# Mingxia Gu

## Lab website: https://www.mgulab.org

Department of Pediatrics, Center for Stem Cell and Organoid Medicine (CuSTOM), Division of Pulmonary Biology, Cincinnati Children's Hospital Medical Center

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## Education

Institution	Degree	Date of Degree	Field of Study
Stanford University, Stanford, CA	Postdoctoral Fellow	02/2013 – 11/2016	Pediatric Cardiology Mentor: Marlene Rabinovitch
Stanford University, Stanford, CA	Joint-training	09/2010 – 01/2013	Stem Cell Biology and Regenerative Medicine <i>Mentor: Joseph C. Wu</i>
Peking University, Beijing, China	Ph.D.	09/2009 – 07/2010	Cardiovascular Medicine Mentor: Yi Zhu
Peking University, Beijing, China	M.D.	09/2004 – 07/2009	Medicine

# **Academic Appointments**

12/2016 – 01/2020	<b>Instructor</b> , Department of Pediatric Cardiology, Lucile Parkard Children's Hospital, Stanford University School of Medicine, Stanford, CA		
02/2020 – Current	<b>Assistant Professor (Tenure Track)</b> , Department of Pediatrics, Division of Pulmonary Biology, Center for Stem Cell & Organoid Medicine (CuSTOM), Cincinnati Children's Hospital Medical Center and University of Cincinnati College of Medicine, Cincinnati, Ohio		
2020 - Current	Elected Fellow, American Heart Association		
2020	Faculty, Stanford MCHRI Eureka Winter Course		
2021 - 2022	<b>Reviewer,</b> American Heart Association (AHA) Career Development Award		
2022	Reviewer, Additional Ventures Catalyst to Independence Award		
2022	<i>Ad hoc reviewer</i> , NIH (NHLBI) Respiratory Integrative Biology and Translational Research (RIBT) study section		
2022	Reviewer, Austrian Science Fund		
2022 - Current	ISSCR International Committee		
2022 - Current	Editorial Board, Stem Cell Reports		

## 2023 Faculty, Stanford MCHRI Eureka Winter Course

## Licensing and certification

Eureka International Certificate in Translational Medicine (2019)

## Awards and Honors

- 2022 Honorable Mention, Grace Kawas LeMasters "Lift While You Climb" Mentoring Award for Supporting Female Students
- 2022 Finalist of the Early Career Research, NIH Cardiovascular Bioengineering (CVBE) symposium, Göttingen, Germany
- 2020 American Heart Association (AHA) BCVS Louis N. and Arnold M. Katz Basic Science Research Prize for Early Career Investigators Finalist
- 2020 Elected Fellow of American Heart Association (FAHA)
- 2019 Stanford Cardiovascular Institute Travel Award
- 2019 Finalist, 8<sup>th</sup> Annual Art of Science Competition, Stanford University
- 2019 ISSCR (International Society for Stem Cell Research) Abstract Merit Award
- 2019 ISSCR (International Society for Stem Cell Research) Travel Award
- 2019 Eureka International Certificate Program in Translational Medicine Awards
- 2018 Best Oral Abstract, Annual Heart Center Research Day, Stanford University
- 2017 Stanford Cardiovascular Institute Travel Award
- 2017 Stanford Cardiovascular Institute Best Manuscript Award
- 2016 American Heart Association Junior Investigator Travel Award
- 2016 Outstanding speaker, seventh annual pediatrics research retreat
- 2013 American Heart Association (AHA) Best Manuscript Award

## **Research and Scholarly Activities**

My research lab utilizes patient-specific induced pluripotent stem cell (iPSC) derived vascular cells and organoids to explore the role of vascular deficiency in the etiology of heart, lung, and brain diseases. Recent efforts have largely focused on generating vascularized heart, lung, and intestinal organoids from iPSCs to better understand the impact of vasculature on organ development and disease. By analyzing both iPSC derivatives and patient native tissues with vascular lesions, our research team has uncovered novel disease-specific cellular phenotypes and identified transcriptomic and epigenomic changes at single-cell resolution. Our lab is also developing a high-throughput drug screening platform and machine learning algorithm to identify compounds that reverse the fundamental pathobiology of the disease in a personalized manner.

