Stanford

# Sean M. Wu

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


**CLINICAL OFFICE (PRIMARY)**

- **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, cardio-oncology/cancer drug toxicity, 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
- Coronary Artery Disease
- Arrhythmias, Cardiac
- cardio-oncology
- Cardiac prevention
- Valve disorders

### ACADEMIC APPOINTMENTS

- Professor, Medicine - Cardiovascular Medicine
- Professor (By courtesy), Pediatrics
- Member, Bio-X
- Member, Cardiovascular Institute

- Member, SPARK at Stanford
- Member, Maternal & Child Health Research Institute (MCHRI)

## ADMINISTRATIVE APPOINTMENTS

- Vice Chair for Academic Affairs, Department of Medicine, Stanford University School of Medicine, (2023- present)
- Senior Vice Chair (Interim) for Academic Affairs, Department of Medicine, Stanford University School of Medicine, (2022-2023)
- Professor of Medicine and (by courtesy) Pediatrics, Stanford University, (2022- present)
- Editor-in-Chief, Current Treatment Options in Cardiovascular Medicine, (2022- present)
- Section Chief, Basic and Translational Research, Cardiovascular Medicine Division, Department of Medicine, (2021- present)
- Co-Chair, Faculty Search Committee, Basic Sci & Enginr (BASE) Program, Moore Heart Center, LPCH, (2021- present)
- Member, Editorial Board, Journal of Cardiovascular Development and Disease, (2021- present)
- Member, Editorial Board, Cardiology Discovery, (2020- present)
- Chair, Faculty Search Committee, Surgical & Basic Science Faculty, Dept. of Cardiothoracic Surgery, Stanford SoM, (2020- present)
- 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, (2016-2022)
- Editorial Consultant, Journal of American College of Cardiology: Basic to Translational Science, (2015- present)
- Guest Editor, Journal of Cardiovascular Development and Differentiation, (2015-2016)
- 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

- Elected Member, Association of American Physicians (AAP) (2024)
- Elected Member, Association of University Cardiologists (AUC) (2023)
- Distinguished Achievement Award, Basic Cardiovascular Sciences Council, American Heart Association (2022)
- Joan and Sanford I. 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-Elect, AHA Basic Cardiovascular Sciences Council (2024 - present)
- Immediate Past Chair, Scientific Committee, Sarnoff Cardiovascular Research Foundation (2024 - present)
- Immediate Past President, Board of Directors, American Heart Association Bay Area Division (2024 - present)
- Chair, Scientific Committee, Sarnoff Cardiovascular Research Foundation (2023 - 2024)
- Member, Scientific Advisory Board, Cardiovascular Research Institute, Mt Sinai School of Medicine (2022 - present)
- Member, AHA-Council Operations Committee (2022 - present)
- Immediate-Past Chair, AHA-BCVS Committee on Early Career Development (2022 - 2024)
- President, Board of Directors, American Heart Association Bay Area Division (2022 - 2024)
- Vice Chair, Scientific Committee, Sarnoff Cardiovascular Research Foundation (2022 - 2023)
- President-Elect, Board of Directors, American Heart Association Bay Area Division (2021 - 2022)
- Member, Scientific Committee, Sarnoff Cardiovascular Research Foundation (2020 - present)

- Chair, American Heart Association National Research Committee, Bioethics Subcommittee (2020 - 2022)
- Chair, AHA-BCVS Committee on Early Career Development (2020 - 2022)
- Vice Chair, AHA-BCVS Committee on Early Career Development (2018 - 2020)
- Vice-Chair, American Heart Association National Research Committee, Bioethics Subcommittee (2017 - 2020)
- Member, AHA - Committee on Scientific Session Programming (CSSP) (2016 - 2020)
- Member, AHA - BCVS Committee on Scientific and Clinical Education Lifelong Learning Committee (2016 - 2020)
- 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 - 2014)
- Member, Research Administration Advisory Committee, Massachusette General Hospital (2010 - 2012)

## PROFESSIONAL EDUCATION

- Board Certification: Cardiovascular Disease, American Board of Internal Medicine (2016)
- Research Fellowship, Boston Children's Hospital/Harvard Medical School , Stem Cell Biology (2006)
- 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 Wu, William Goodyer,. "United States Patent Application No. 63/322,297 ; PCT/US2023/015747 Monoclonal Antibodies for Targeting the Cardiac Conduction System", Board of Trustees of the Leland Stanford Junior University, Mar 21, 2023
- Sean Wu, Han Zhu, Patricia Nguyen. "United States Patent Application No. 63/235,580 IDENTIFICATION OF PATHOGENIC IMMUNE CELL SUBSETS IN CHECKPOINT INHIBITOR-INDUCED MYOCARDITIS", Leland Stanford Junior University, Aug 20, 2021
- Sean Wu, Soah Lee. "United States Patent Application No. 63/045,952 MOLECULES REGULATING HUMAN IPSC-DERIVED CARDIOMYOCYTE PROLIFERATION BY INHIBITING CELL-CELL CONTACT", Leland Stanford Junior University, Jun 30, 2020
- Sean Wu, William Goodyer, Benjamin Beyersdorf, Eben Rosenthal, Nynke van den Berg. "United States Patent Application No. 62/871,551 NOVEL MOLECULAR TOOLS TO VISUALIZE AND TARGET THE CARDIAC CONDUCTION SYSTEM (CCS)", Leland Stanford Junior University, Jul 8, 2019
- Sean Wu, Jan Buikema, Arun Sharma. "United States Patent Applicaiton No. 62/644,091 REAGENTS AND METHODS WITH WNT AGONISTS AND BIOACTIVE LIPIDS FOR GENERATING AND EXPANDING CARDIOMYOCYTES", Stem Cell Technology, Inc., Mar 16, 2018
- 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

