI Scholarship, Keystone Symposium on Molecular Mechanism of Cardiac Disease and Regeneration (2005)

- Career Development Award in Cardiovascular Medicine, American College of Cardiology Foundation/Pfizer (2004-2007)
- ACCF/Bristol Meyers Travel Award, American College of Cardiology (2002)
- Merck/ACC Young Investigator Award - 2nd Place, American College of Cardiology (2001)
- Henry Christian Award for Research Excellence, American Federation for Medical Research (1999)
- Experimental Pathologist-in-Training, American Society for Investigative Pathology (1998)
- Award for Academic Excellence and Achievement, American Society of Clinical Pathologists (1996, 1997)
- Tau Beta Pi, Stanford University School of Engineering (1992)
- Terman Award, Stanford University School of Engineering (1992)
- President's Award for Academic Excellence, Stanford University (1989)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Chair, AHA-BCVS Committee on Early Career Development (2020 - present)
- Vice Chair, AHA-BCVS Committee on Early Career Development (2018 - 2020)
- Vice-Chair, American Heart Association National Research Committee, Bioethics Subcommittee (2017 - present)
- Member, AHA - Committee on Scientific Session Programming (CSSP) (2016 - present)
- Member, AHA - BCVS Committee on Scientific and Clinical Education Lifelong Learning Committee (2016 - present)
- Member, American Heart Association - BCVS Committee on Early Career Development (2015 - 2018)
- Member, American Heart Association National Research Committee, Stem Cell Research Subgroup (2013 - 2017)
- Member, American Heart Association National Stem Cell Therapy Writing Group (2012 - present)
- Member, Research Administration Advisory Committee, Massachusette General Hospital (2010 - 2012)

PROFESSIONAL EDUCATION

- Research Fellowship, Boston Children's Hospital/Harvard Medical School , Stem Cell Biology (2006)
- Board Certification: Cardiovascular Disease, American Board of Internal Medicine (2005)
- Fellowship: Massachusetts General Hospital (2005) MA
- Board Certification, Internal Medicine, ABIM (2003)
- Residency: Duke University Medical Center (2001) NC
- Medical Education: Duke University School of Medicine (1999) NC
- PhD, Duke University School of Arts and Sciences , Pathology (1998)
- BS, Stanford University , Mechanical Engineering (1992)
- BS, Stanford University , Biological Science (1992)

COMMUNITY AND INTERNATIONAL WORK

- Faculty Advisor

PATENTS

- Sean M. Wu. "United States Patent Application No. 13/552,975; US Patent No. 9393221 Methods and compounds for reducing intracellular lipid storage", Massachusetts General Hospital, Jul 19, 2016

LINKS

- Sean Wu Stanford Lab website: http://seanwulab.stanford.edu/

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Cardiovascular Developmental Biology

A major focus of the Wu Laboratory is to define the earliest steps in heart formation. We use experimentally-modified mice as our live model to take advantage of a broad range of molecular tools available. The similarity between a mouse heart and a human heart allows us to connect our results directly into finding ways to treat human heart diseases. We seek to understand what genes are responsible for making the heart chamber form in the right way. We are also interested in finding out what disturbances in the normal process of heart formation is responsible for devastating congenital heart diseases that lead to fetal demise or death shortly after birth. We have utilized the most state-of-the-art tools to try to understand the process of normal heart formation and have made significant discoveries in this area of research.

Cardiovascular Tissue Engineering

We have recently embarked on cardiac tissue engineering work due to the significant promise of this research direction in creating functional cardiac tissue for modeling of heart diseases and for generation a new organ that may be transplantable. By using stem cells that can be turned into cardiac cells, we have brought stem cell biology and tissue engineering together to begin making true functional heart tissue for screening drugs to treat heart diseases and to build new replacement tissues that may one day be used to replace the damaged heart muscle after heart attack. We have actively collaborated with material science engineers, vascular engineers, and mechanical engineers to make new discoveries in this research area. We currently employ 3D bioprinting as a tool to generate full-thickness, vascularized, and functional cardiac tissue.