## **Grants and Contracts**

• Active Research Support

NIH (R00HL135258)Gu (PI)08/15/2020-07/31/2023Uncovering compensatory mechanisms in family members with disease causing<br/>mutations of pulmonary hypertension<br/>\$ 747,000 in total, 30% effort8

CCHMC Trustee AwardGu (Pl)01/01/2021-12/31/2022Transcriptional and Epigenetic Basis of the Endothelial Defect in BronchopulmonaryDysplasia associated Pulmonary Hypertension (BPD-PH)\$200,000 in total, 20% effort

**DOD Career Development Award** Tchieu (PI)/**Gu (Co-I)** 04/01/2022-03/31/2025 *Is There a Point of Convergence Between Congenital Heart Disease and Autism?* \$795,000 in total (\$24,858 allocated to the Gu lab), 5% effort

CCHMC Center for Pediatric Atreya (PI)/Gu (Co-PI) 07/01/2022-06/30/2023 Genomics Award

*Translational study of organ-specific endothelial dysfunction in pediatric sepsis* \$100,000 in total (\$25,000 allocated to the Gu lab), 1% effort

**CCHMC Trustee Award** Sarangdhar (PI)/**Gu (Co-I)** 07/01/2022-06/30/2024 *Predicting polypharmacy and comorbidity mediators of real-world drug toxicity* \$200,000 in total, 4% effort

• <u>Pending Research Support</u>

NIH R01HL166283Gu (Pl)09/01/2022-08/31/2027Elucidating the FOXF1 gene regulatory network in human alveologenesis\$3,404,143 in total, 25% effortPercentile: 16% (as an Early-Stage Investigator)

United Therapeutics Corporation Gu (PI) 10/01/2022-09/30/2024 Engineering Alveolar Capillary Endothelial Cells to Revascularize Porcine Lung Scaffold \$800,000 in total, 5% effort (Awarded, pending institutional contract)

NIH R01HL137766-05A1Waxman (PI)/Gu (Co-I)09/01/2022-08/31/2027Molecular mechanisms of atrial development and regeneration\$2,981,252 in total (\$49,716, allocated to the Gu lab), 10% effortPercentile: 1%

NIH R01HL169484Gu (Pl)07/01/2023-06/30/2028NTRK2-mediated endothelial abnormality in Bronchopulmonary Dysplasia\$3,469, 467 in total, 25% effortPending IRG Review

Additional VenturesGu (Pl)03/01/2023-02/28/2026Understanding Valve Abnormalities in Pulmonary Atresia with Intact Ventricular Septum\$660,000 in total, 15% effort

o <u>Complete Research Support</u>

NIH PCTC Jump Start Award Generation of Vascularized Lung Org \$25,000 in total,1% effort	<b>Gu (PI)</b> anoid from iPSCs	06/01/2021-05/31/2022		
LungMAP2 Pilot Grant Sub-award of NIH(1124HI 148865)	Gu (PI)	01/01/2021-12/31/2021		
<i>Transcriptional and Epigenetic Basis</i> \$50,000 in total, 5% effort	of the Endothelial Defect	in BPD-PH		
Center for Pediatric Genomics Award Eosinophils and EPX mutations in Ka \$100,000 in total, 1% effort	Waggoner (PI) <b>Gu (Co-I)</b> wasaki Disease	07/01/2020-07/01/2021		
MCHRI Instructor K AwardGu (PI)01/01/2018-01/01/2019(Stanford University)Uncovering endothelial defects in pulmonary arterial hypertension\$50,000 in total (\$50,000 allocated to Gu), 1% effort				
<b>CVI Seed Grant</b> (Stanford University) <i>Multiparametric imaging to study cell</i> <i>associated dilated cardiomyopathy</i> \$25,000 in total, 1% effort	Blau (PI) <b>Gu (co-PI)</b> Jular dynamics in Ducher	01/01/2018-01/01/2019 ane muscular dystrophy-		
<b>CVI Seed Grant</b> (Stanford University) <i>A perfusion bioreactor for unders</i> <i>Hypoplastic Left Heart Syndrome (HL</i> \$25,000 in total, 1% effort	Wu (PI) <b>Gu (Co-I)</b> tanding endocardial-myo .HS)	01/01/2017-01/01/2018 ocardial Interactions in		
AHA Postdoc Fellowship (American Heart Association) Using patient-specific iPSC derived pathobiology and therapy of FPAH ar \$125,000 in total, 75% effort	<b>Gu (PI)</b> d endothelial cells to nd IPAH with a BMPR2 m	07/01/2014-06/30/2016 gain new insights into utation		