**Med Scholar Project Advisor**

Sruthi Mantri Garimella

**Postdoctoral Faculty Sponsor**

Tahmina Samad

### GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

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

## Publications

### PUBLICATIONS

- **Cardiac ACTN2 enhancer regulates cardiometabolism and maturation.** *Nature cardiovascular research*
  Galdos, F. X., Lee, C., Wu, S. M.
  2024; 3 (6): 616-618
- **The sum of the parts is greater than the whole: current research models for congenital heart disease.** *Nature cardiovascular research*
  Samad, T., Wu, S. M.
  2023; 2 (8): 708-710
- **Combined lineage tracing and scRNA-seq reveals unexpected first heart field predominance of human iPSC differentiation.** *eLife*
  Galdos, F. X., Lee, C., Lee, S., Paige, S., Goodyer, W., Xu, S., Samad, T., Escobar, G. V., Darsha, A., Beck, A., Bak, R. O., Porteus, M. H., Wu, et al
  2023; 12
- **Sex differences in ICI myocarditis: Hormones to the rescue** *SCIENCE TRANSLATIONAL MEDICINE*
  Nguyen, P. K., Wu, S. M.
  2022; 14 (669)
- **devCellPy is a machine learning-enabled pipeline for automated annotation of complex multilayered single-cell transcriptomic data.** *Nature communications*
  Galdos, F. X., Xu, S., Goodyer, W. R., Duan, L., Huang, Y. V., Lee, S., Zhu, H., Lee, C., Wei, N., Lee, D., Wu, S. M.
  2022; 13 (1): 5271
- **In vivo visualization and molecular targeting of the cardiac conduction system.** *The Journal of clinical investigation*
  Goodyer, W. R., Beyersdorf, B. M., Duan, L., van den Berg, N. S., Mantri, S., Galdos, F. X., Puluca, N., Buikema, J. W., Lee, S., Salmi, D., Robinson, E. R., Rogalla, S., Cogan, et al
  2022
- **Identification of Pathogenic Immune Cell Subsets Associated With Checkpoint Inhibitor-Induced Myocarditis.** *Circulation*
  Zhu, H., Galdos, F. X., Lee, D., Waliany, S., Vivian Huang, Y., Ryan, J., Dang, K., Neal, J. W., Wakelee, H. A., Reddy, S. A., Srinivas, S., Lin, L. L., Witteles, et al
  2022: 101161CIRCULATIONAHA121056730
- **The Tabula Sapiens: A multiple-organ, single-cell transcriptomic atlas of humans.** *Science (New York, N.Y.)*
  Jones, R. C., Karkanias, J., Krasnow, M. A., Pisco, A. O., Quake, S. R., Salzman, J., Yosef, N., Bulthaup, B., Brown, P., Harper, W., Hemenez, M., Ponnusamy, R., Salehi, et al
  2022; 376 (6594): eabl4896
- **Molecular hallmarks of heterochronic parabiosis at single-cell resolution.** *Nature*
  Palovics, R., Keller, A., Schaum, N., Tan, W., Fehlmann, T., Borja, M., Kern, F., Bonanno, L., Calcuttawala, K., Webber, J., McGeever, A., Tabula Muris Consortium, Luo, J., et al
  2022
- **Cell types of origin of the cell-free transcriptome.** *Nature biotechnology*
  Vorperian, S. K., Moufarrej, M. N., Tabula Sapiens Consortium, Quake, S. R., Jones, R. C., Karkanias, J., Krasnow, M., Pisco, A. O., Quake, S. R., Salzman, J., Yosef, N., Bulthaup, B., Brown, P., et al
  2022
- **Patient-Specific Induced Pluripotent Stem Cells Implicate Intrinsic Impaired Contractility in Hypoplastic Left Heart Syndrome.** *Circulation*

Paige, S. L., Galdos, F. X., Lee, S., Chin, E. T., Ranjbarvaziri, S., Feyen, D. A., Darsha, A. K., Xu, S., Ryan, J. A., Beck, A. L., Qureshi, M. Y., Miao, Y., Gu, et al
2020; 142 (16): 1605–8

- **Intrinsic Endocardial Defects Contribute to Hypoplastic Left Heart Syndrome.** *Cell stem cell*
  Miao, Y., Tian, L., Martin, M., Paige, S. L., Galdos, F. X., Li, J., Klein, A., Zhang, H., Ma, N., Wei, Y., Stewart, M., Lee, S., Moonen, et al
  2020
- **A single-cell transcriptomic atlas characterizes ageing tissues in the mouse.** *Nature*
  2020
- **Next-Generation Surrogate Wnts Support Organoid Growth and Deconvolute Frizzled Pleiotropy In Vivo.** *Cell stem cell*
  Miao, Y. n., Ha, A. n., de Lau, W. n., Yuki, K. n., Santos, A. J., You, C. n., Geurts, M. H., Puschhof, J. n., Pleguezuelos-Manzano, C. n., Peng, W. C., Senlice, R. n., Piani, C. n., Buikema, et al
  2020
- **Wnt Activation and Reduced Cell-Cell Contact Synergistically Induce Massive Expansion of Functional Human iPSC-Derived Cardiomyocytes.** *Cell stem cell*
  Buikema, J. W., Lee, S. n., Goodyer, W. R., Maas, R. G., Chirikian, O. n., Li, G. n., Miao, Y. n., Paige, S. L., Lee, D. n., Wu, H. n., Paik, D. T., Rhee, S. n., Tian, et al
  2020; 27 (1): 50–63.e5
- **Ageing hallmarks exhibit organ-specific temporal signatures.** *Nature*
  Schaum, N. n., Lehallier, B. n., Hahn, O. n., Pálovics, R. n., Hosseinzadeh, S. n., Lee, S. E., Sit, R. n., Lee, D. P., Losada, P. M., Zardeneta, M. E., Fehlmann, T. n., Webber, J. T., McGeever, et al
  2020
- **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
- **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; 562: 367–372
- **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
- **Lift NIH restrictions on chimera research.** *Science (New York, N.Y.)*
  Sharma, A. n., Sebastiano, V. n., Scott, C. T., Magnus, D. n., Koyano-Nakagawa, N. n., Garry, D. J., Witte, O. N., Nakauchi, H. n., 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