Cardiovascular Disease Modeling

While mouse models are useful for studying the process of heart formation, they are not exactly like the human hearts in various ways. Since we cannot easily obtain human heart tissue, we have chosen to use stem cells as the next best source of material to study human heart formation and disease onset. We focus on a special type of stem cells call induced pluripotent stem cells (iPSCs) that behave exactly like embryonic stem cells but are made from regular human skin or blood cell. These human iPSCs make excellent model of heart formation inside a petri dish in the lab and can be turned into beating heart muscle cells by treating them with special factors. Furthermore, the steps that these iPSCs take to become heart muscle cells replicate exactly the way a human fetus goes through during early development in utero.

Cardiovascular Regenerative Biology

Ultimately, our work in developmental biology and tissue engineering seek to identify the most effective way to treat damage hearts. The regenerative potentials of stem cells is unlimited but requires careful guidance when given to a patient with heart disease. Many efforts that have failed in the past is due to the lack of understanding of what stem cells are capable of doing to treat damaged hearts. We have studied the role of stem cells in a fetal heart injury and recovery model (Sturzu et al, Circulation 2015) and have addressed the challenges that must be overcome in order to move the field forward (Wu et al, Cell 2008). We are currently seeking to find new cell types that may be useful for repairing damages to the muscle and the conduction system (i.e. the electrical network) in the heart using human iPSC-derived cells. In the future, we seek to generate transplantable organs using innovative strategies that involve tissue engineering and interspecies chimerism with pluripotent stem cells.

Teaching

STANFORD ADVISEES

Postdoctoral Faculty Sponsor

Soah Lee, Han Zhu

Doctoral Dissertation Advisor (AC)

Francisco Galdos

Doctoral Dissertation Co-Advisor (AC)

Zachary Sexton

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Cardiovascular Medicine (Fellowship Program)
- Medicine (Masters Program)

Publications

PUBLICATIONS

- **Single-Cell Delineation of Who's on First and Second Heart Fields During Development** *CIRCULATION RESEARCH*
  Galdos, F. X., Wu, S. M.
  2019; 125 (4): 411–13

- **Transcriptomic Profiling of the Developing Cardiac Conduction System at Single-Cell Resolution.** *Circulation research*
  Goodyer, W. R., Beyersdorf, B., Paik, D. T., Tian, L., Li, G., Buikema, J. W., Chirikian, O., Choi, S., Venkatraman, S., Adams, E. L., Tessier-Lavigne, M., Wu, J. C., Wu, et al
  2019

- **Single cell expression analysis reveals anatomical and cell cycle-dependent transcriptional shifts during heart development.** *Development (Cambridge, England)*
  Li, G., Tian, L., Goodyer, W., Kort, E. J., Buikema, J. W., Xu, A., Wu, J., Jovinge, S., Wu, S. M.
  2019

- **Prometheus Unbound in Ya(p) Heart** *DEVELOPMENTAL CELL*
  Buikema, J. W., Wu, S. M.
  2019; 48 (6): 741–42

- **Single-cell analysis of early progenitor cells that build coronary arteries** *NATURE*
  Su, T., Stanley, G., Sinha, R., D'Amato, G., Das, S., Rhee, S., Chang, A. H., Poduri, A., Raftrey, B., Thanh Theresa Dinh, Roper, W. A., Li, G., Quinn, K. E., et al
  2018; 559 (7714): 356-+

- **Single-cell transcriptomics of 20 mouse organs creates a Tabula Muris** *NATURE*
  The Tabula Muris Consortium, ..
  2018; In Press

- **High-throughput screening of tyrosine kinase inhibitor cardiotoxicity with human induced pluripotent stem cells.** *Science translational medicine*
  Sharma, A., Burridge, P. W., McKeithan, W. L., Serrano, R., Shukla, P., Sayed, N., Churko, J. M., Kitani, T., Wu, H., Holmström, A., Matsa, E., Zhang, Y., Kumar, et al
  2017; 9 (377)

- **Transcriptomic Profiling Maps Anatomically Patterned Subpopulations among Single Embryonic Cardiac Cells** *DEVELOPMENTAL CELL*
  Li, G., Xu, A., Sim, S., Priest, J. R., Tian, X., Khan, T., Quertermous, T., Zhou, B., Tsao, P. S., Quake, S. R., Wu, S. M.
  2016; 39 (4): 491-507