# **Publications**

## • Original Research Publications (\*Denotes corresponding author)

\*\*\*<u>First or corresponding authors</u>

1. Yu Z, Zhou X, Liu Z, Pastrana-Gomez V, Liu Y, Guo M, Tian L, Nelson TJ, Snyder MP, Wang N, Mital S, Chitayat D, Wu JC, Rabinovitch M, Wu SM, Synder MP, Miao Y, **Gu M\***. KMT2D-NOTCH Mediates Coronary Abnormalities in Hypoplastic Left Heart Syndrome. **Circulation Research.** 2022 Jul 22;131(3):280-282. <u>PMID: 35762338</u>

2. <u>**Gu M**</u>, Donato M, Guo M, Wary N, Miao Y, Mao S, Saito T, Otsuki S, Wang L, Harper R, Sa S, Khatri P, Rabinovitch M. iPSC-endothelial cell phenotypic drug screening and in silico analyses identify tyrphostin-AG1296 for pulmonary arterial hypertension.

## Science Translational Medicine. 2021 May 5;13(592):eaba6480. PMID: 33952674

3. Miao Y, Tian L, Martin M, Paige SL, Galdos FX, Li J, Klein A, Wei Y, Moonen JR, Zhang H, Ma N, Zhang B, Grossfeld P, Mital S, Chitayat D, Wu JC, Rabinovitch M, Nelson JT, Nie S, Wu SM, <u>Gu M\*</u>. Intrinsic Endocardial Defects in Hypoplastic Left Heart Syndrome. **Cell Stem Cell.** 2020 Aug 10;S1934-5909(20)30353-2. <u>PMID: 32810435</u>

4. Klein A, Bayrau B, Miao Y, <u>**Gu M**</u>\*. Isolation of Endocardial and Coronary Endothelial Cells from the Ventricular Free Wall of the Rat Heart. **Journal of visualized experiments: JoVE.** 2020 Apr 15;(158). doi: 10.3791/61126. <u>PMID: 32364545</u>

5. <u>**Gu M**</u>, Shao NY, Sa S, Li D, Termglinchan V, Ameen M, Karakikes I, Sosa G, Grubert F, Lee J, Cao A, Taylor S, Ma Y, Zhao Z, Chappell J, Hamid R, Austin ED, Gold JD, Wu JC, Snyder MP, Rabinovitch M. Patient-Specific iPSC-Derived Endothelial Cells Uncover Pathways that Protect against Pulmonary Hypertension in BMPR2 Mutation Carriers. **Cell Stem Cell**, 2017 Apr 6;20(4):490-504.e5. <u>PMID: 28017794</u>

6. Sa S<sup>#</sup>, <u>**Gu M**<sup>#</sup></u> (*co-first author*), Chappell J, Shao NY, Ameen M, Elliott KA, Li D, Grubert F, Li CG, Taylor S, Cao A, Ma Y, Fong R, Nguyen L, Wu JC, Snyder MP, Rabinovitch M. Induced Pluripotent Stem Cell Model of Pulmonary Arterial Hypertension Reveals Novel Gene Expression and Patient Specificity. **American Journal of Respiratory and Critical Care Medicine**, 2017 Apr 1;195(7):930-941. <u>PMID: 27779452</u>