- **Cardiac Development at a Single-Cell Resolution.** *Advances in experimental medicine and biology*
  Wei, N., Lee, C., Duan, L., Galdos, F. X., Samad, T., Raissadati, A., Goodyer, W. R., Wu, S. M.
  2024; 1441: 253-268

- **Incomplete-penetrant hypertrophic cardiomyopathy MYH7 G256E mutation causes hypercontractility and elevated mitochondrial respiration.** *Proceedings of the National Academy of Sciences of the United States of America*
  Lee, S., Vander Roest, A. S., Blair, C. A., Kao, K., Bremner, S. B., Childers, M. C., Pathak, D., Heinrich, P., Lee, D., Chirikian, O., Mohran, S. E., Roberts, B., Smith, et al
  2024; 121 (19): e2318413121

- **The cardiac conduction system: History, development, and disease.** *Current topics in developmental biology*
  Lee, C., Xu, S., Samad, T., Goodyer, W. R., Raissadati, A., Heinrich, P., Wu, S. M.
  2024; 156: 157-200

- **Osimertinib-Associated Cardiomyopathy In Patients With Non-Small Cell Lung Cancer: A Case Series** *JACC: CardioOncology*
  Franquiz, M., Waliany, S., Xu, A., Hnatiuk, A., Wu, S., Cheng, P., Wakelee, H., Neal, J., Witteles, R., Zhu, H.
  2023: 839-841

- **Massive expansion of functional human iPSC-derived cardiomyocytes by concomitant glycogen synthase kinase-3 beta inhibition and removal of cell-cell contact**
  Buikema, J. W., Lee, S., Maas, R. J., Van der Velden, J., Sluijter, J. G., Wu, S. M.
  OXFORD UNIV PRESS.2023

- **Impact of Troponin Monitoring on Cardiac Outcomes in Patients Receiving Immune Checkpoint Inhibitors**
  Ivanovic, M., Chan, A., Franquiz, M., Xu, S., Lee, C., Fazal, M., You, J., Witteles, R., Neal, J., Wu, S., Waliany, S., Zhu, H.
  WILEY.2023: 2087-2089

- **Notch and retinoic acid signals regulate macrophage formation from endocardium downstream of Nkx2-5.** *Nature communications*
  Liu, N., Kawahira, N., Nakashima, Y., Nakano, H., Iwase, A., Uchijima, Y., Wang, M., Wu, S. M., Minamisawa, S., Kurihara, H., Nakano, A.
  2023; 14 (1): 5398

- **Mechanisms in cardiac development and regeneration** *ZEITSCHRIFT FUR HERZ THORAX UND GEFASSCHIRURGIE*
  Deutsch, M., Doppler, S. A., Gummert, J. F., Wu, S. M., Krane, M., Lange, R.
  2023

- **The Z-disc: Mechanosensor at the interface between myosin biomechanics and hypertrophic signaling**
  Giri, P., Roest, A., Lee, S., Heinrich, P., Dunn, A. R., Wu, S., Bernstein, D.
  CELL PRESS.2023: 404A

- **Effects of changes in myosin biomechanics on canonical and non-canonical signaling and HCM phenotypes.** *Biophysical journal*
  Heinrich, P., Wu, S. M.
  2023; 122 (3S1): 148a

- **Changes in myosin biomechanics influence growth and maturation of iPSC-cardiomyocytes.** *Biophysical journal*
  Bernstein, D., Vander Roest, A. S., Wu, S., Pruitt, B., Zhao, M., Fajardo, G., Ruppel, K., Spudich, J. A.
  2023; 122 (3S1): 148a

- **The potential of auto-antigen-guided treatment of immune checkpoint inhibitor-mediated myocarditis.** *Med (New York, N.Y.)*