- **Members Only: Hypoxia-Induced Cell-Cycle Activation in Cardiomyocytes.** *Cell metabolism*
  Sharma, A., Wu, S. M.
  2015; 22 (3): 365-366

- **Fetal Mammalian Heart Generates a Robust Compensatory Response to Cell Loss.** *Circulation*
  Sturzu, A. C., Rajarajan, K., Passer, D., Plonowska, K., Riley, A., Tan, T. C., Sharma, A., Xu, A. F., Engels, M. C., Feistritzer, R., Li, G., Selig, M. K., Geissler, et al
  2015; 132 (2): 109-121

- **Lift NIH restrictions on chimera research.** *Science (New York, N.Y.)*
  Sharma, A., Sebastiano, V., Scott, C. T., Magnus, D., Koyano-Nakagawa, N., Garry, D. J., Witte, O. N., Nakauchi, H., Wu, J. C., Weissman, I. L., Wu, S. M.
  2015; 350 (6261): 640

- **Harnessing the potential of induced pluripotent stem cells for regenerative medicine** *NATURE CELL BIOLOGY*
  Wu, S. M., Hothedlinger, K.
  2011; 13 (5): 497-505

- **Generation of Functional Ventricular Heart Muscle from Mouse Ventricular Progenitor Cells** *SCIENCE*
  Domian, I. J., Chiravuri, M., van der Meer, P., Feinberg, A. W., Shi, X., Shao, Y., Wu, S. M., Parker, K. K., Chien, K. R.
  2009; 326 (5951): 426-429

- **Epicardial progenitors contribute to the cardiomyocyte lineage in the developing heart** *NATURE*
  Zhou, B., Ma, Q., Rajagopal, S., Wu, S. M., Domian, I., Rivera-Feliciano, J., Jiang, D., von Gise, A., Ikeda, S., Chien, K. R., Pu, W. T.
  2008; 454 (7200): 109-U5

- **Origins and fates of cardiovascular progenitor cells** *CELL*
  Wu, S. M., Chien, K. R., Mummery, C.
  2008; 132 (4): 537-543

- **Developmental origin of a bipotential myocardial and smooth muscle cell precursor in the mammalian heart** *CELL*
  Wu, S. M., Fujiwara, Y., Cibulsky, S. M., Clapham, D. E., Lien, C., Schultheiss, T. M., Orkin, S. H.
  2006; 127 (6): 1137-1150

- **Proceedings From the 2019 Stanford Single Ventricle Scientific Summit: Advancing Science for Single Ventricle Patients: From Discovery to Clinical Applications.** *Journal of the American Heart Association*
  Reddy, S., Handler, S. S., Wu, S., Rabinovitch, M., Wright, G.
  2020; 9 (7): e015871

- **Cardiovascular Risks in Patients with COVID-19: Potential Mechanisms and Areas of Uncertainty.** *Current cardiology reports*
  Cheng, P., Zhu, H., Witteles, R. M., Wu, J. C., Quertermous, T., Wu, S. M., Rhee, J. W.
  2020; 22 (5): 34

- **Cardiovascular Complications in Patients with COVID-19: Consequences of Viral Toxicities and Host Immune Response** *Curr Cardiol Rep*
  Zhu, H., Rhee, J., Cheng, P., Waliany, S., Chang, A., Witteles, R. M., Maecker, H., Davis, M. M., Nguyen, P. K., Wu, S. M.
  2020; 22 (5)

- **Simple Lithography-Free Single Cell Micropatterning using Laser-Cut Stencils.** *Journal of visualized experiments : JoVE*
  Lee, S., Yang, H., Chen, C., Venkatraman, S., Darsha, A., Wu, S. M., Wu, J. C., Seeger, T.
  2020

- **Levitating Cells to Sort the Fit and the Fat.** *Advanced biosystems*
  Puluca, N., Durmus, N. G., Lee, S., Belbachir, N., Galdos, F. X., Ogut, M. G., Gupta, R., Hirano, K. I., Krane, M., Lange, R., Wu, J. C., Wu, S. M., Demirci, et al
  2020: e1900300