7. <u>**Gu M**</u>, Mordwinkin NM, Kooreman NG, Lee J, Wu H, Hu S, Churko JM, Diecke S, Burridge PW, He C, Barron FE, Ong SG, Gold JD, Wu JC. Pravastatin Reverses Obesityinduced Dysfunction of Induced Pluripotent Stem Cell-Derived Endothelial Cells via a Nitric Oxide- Dependent Mechanism. **European Heart Journal.** 2015; 36 (13): 806-816. <u>PMID: 25368203</u>

8. <u>**Gu M**</u>, Nguyen PK, Lee AS, Xu D, Hu S, Plews J, Han L, Huber BC, Lee WH, Gong Y, de Almeida PE, Lyons J, Ikeno F, Pacharinsak C, Connolly AJ, Gambhir SS, Robbins RC, Longaker MT, Wu JC. Microfluidic Single Cell Analysis Show Porcine Induced Pluripotent Stem Cell-Derived Endothelial Cells Improve Myocardial Function by Paracrine Activation. **Circulation Research.** 2012; 111 (7): 882-893. <u>PMID: 22821929</u>

9. <u>**Gu M**</u>, Fu Y, Sun XL, Ding YZ, Li CH, Pang W, Pan S, Zhu Y. Proteomic analysis of endothelial lipid rafts reveals a novel role of statins in antioxidation. **Journal of Proteome Research.** 2012; 11 (4): 2365-2373. <u>PMID: 22428589</u>

# \*\*\* <u>Co-author papers</u>

10. Ameen M, Ameen M, Sundaram L, Banerjee A, Shen M, Kundu S, Nair S, Shcherbina A, <u>**Gu M**</u>, Wilson KD, Varadarajan A, Vadgama N, Balsubramani A, Wu JC, Engreitz J, Farh K, Karakikes I, Wang K, Quertermous T, Greenleaf W, Kundaje A. Integrative single-cell analysis of cardiogenesis identifies developmental trajectories and non-coding mutations in congenital heart disease. **Cell.** *In Press.* Dec 8, 2022

11. Pradhan A, Che L, Ustiyan V, Reza AA, Pek NM, Zhang Y, Alber AB, Kalin TR, Wambach JA, <u>**Gu M**</u>, Kotton DN, Ziady AG, Kalin TV, Kalinichenko VV. Novel FOXF-1stablizing compound TanFe stimulates lung angiogenesis in alveolar capillary dysplasia. **American Journal of Respiratory and Critical Care Medicine**, Dec 8, 2022. <u>PMID</u>:

## 36480964

12. Cai H, Ao Z, Tian C, Wu Z, Kaurich C, Chen Z, <u>**Gu M**</u>, Hohmann AG, Machie K, Guo F. Engineering human spinal microphysiological systems to model opioid-induced tolerance. **Bioactive Materials.** 2022 Oct 25;22:482-490. <u>PMID: 36330161</u>

13. Liu B, Yi D, Yu Z, Pan J, Ramirez K, Li S, Wang T, Glembotski C, Fallon M, Oh S, <u>Gu M</u>, Kalucka J, Dai Z. TMEM100, a Lung-Specific Endothelium Gene. **Arteriosclerosis**, **Thrombosis**, and **Vascular Biology (ATVB)**. doi: 10.1161/ATVBAHA.122.317683. <u>PMID: 36252125</u>

14. Ao Z, Song S, Tian C, Cai H, Li X, Miao Y, Wu Z, Krzesniak J, Ning B, <u>**Gu M**</u>, Lee LP, Guo F. Understanding Immune-Driven Brain Aging by Human Brain Organoid Microphysiological Analysis Platform. **Advanced Science.** 2022 Jul 31;e2200475. doi: 10.1002/advs.202200475. <u>PMID: 35908805</u>