Zhu, H., Huang, Y. V., Wu, S. M.
2023; 4 (1): 13-14

- **Harnessing developmental cues for cardiomyocyte production.** *Development (Cambridge, England)*
  Maas, R. G., van den Dolder, F. W., Yuan, Q., van der Velden, J., Wu, S. M., Sluijter, J. P., Buikema, J. W.
  2023; 150 (15)
- **Late-Onset Immunotherapy-Induced Myocarditis 2 Years After Checkpoint Inhibitor Initiation.** *JACC. CardioOncology*
  Nguyen, A. T., Berry, G. J., Witteles, R. M., Le, D. T., Wu, S. M., Fisher, G. A., Zhu, H.
  2022; 4 (5): 727-730
- **The Role of Single-Cell Profiling and Deep Immunophenotyping in Understanding Immune Therapy Cardiotoxicity.** *JACC. CardioOncology*
  Huang, Y. V., Waliany, S., Lee, D., Galdos, F. X., Witteles, R. M., Neal, J. W., Fan, A. C., Maecker, H. T., Nguyen, P. K., Wu, S. M., Zhu, H.
  2022; 4 (5): 629-634
- **KMT2D-NOTCH Mediates Coronary Abnormalities in Hypoplastic Left Heart Syndrome.** *Circulation research*
  Yu, Z., Zhou, X., Liu, Z., Pastrana-Gomez, V., Liu, Y., Guo, M., Tian, L., Nelson, T. J., Wang, N., Mital, S., Chitayat, D., Wu, J. C., Rabinovitch, et al
  2022: 101161CIRCRESAHA122320783
- **NOVEL REGULATORY MECHANISM OF HEMOGENIC ENDOCARDIUM DURING CARDIOVASCULAR DEVELOPMENT**
  Liu, N., Kawahira, N., Nakano, H., Iwase, A., Uchijima, Y., Wu, S., Minamisawa, S., Kurihara, H., Nakano, A.
  ELSEVIER SCIENCE INC.2022: S106
- **Sequential Defects in Cardiac Lineage Commitment and Maturation Cause Hypoplastic Left Heart Syndrome.** *Circulation*
  Krane, M., DreSSen, M., Santamaria, G., My, I., Schneider, C. M., Dorn, T., Laue, S., Mastantuono, E., Berutti, R., Rawat, H., Gilsbach, R., Schneider, P., Lahm, et al
  2021; 144 (17): 1409-1428
- **RNA splicing programs define tissue compartments and cell types at single cell resolution.** *eLife*
  Olivieri, J. E., Dehghannasiri, R., Wang, P. L., Jang, S., de Morree, A., Tan, S. Y., Ming, J., Ruohao Wu, A., Tabula Sapiens Consortium, Quake, S. R., Krasnow, M. A., Salzman, J.
  2021; 10
- **Molecular Profiling of the Cardiac Conduction System: the Dawn of a New Era.** *Current cardiology reports*
  Mantri, S., Wu, S. M., Goodyer, W. R.
  2021; 23 (8): 103
- **Overexpression of human BAG3P209L in mice causes restrictive cardiomyopathy.** *Nature communications*
  Kimura, K., Ooms, A., Graf-Riesen, K., Kuppusamy, M., Unger, A., Schuld, J., Daerr, J., Lother, A., Geisen, C., Hein, L., Takahashi, S., Li, G., Roll, et al
  2021; 12 (1): 3575
- **Single cell RNA sequencing approaches to cardiac development and congenital heart disease.** *Seminars in cell & developmental biology*
  Samad, T., Wu, S. M.
  2021
- **Massive expansion and cryopreservation of functional human induced pluripotent stem cell-derived cardiomyocytes.** *STAR protocols*
  Maas, R. G., Lee, S., Harakalova, M., Snijders Blok, C. J., Goodyer, W. R., Hjortnaes, J., Doevendans, P. A., Van Laake, L. W., van der Velden, J., Asselbergs, F. W., Wu, J. C., Sluijter, J. P., Wu, et al
  2021; 2 (1): 100334
- **Myocarditis Surveillance with High-Sensitivity Troponin I During Cancer Treatment with Immune Checkpoint Inhibitors.** *JACC. CardioOncology*
  Waliany, S., Neal, J. W., Reddy, S., Wakelee, H., Shah, S. A., Srinivas, S., Padda, S. K., Fan, A. C., Colevas, A. D., Wu, S. M., Witteles, R. M., Zhu, H.
  2021; 3 (1): 137–39
- **CRISPR/Cas9-based targeting of fluorescent reporters to human iPSCs to isolate atrial and ventricular-specific cardiomyocytes.** *Scientific reports*
  Chirikian, O., Goodyer, W. R., Dzilic, E., Serpooshan, V., Buikema, J. W., McKeithan, W., Wu, H., Li, G., Lee, S., Merk, M., Galdos, F., Beck, A., Ribeiro, et al