- **Effects of Spaceflight on Human Induced Pluripotent Stem Cell-Derived Cardiomyocyte Structure and Function.** *Stem cell reports*
  Wnorowski, A., Sharma, A., Chen, H., Wu, H., Shao, N., Sayed, N., Liu, C., Countryman, S., Stodieck, L. S., Rubins, K. H., Wu, S. M., Lee, P. H., Wu, et al
  2019

- **Myopathy Causing Bag3P209L Protein Leads to Restrictive Cardiomyopathy Caused by Aggregate Formation and Sarcomere Disruption in Cardiomyocytes**
  Graf-Riesen, K., Kimura, K., Unger, A., Lother, A., Hein, L., Daerr, J., Braune, J., Ooms, A., Li, G., Wu, S. M., Hohfeld, J., Linke, W. A., Furst, et al
  LIPPINCOTT WILLIAMS & WILKINS.2019

- **Hypertrophic Cardiomyopathy Mutations With Opposite Effects on [latin sharp s]-myosin Biomechanics Show Similar Structural and Biomechanical Phenotypes in Human Induced Pluripotent Stem Cell Derived Cardiomyocytes (hipsc-cms)**
  Schroer, A., Jung, G., Kooiker, K., Adhikari, A., Song Linda, Liu Chao, Ruppel, K., Wu Sean, Pruitt, B., Spudich, J., Bernstein, D.
  LIPPINCOTT WILLIAMS & WILKINS.2019

- **Single-Cell RNA-seq Unveils Unique Transcriptomic Signatures of Organ-Specific Endothelial Cells**
  Paik, D. T., Tian, L., Williams, I. M., Zhang, H., Williams, D., Mishra, R., Wu, S. M., Wu, J. C.
  LIPPINCOTT WILLIAMS & WILKINS.2019

- **Single Cell Analysis of Endothelial Cells Identified Organ-Specific Molecular Signatures and Heart-Specific Cell Populations and Molecular Features.** *Frontiers in cardiovascular medicine*

Feng, W., Chen, L., Nguyen, P. K., Wu, S. M., Li, G.
2019; 6: 165

- **Cardiovascular Regenerative Medicine: Challenges, Perspectives, and Future Directions** *Cardiovasscular Regenerative Medicine*
  Wu, S. M., Serpooshan, V.
  Springer Nature.2019: 223–225

- **Cardiovascular Regenerative Medicine**
  edited by Serpooshan, V., Wu, S. M.
  Springer Nature.2019

- **Bioprinting Approaches to Engineering Vascularized 3D Cardiac Tissues.** *Current cardiology reports*
  Puluca, N., Lee, S., Doppler, S., Münsterer, A., Dreßen, M., Krane, M., Wu, S. M.
  2019; 21 (9): 90

- **Modelling inherited cardiac disease using human induced pluripotent stem cell-derived cardiomyocytes: progress, pitfalls, and potential** *CARDIOVASCULAR RESEARCH*
  van Mil, A., Balk, G., Neef, K., Buikema, J., Asselbergs, F. W., Wu, S. M., Doevendans, P. A., Sluijter, J. G.
  2018; 114 (14): 1828–42

- **Cardiovascular tissue bioprinting: Physical and chemical processes** *APPLIED PHYSICS REVIEWS*
  Hu, J. B., Tomov, M. L., Buikema, J. W., Chen, C., Mahmoudi, M., Wu, S. M., Serpooshan, V.
  2018; 5 (4)

- **Large-Scale Single-Cell RNA-Seq Reveals Molecular Signatures of Heterogeneous Populations of Human Induced Pluripotent Stem Cell-Derived Endothelial Cells** *CIRCULATION RESEARCH*
  Paik, D. T., Tian, L., Lee, J., Sayed, N., Chen, I. Y., Rhee, S., Rhee, J., Kim, Y., Wirka, R. C., Buikema, J. W., Wu, S. M., Red-Horse, K., Quertermous, et al
  2018; 123 (4): 443–50

- **Fates Aligned: Origins and Mechanisms of Ventricular Conduction System and Ventricular Wall Development**
  Goodyer, W. R., Wu, S. M.
  SPRINGER.2018: 1090–98

- **Reassessment of c-Kit in Cardiac Cells A Complex Interplay Between Expression, Fate, and Function** *CIRCULATION RESEARCH*
  Zhou, B., Wu, S. M.
  2018; 123 (1): 9–11