2021; 11 (1): 3026

- **Myocardial Disease and Long-Distance Space Travel: Solving the Radiation Problem.** *Frontiers in cardiovascular medicine*
  Meerman, M., Bracco Gartner, T. C., Buikema, J. W., Wu, S. M., Siddiqi, S., Bouten, C. V., Grande-Allen, K. J., Suyker, W. J., Hjortnaes, J.
  2021; 8: 631985
- **Immune checkpoint inhibitor cardiotoxicity: Breaking barriers in the cardiovascular immune landscape.** *Journal of molecular and cellular cardiology*
  Zhu, H., Ivanovic, M., Nguyen, A., Nguyen, P. K., Wu, S. M.
  2021
- **Molecular hallmarks of heterochronic parabiosis at single cell resolution** *Nature*
  Palovics, R., Keller, A., Schaum, N., Tan, W., Fehlmann, T., , Borja, M., Kern, F., Bonanno, L., Calcuttawala, K., Webber, J., McGeever, A., Muris Consortium, T., et al
  2021
- **Purification of Pluripotent Stem Cell-Derived Cardiomyocytes Using CRISPR/Cas9-Mediated Integration of Fluorescent Reporters.** *Methods in molecular biology (Clifton, N.J.)*
  Galdos, F. X., Darsha, A. K., Paige, S. L., Wu, S. M.
  2021; 2158: 223–40
- **Single-Cell RNA-seq Unveils Unique Transcriptomic Signatures of Organ-Specific Endothelial Cells.** *Circulation*
  Paik, D. T., Tian, L., Williams, I. M., Rhee, S., Zhang, H., Liu, C., Mishra, R., Wu, S. M., Red-Horse, K., Wu, J. C.
  2020
- **4HNE Impairs Myocardial Bioenergetics in Congenital Heart DiseaseInduced Right Ventricular Failure.** *Circulation*
  Hwang, H. V., Sandeep, N., Paige, S. L., Ranjbarvaziri, S., Hu, D., Zhao, M., Lan, I. S., Coronado, M., Kooiker, K. B., Wu, S. M., Fajardo, G., Bernstein, D., Reddy, et al
  2020
- **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
- **Immune Checkpoint Inhibitor Cardiotoxicity: Understanding Basic Mechanisms and Clinical Characteristics and Finding a Cure.** *Annual review of pharmacology and toxicology*
  Waliany, S. n., Lee, D. n., Witteles, R. M., Neal, J. W., Nguyen, P. n., Davis, M. M., Salem, J. E., Wu, S. M., Moslehi, J. J., Zhu, H. n.
  2020
- **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. n., Yang, H. n., Chen, C. n., Venkatraman, S. n., Darsha, A. n., Wu, S. M., Wu, J. C., Seeger, T. n.
  2020
- **Levitating Cells to Sort the Fit and the Fat.** *Advanced biosystems*
  Puluca, N. n., Durmus, N. G., Lee, S. n., Belbachir, N. n., Galdos, F. X., Ogut, M. G., Gupta, R. n., Hirano, K. I., Krane, M. n., Lange, R. n., Wu, J. C., Wu, S. M., Demirci, et al
  2020: e1900300
- **Cardiovascular Risks in Patients with COVID-19: Potential Mechanisms and Areas of Uncertainty.** *Current cardiology reports*
  Cheng, P. n., Zhu, H. n., Witteles, R. M., Wu, J. C., Quertermous, T. n., Wu, S. M., Rhee, J. W.
  2020; 22 (5): 34
- **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

- **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

- **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

- **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 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

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

- **Tissue Engineering of 3D Organotypic Microtissues by Acoustic Assembly** *ORGANOIDS*
  Zhu, Y., Serpooshan, V., Wu, S., Demirci, U., Chen, P., Guven, S., Turksen, K.
  2019; 1576: 301-312

- **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

- **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): 041106

- **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

- **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

- **Reactivation of the Nkx2.5 cardiac enhancer after myocardial infarction does not presage myogenesis.** *Cardiovascular research*
  Deutsch, M. A., Doppler, S. A., Li, X. n., Lahm, H. n., Santamaria, G. n., Cuda, G. n., Eichhorn, S. n., Ratschiller, T. n., Dzilic, E. n., Dreßen, M. n., Eckart, A. n., Stark, K. n., Massberg, et al
  2018

- **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

- **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

- **Stage-specific Effects of Bioactive Lipids on Human iPSC Cardiac Differentiation and Cardiomyocyte Proliferation.** *Scientific reports*
  Sharma, A. n., Zhang, Y. n., Buikema, J. W., Serpooshan, V. n., Chirikian, O. n., Kosaric, N. n., Churko, J. M., Dzilic, E. n., Shieh, A. n., 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

- **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
- **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)
- **The relationship between cardiac endothelium and fibroblasts: it's complicated.** *The Journal of clinical investigation*
  Karra, R. n., 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. n., Serpooshan, V. n., Wu, S. n., Demirci, U. n., Chen, P. n., Güven, S. n.
  2017
- **In vivo rescue of the hematopoietic niche by pluripotent stem cell complementation of defective osteoblast compartments.** *Stem cells (Dayton, Ohio)*
  Chubb, R. n., Oh, J. n., Riley, A. K., Kimura, T. n., Wu, S. M., Wu, J. Y.
  2017
- **Nkx2.5+ Cardiomyoblasts Contribute to Cardiomyogenesis in the Neonatal Heart.** *Scientific reports*
  Serpooshan, V. n., Liu, Y. H., Buikema, J. W., Galdos, F. X., Chirikian, O. n., Paige, S. n., Venkatraman, S. n., Kumar, A. n., Rawnsley, D. R., Huang, X. n., 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. n., Li, Y. n., He, L. n., Zhang, H. n., Huang, X. n., Liu, Q. n., Pu, W. n., Zhang, L. n., Li, Y. n., Zhao, H. n., Wang, Z. n., Zhu, J. n., 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-?
- **Distilling complexity to advance cardiac tissue engineering** *SCIENCE TRANSLATIONAL MEDICINE*
  Ogle, B. M., Bursac, N., Domian, I., Huang, N. F., Menasche, P., Murry, C. E., Pruitt, B., Radisic, M., Wu, J. C., Wu, S. M., Zhang, J., Zimmermann, W., Vunjak-Novakovic, et al

2016; 8 (342)

- **Regenerative Medicine: Potential Mechanisms of Cardiac Recovery in Takotsubo Cardiomyopathy.** *Current treatment options in cardiovascular medicine*
  Chang, A. Y., Kittle, J. T., Wu, S. M.
  2016; 18 (3): 20-?
- **Cardioprotective Actions of TGF beta RI Inhibition Through Stimulating Autocrine/Paracrine of Survivin and Inhibiting Wnt in Cardiac Progenitors** *STEM CELLS*
  Ho, Y., Tsai, W., Lin, F., Huang, W., Lin, L., Wu, S. M., Liu, Y., Chen, W.
  2016; 34 (2): 445-455
- **Harnessing the Induction of Cardiomyocyte Proliferation for Cardiac Regenerative Medicine.** *Current treatment options in cardiovascular medicine*
  Sharma, A., Zhang, Y., Wu, S. M.
  2015; 17 (10): 404-?
- **Members Only: Hypoxia-Induced Cell-Cycle Activation in Cardiomyocytes.** *Cell metabolism*
  Sharma, A., Wu, S. M.
  2015; 22 (3): 365-366
- **Integrin Based Isolation Enables Purification of Murine Lineage Committed Cardiomyocytes** *PLOS ONE*
  Tarnawski, L., Xian, X., Monnerat, G., Macaulay, I. C., Malan, D., Borgman, A., Wu, S. M., Fleischmann, B. K., Jovinge, S.
  2015; 10 (8)
- **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
- **Identification of cardiovascular lineage descendants at single-cell resolution.** *Development*
  Li, G., Plonowska, K., Kuppusamy, R., Sturzu, A., Wu, S. M.
  2015; 142 (5): 846-857
- **Small RNAs make big impact in cardiac repair.** *Circulation research*
  Krane, M., Deutsch, M., Doppler, S., Lange, R., Wu, S. M.
  2015; 116 (3): 393-395
- **Molecular Regulation of Cardiomyocyte Differentiation** *CIRCULATION RESEARCH*
  Paige, S. L., Plonowska, K., Xu, A., Wu, S. M.
  2015; 116 (2): 341-353
- **Pharmacological inhibition of TGFß receptor improves Nkx2.5 cardiomyoblast-mediated regeneration.** *Cardiovascular research*
  Chen, W., Liu, Y., Ho, Y., Wu, S. M.
  2015; 105 (1): 44-54
- **Derivation of Highly Purified Cardiomyocytes from Human Induced Pluripotent Stem Cells Using Small Molecule-modulated Differentiation and Subsequent Glucose Starvation.** *Journal of visualized experiments : JoVE*
  Sharma, A., Li, G., Rajarajan, K., Hamaguchi, R., Burridge, P. W., Wu, S. M.
  2015
- **Comparing mouse and human pluripotentstem cell derived cardiac cells: both systemshave advantages for pharmacological and toxicological screening.** *Journal of pharmacological and toxicological methods*
  Lagerqvist, E. L., Finnin, B. A., Elliott, D. n., Anderson, D. n., Wu, S. M., Pouton, C. W., Haynes, J. M.
  2015
- **Patching up broken hearts: cardiac cell therapy gets a bioengineered boost.** *Cell stem cell*
  Serpooshan, V., Wu, S. M.
  2014; 15 (6): 671-673
- **Human induced pluripotent stem cell-derived cardiomyocytes as an in vitro model for coxsackievirus b3-induced myocarditis and antiviral drug screening platform.** *Circulation research*

Sharma, A., Marceau, C., Hamaguchi, R., Burridge, P. W., Rajarajan, K., Churko, J. M., Wu, H., Sallam, K. I., Matsa, E., Sturzu, A. C., Che, Y., Ebert, A., Diecke, et al
2014; 115 (6): 556-566

- **Somatic Cell Reprogramming into Cardiovascular Lineages** *JOURNAL OF CARDIOVASCULAR PHARMACOLOGY AND THERAPEUTICS*
  Chen, J. X., Plonowska, K., Wu, S. M.
  2014; 19 (4): 340-349
- **Insulin-like growth factor promotes cardiac lineage induction in vitro by selective expansion of early mesoderm.** *Stem cells*
  Engels, M. C., Rajarajan, K., Feistritzer, R., Sharma, A., Nielsen, U. B., Schalij, M. J., de Vries, A. A., Pijnappels, D. A., Wu, S. M.
  2014; 32 (6): 1493-1502
- **Telocytes in human heart valves** *JOURNAL OF CELLULAR AND MOLECULAR MEDICINE*
  Yang, Y., Sun, W., Wu, S. M., Xiao, J., Kong, X.
  2014; 18 (5): 759-765
- **Myeloid zinc finger 1 (mzf1) differentially modulates murine cardiogenesis by interacting with an nkx2.5 cardiac enhancer.** *PloS one*
  Doppler, S. A., Werner, A., Barz, M., Lahm, H., Deutsch, M., Dreßen, M., Schiemann, M., Voss, B., Gregoire, S., Kuppusamy, R., Wu, S. M., Lange, R., Krane, et al
  2014; 9 (12): e113775
- **Patching Up Broken Hearts: Cardiac Cell Therapy Gets a Bioengineered Boost** *Cell Stem Cell*
  Serpooshan, V., Wu, S. M.
  2014; 15 (6): 671–673
- **Induced pluripotent stem cell-derived cardiomyocytes for cardiovascular disease modeling and drug screening** *STEM CELL RESEARCH & THERAPY*
  Sharma, A., Wu, J. C., Wu, S. M.
  2013; 4
- **Screening drug-induced arrhythmia events using human induced pluripotent stem cell-derived cardiomyocytes and low-impedance microelectrode arrays.** *Circulation*
  Navarrete, E. G., Liang, P., Lan, F., Sanchez-Freire, V., Simmons, C., Gong, T., Sharma, A., Burridge, P. W., Patlolla, B., Lee, A. S., Wu, H., Beygui, R. E., Wu, et al
  2013; 128 (11): S3-13
- **Meta-Analysis of Stem Cell Therapy in Chronic Ischemic Cardiomyopathy** *AMERICAN JOURNAL OF CARDIOLOGY*
  Kandala, J., Upadhyay, G. A., Pokushalov, E., Wu, S., Drachman, D. E., Singh, J. P.
  2013; 112 (2): 217-225
- **A83-01, a TGF beta RI inhibitor, can proliferate adult cardiac progenitor cells and improve cardiac contractility of myocardial infarcted mice**
  Chen, W., Liu, Y., Ho, Y., Wu, S. M.
  ACTA PHARMACOLOGICA SINICA.2013: 57–57
- **Autophagy - the friendly fire in endothelial cell regeneration. Focus on "Autophagy in endothelial progenitor cells is cytoprotective in hypoxic conditions"** *AMERICAN JOURNAL OF PHYSIOLOGY-CELL PHYSIOLOGY*
  Sharma, A., Wu, S. M.
  2013; 304 (7): C614-C616
- **At a Crossroad Cell Therapy for Cardiac Repair** *CIRCULATION RESEARCH*
  Deutsch, M., Sturzu, A., Wu, S. M.
  2013; 112 (6): 884-890
- **Essential and Unexpected Role of Yin Yang 1 to Promote Mesodermal Cardiac Differentiation** *CIRCULATION RESEARCH*
  Gregoire, S., Karra, R., Passer, D., Deutsch, M., Krane, M., Feistritzer, R., Sturzu, A., Domian, I., Saga, Y., Wu, S. M.
  2013; 112 (6): 900-U104
- **Of fish and men: clonal lineage analysis identifies divergence in myocardial development.** *Circulation research*
  Sharma, A., Wu, S. M.
  2013; 112 (4): 583-585