- **Big bottlenecks in cardiovascular tissue engineering** *COMMUNICATIONS BIOLOGY*
  Huang, N. F., Serpooshan, V., Morris, V. B., Sayed, N., Pardon, G., Abilez, O. J., Nakayama, K. H., Pruitt, B. L., Wu, S. M., Yoon, Y., Zhang, J., Wu, J. C.
  2018; 1

- **Genome Editing Redefines Precision Medicine in the Cardiovascular Field.** *Stem cells international*
  Dzilic, E., Lahm, H., Dreßen, M., Deutsch, M. A., Lange, R., Wu, S. M., Krane, M., Doppler, S. A.
  2018; 2018: 4136473

- **4D Printing of Actuating Cardiac Tissue** *3D PRINTING APPLICATIONS IN CARDIOVASCULAR MEDICINE*
  Serpooshan, V., Hu, J. B., Chirikian, O., Hu, D. A., Mahmoudi, M., Wu, S. M., AlAref, S. J., Mosadegh, B., Dunham, S., Min, J. K.
  2018: 153–62

- **Stage-specific Effects of Bioactive Lipids on Human iPSC Cardiac Differentiation and Cardiomyocyte Proliferation.** *Scientific reports*
  Sharma, A., Zhang, Y., Buikema, J. W., Serpooshan, V., Chirikian, O., Kosaric, N., Churko, J. M., Dzilic, E., Shieh, A., Burridge, P. W., Wu, J. C., Wu, S. M.
  2018; 8 (1): 6618

- **Myocardial Development** *Reference Modules in Biomedical Sciences*
  Galdos, F. X., Wu, S. M.
  Elsevier.2018; 1

- **Reactivation of the Nkx2.5 cardiac enhancer after myocardial infarction does not presage myogenesis.** *Cardiovascular research*
  Deutsch, M. A., Doppler, S. A., Li, X., Lahm, H., Santamaria, G., Cuda, G., Eichhorn, S., Ratschiller, T., Dzilic, E., Dreßen, M., Eckart, A., Stark, K., Massberg, et al

2018

- **Bioengineering of vascular myocardial tissue; a 3D bioprinting approach**
  Hu, J. B., Hu, D. A., Buikema, J. W., Chirikian, O., Venkatraman, S., Serpooshan, V., Wu, S. M.
  MARY ANN LIEBERT, INC.2017: S158–S159

- **Bioacoustic-enabled patterning of human iPSC-derived cardiomyocytes into 3D cardiac tissue** *BIOMATERIALS*
  Serpooshan, V., Chen, P., Wu, H., Lee, S., Sharma, A., Hu, D. A., Venkatraman, S., Ganesan, A. V., Usta, O. B., Yarmush, M., Yang, F., Wu, J. C., Demirci, et al
  2017; 131: 47-57

- **Contractile force generation by 3D hiPSC-derived cardiac tissues is enhanced by rapid establishment of cellular interconnection in matrix with muscle-mimicking stiffness** *BIOMATERIALS*
  Lee, S., Serpooshan, V., Tong, X., Venkatraman, S., Lee, M., Lee, J., Chirikian, O., Wu, J. C., Wu, S. M., Yang, F.
  2017; 131: 111-120

- **YY1 Expression is Sufficient for the Maintenance of Cardiac Progenitor Cell State.** *Stem cells*
  Gregoire, S., Li, G., Sturzu, A. C., Schwartz, R. J., Wu, S. M.
  2017

- **Untangling the Biology of Genetic Cardiomyopathies with Pluripotent Stem Cell Disease Models** *CURRENT CARDIOLOGY REPORTS*
  Buikema, J. W., Wu, S. M.
  2017; 19 (4)

- **Partial Reprogramming of Pluripotent Stem Cell-Derived Cardiomyocytes into Neurons** *SCIENTIFIC REPORTS*
  Chuang, W., Sharma, A., Shukla, P., Li, G., Mall, M., Rajarajan, K., Abilez, O. J., Hamaguchi, R., Wu, J. C., Wernig, M., Wu, S. M.
  2017; 7

- **Cardiac Regeneration Lessons From Development** *CIRCULATION RESEARCH*
  Galdos, F. X., Guo, Y., Paige, S. L., VanDusen, N. J., Wu, S. M., Pu, W. T.
  2017; 120 (6): 941-959