- **iPS Cell Modeling of Cardiometabolic Diseases** *JOURNAL OF CARDIOVASCULAR TRANSLATIONAL RESEARCH*
  Nakamura, K., Hirano, K., Wu, S. M.
  2013; 6 (1): 46-53
- **Early cardiac development: a view from stem cells to embryos** *CARDIOVASCULAR RESEARCH*
  van Vliet, P., Wu, S. M., Zaffran, S., Puceat, M.
  2012; 96 (3): 352-362
- **Reprogramming the Beat Kicking It Up a Notch** *CIRCULATION*
  Wu, S. M., Milan, D. J.
  2012; 126 (9): 1009-1011
- **Inefficient Reprogramming of Fibroblasts into Cardiomyocytes Using Gata4, Mef2c, and Tbx5** *CIRCULATION RESEARCH*
  Chen, J. X., Krane, M., Deutsch, M., Wang, L., Rav-Acha, M., Gregoire, S., Engels, M. C., Rajarajan, K., Karra, R., Abel, E. D., Wu, J. C., Milan, D., Wu, et al
  2012; 111 (1): 50-55
- **Small molecule regulators of postnatal Nkx2.5 cardiomyoblast proliferation and differentiation** *JOURNAL OF CELLULAR AND MOLECULAR MEDICINE*
  Chen, W., Wu, S. M.
  2012; 16 (5): 961-965
- **Putting the Pieces Together: Stem Cells and The Quest to Heal A Broken Heart** *CardioSource World News*
  Wu, S. M., Singh, J. P.
  2012; 12: 22-27
- **Induced pluripotent stem cell modeling of complex genetic diseases.** *Drug discovery today. Disease models*
  Hinson, J. T., Nakamura, K., Wu, S. M.
  2012; 9 (4): e147-e152
- **A Brief Primer on the Development of the Heart** *Heart Failure, 2nd Ed.*
  Gregoire S, Wu SM
  2012: Chapter 1
- **Epigenetic mechanisms in cardiac development and disease** *ACTA BIOCHIMICA ET BIOPHYSICA SINICA*
  Vallaster, M., Vallaster, C. D., Wu, S. M.
  2012; 44 (1): 92-102
- **Reprogramming of mouse, rat, pig, and human fibroblasts into iPS cells.** *Current protocols in molecular biology / edited by Frederick M. Ausubel ... [et al.]*
  Rajarajan, K., Engels, M. C., Wu, S. M.
  2012; Chapter 23: Unit 23 15-?
- **Developmental and Regenerative Biology of Multipotent Cardiovascular Progenitor Cells** *CIRCULATION RESEARCH*
  Sturzu, A. C., Wu, S. M.
  2011; 108 (3): 353-364
- **Regenerative strategies for cardiac disease** *In: Stem Cells and Regenerative Medicine. Humana Press.*
  Huang X, Oh JB, Wu SM
  2011; 1: 579-593
- **Origin of Cardiac Progenitor Cells in the Developing and Postnatal Heart** *JOURNAL OF CELLULAR PHYSIOLOGY*
  Kuhn, E. N., Wu, S. M.
  2010; 225 (2): 321-325
- **Isolation and functional characterization of pluripotent stem cell-derived cardiac progenitor cells.** *Current protocols in stem cell biology*
  Huang, X., Wu, S. M.
  2010; Chapter 1: Unit 1F 10-?
- **Promises and pitfalls in cell replacement therapy for heart failure.** *Drug discovery today. Disease mechanisms*

Krane, M., Wernet, O., Wu, S. M.
2010; 7 (2): e109-e115

- **Cardiac progenitor cells: from embryonic to the aging heart.** *Aging Health*
  Liu, Y-H., Kuhn, E.B., Wu, S.M.
  2010; 6 (6): 679-686