- **Strategies for the acquisition of transcriptional and epigenetic information in single cells.** *Journal of thoracic disease*
  Li, G., Dzilic, E., Flores, N., Shieh, A., Wu, S. M.
  2017; 9: S9-S16

- **Mammalian Heart Regeneration: The Race to the Finish Line.** *Circulation research*
  Doppler, S. A., Deutsch, M., Serpooshan, V., Li, G., Dzilic, E., Lange, R., Krane, M., Wu, S. M.
  2017; 120 (4): 630-632

- **The relationship between cardiac endothelium and fibroblasts: it's complicated.** *The Journal of clinical investigation*
  Karra, R., Walter, A. O., Wu, S. M.
  2017

- **Bioengineering cardiac constructs using 3D printing** *Journal of 3D Printing in Medicine*
  Serpooshan, V., Mahmoudi, M., Hu, D. A., Hu, J. B., Wu, S. M.
  2017; 1 (2): 1-8

- **Tissue Engineering of 3D Organotypic Microtissues by Acoustic Assembly.** *Methods in molecular biology (Clifton, N.J.)*
  Zhu, Y., Serpooshan, V., Wu, S., Demirci, U., Chen, P., Güven, S.
  2017

- **In vivo rescue of the hematopoietic niche by pluripotent stem cell complementation of defective osteoblast compartments.** *Stem cells (Dayton, Ohio)*
  Chubb, R., Oh, J., Riley, A. K., Kimura, T., Wu, S. M., Wu, J. Y.
  2017

- **Nkx2.5+ Cardiomyoblasts Contribute to Cardiomyogenesis in the Neonatal Heart.** *Scientific reports*
  Serpooshan, V., Liu, Y. H., Buikema, J. W., Galdos, F. X., Chirikian, O., Paige, S., Venkatraman, S., Kumar, A., Rawnsley, D. R., Huang, X., Pijnappels, D. A., Wu, S. M.
  2017; 7 (1): 12590

- **Identification of a hybrid myocardial zone in the mammalian heart after birth.** *Nature communications*

Tian, X., Li, Y., He, L., Zhang, H., Huang, X., Liu, Q., Pu, W., Zhang, L., Li, Y., Zhao, H., Wang, Z., Zhu, J., Nie, et al
2017; 8 (1): 87

- **Integrative Analysis of PRKAG2 Cardiomyopathy iPS and Microtissue Models Identifies AMPK as a Regulator of Metabolism, Survival, and Fibrosis** *CELL REPORTS*
  Hinson, J. T., Chopra, A., Lowe, A., Sheng, C. C., Gupta, R. M., Kuppusamy, R., O'Sullivan, J., Rowe, G., Wakimoto, H., Gorham, J., Zhang, K., Musunuru, K., Gerszten, et al
  2016; 17 (12): 3292-3304

- **Inhibition of Apoptosis Overcomes Stage-Related Compatibility Barriers to Chimera Formation in Mouse Embryos.** *Cell stem cell*
  Masaki, H., Kato-Itoh, M., Takahashi, Y., Umino, A., Sato, H., Ito, K., Yanagida, A., Nishimura, T., Yamaguchi, T., Hirabayashi, M., Era, T., Loh, K. M., Wu, et al
  2016; 19 (5): 587-592

- **iPSC-derived cardiomyocytes reveal abnormal TGF-ß signalling in left ventricular non-compaction cardiomyopathy.** *Nature cell biology*
  Kodo, K., Ong, S., Jahanbani, F., Termglinchan, V., Hirono, K., Inanloorahatloo, K., Ebert, A. D., Shukla, P., Abilez, O. J., Churko, J. M., Karakikes, I., Jung, G., Ichida, et al
  2016; 18 (10): 1031-1042

- **Endocardium Minimally Contributes to Coronary Endothelium in the Embryonic Ventricular Free Walls** *CIRCULATION RESEARCH*
  Zhang, H., Pu, W., Li, G., Huang, X., He, L., Tian, X., Liu, Q., Zhang, L., Wu, S. M., Sucov, H. M., Zhou, B.
  2016; 118 (12): 1880-?

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