- **The integrative aspects of cardiac physiology and their implications for cell-based therapy** *Ananlysis of Cardiac Development: From Embryo to Old Age*
  Pijnappels, D. A., Gregoire, S., Wu, S. M.
  Annals of the New York Academy of Sciences.2010; 1188: 7–14

- **Myocardial Injury Induces the Expansion and Cardiomyogenic Differentiation of Postnatal Nkx2.5 Progenitor Cells via Inflammatory Signals** *82nd National Conference and Exhibitions and Annual Scientific Session of the American-Heart-Association*
  Liu, Y., Rawnsley, D., Zeng, M., Yu, E., Pijnappels, D., Thibault, H., Scherrer-Crosbie, M., Wu, S. M.
  LIPPINCOTT WILLIAMS & WILKINS.2009: S756–S756

- **VISIONS: the art of science.** *Molecular reproduction and development*
  Wu, S. M.
  2009; 76 (6): 525-?

- **Committed Ventricular Progenitors in the Islet-1 Lineage Expand and Assemble Into Functional Ventricular Heart Muscle** *58th Annual Scientific Session of the American-College-of-Cardiology*
  van der Meer, P., Domian, I. J., Chiravuri, M., Feinberg, A. F., Wu, S. M., Parker, K. K., Chien, K. R.
  ELSEVIER SCIENCE INC.2009: A468–A468

- **Platypnea-orthodeoxia syndrome in two previously healthy adults: a case-based review** *Clinical Medicine Insights: Cardiology*
  Ptaszek LM, Saldana F, Palacios IF, Wu SM
  2009; 3: 37-43

- **Derivation and Functional Characterization of Nkx2.5+Cardiac Progenitor Cells from Mouse Induced Pluripotent Stem Cells** *81st Annual Scientific Session of the American-Heart-Association*
  Pijnappels, D. A., Stadtfeld, M., Zeng, M., Yu, E., Fujiwara, Y., Wang, G., Orkin, S. H., Jackson-Grusby, L., Hochedlinger, K., Wu, S. M.
  LIPPINCOTT WILLIAMS & WILKINS.2008: S428–S428

- **Mesp1 at the heart of mesoderm lineage specification** *CELL STEM CELL*
  Wu, S. M.
  2008; 3 (1): 1-2

- **Multipotent stem cells in cardiac regenerative therapy** *REGENERATIVE MEDICINE*
  Karra, R., Wu, S. M.
  2008; 3 (2): 189-198

- **Cardiovascular Stem Cells in Regenerative Medicine: Ready for Prime Time?** *Drug discovery today. Therapeutic strategies*
  Liu, Y., Karra, R., Wu, S. M.
  2008; 5 (4): 201-207

- **alpha(2)-Macraglobulin from rheumatoid arthritis synovial fluid: Functional analysis defines a role for oxidation in inflammation** *ARCHIVES OF BIOCHEMISTRY AND BIOPHYSICS*
  Wu, S. M., Pizzo, S. V.
  2001; 391 (1): 119-126

- **Differential regulation of the fibroblast growth factor (FGF) family by alpha(2)-macroglobulin: evidence for selective modulation of FGF-2-induced angiogenesis** *BLOOD*
  Asplin, I. R., Wu, S. M., Mathew, S., Bhattacharjee, G., Pizzo, S. V.
  2001; 97 (11): 3450-3457

- **The conformation-dependent interaction of alpha(2)-macroglobulin with vascular endothelial growth factor - A novel mechanism of alpha(2)-macroglobulin/growth factor binding** *JOURNAL OF BIOLOGICAL CHEMISTRY*
  Bhattacharjee, G., Asplin, I. R., Wu, S. M., Gawdi, G., Pizzo, S. V.
  2000; 275 (35): 26806-26811

- **a-Macroglobulins/Kunins** *In: Hemostasis and Thrombosis: Basic Principles and Clinical Practice, 4th Ed.*
  Pizzo SV, Wu SM
  2000: 367-379
- **Mechanism of hypochlorite-mediated inactivation of proteinase inhibition by alpha(2)-Macroglobulin** *BIOCHEMISTRY*
  Wu, S. M., Pizzo, S. V.
  1999; 38 (42): 13983-13990
- **Oxidized alpha(2)-macroglobulin (alpha(2)M) differentially regulates receptor binding by cytokines growth factors: Implications for tissue injury and repair mechanisms in inflammation** *JOURNAL OF IMMUNOLOGY*
  Wu, S. M., Patel, D. D., Pizzo, S. V.
  1998; 161 (8): 4356-4365
- **The binding of receptor-recognized alpha(2)-macroglobulin to the low density lipoprotein receptor-related protein and the alpha(2)M signaling receptor is decoupled by oxidation** *JOURNAL OF BIOLOGICAL CHEMISTRY*
  Wu, S. M., BOYER, C. M., Pizzo, S. V.
  1997; 272 (33): 20627-20635
- **Crashing the Boards: A User Friendly Study Guide for the USMLE Step 1** *Lippincott-Raven*
  Yeh B, Paydafar JA, Flynn M, Biswas SS, Bulsara KR, Liao L, Wu SM
  1997; 1
- **Low-density lipoprotein receptor-related protein alpha(2)-macroglobulin receptor on murine peritoneal macrophages mediates the binding and catabolism of low-density lipoprotein** *ARCHIVES OF BIOCHEMISTRY AND BIOPHYSICS*
  Wu, S. M., Pizzo, S. V.
  1996; 326 (1): 39-47