15. Taylor S, Isobe S, Cao A, Contrepois K, Benayoun BA, Jiang L, Wang L, Melemenidis S, Ozen MO, Otsuki S, Shinohara T, Sweatt AJ, Kaplan J, Moonen J-R, Marciano DP, <u>Gu M</u>, Miyagawa K, Hayes B, Sierra RG, Kupitz CJ, Del Rosario PA, Hsi A, Thompson AAR, Ariza ME, Demirci U, Zamanian RT, Haddad F, Nicolls MR, Snyder MP, Rabinovitch M. Endogenous Retroviral Elements Generate Pathologic Neutrophils in Pulmonary Arterial Hypertension. **Am J Respir Crit Care Med.** 2022 Jun 13. doi: 10.1164/rccm.202102-0446OC. <u>PMID: 35696338</u>

16. Gillich A, Brownfield DG, Travaglini KJ, Zhang F, Farmer CG, St Julien KR, Tan SY, **<u>Gu M</u>**, Zhou B, Feinstein JA, Metzger RJ.; Krasnow MA. Dissecting alveolar patterning and maintenance at single-cell resolution. *FASEB J* 36 Suppl 1:May 2022

17. Ao Z, Wu Z, Cai H, Hu L, Li X, Kaurich C, Chang J, <u>**Gu M**</u>, Cheng L, Xin L, Guo F. Rapid profiling of tumor-immune interaction using acoustically assembled patient-derived cell clusters. **Advanced Science.** 2022 May 25; e2201478. doi: 10.1002/advs.202201478. <u>PMID: 35611994</u>

18. Ao Z, Cai H, Wu Z, Hu L, Li X, Kaurich C, <u>**Gu M**</u>, Cheng L, Lu X, Guo F. Evaluation of cancer immunotherapy using mini-tumor chips. **Theranostics**. 2022 May 1;12(8):3628-3636. doi: 10.7150/thno.71761. <u>PMID: 35664082</u>

19. Toth A, Steinmeyer S, Kannan P, Gray J, Jackson CM, Mukherjee S, Demmert M, Sheak JR, Benson D, Kitzmiller J, Wayman JA, Presicce P, Cates C, Rubin R, Chetal K, Du Y, Miao Y, <u>**Gu M**</u>, Guo M, Kalinichenko VV, Kallapur SG, Miraldi ER, Xu Y, Swarr D, Lewkowich I, Salomonis N, Miller L, Sucre JS, Whitsett JA, Chougnet CA, Jobe AH, Deshmukh H, Zacharias WJ. Inflammatory blockade prevents injury to the developing pulmonary gas exchange surface in preterm primates. **Science Translational Medicine**. 2022 Mar 30;14(638):eabl8574. <u>PMID: 35353543</u>

20. Culley MK, Zhao J, Tai YY, Tang Y, Perk D, Negi V, Yu Q, Woodcock C-SC, Handen A, Speyer G, Kim S, Lai Y-C, Satoh T, Watson A, Al Aaraj Y, Sembrat J, Rojas M, Goncharov D, Goncharova EA, Khan OF, Anderson DG, Dahlman JE, Gurkar A, Lafyatis R, Fayyaz AU, Redfield MM, Gladwin MT, Rabinovitch M, <u>**Gu M**</u>, Bertero T, Chan SY. Frataxin deficiency promotes endothelial senescence in pulmonary hypertension. Journal of Clinical Investigation. 2021 Apr 27;136459. <u>PMID: 33905372</u>

21. Niu C, Wang S, Guo J, Wei X, Jia M, Chen Z, Gong W, Qin Y, Wang X, Zhi X, Lu M, Chen S, <u>**Gu M**</u>, Zhang J, Han J, Lan F, Meng D. BACH1 recruits NANOG and histone H3 lysine 4 methyltransferase MLL/SET1 complexes to regulate enhancer-promoter activity and maintains pluripotency. **Nucleic Acids Research.** 2021 Jan 27;gkab034. <u>PMID: 33503260</u>

22. Mikryukov AA, Mazine A, Wei B, Yang D, Miao Y, <u>**Gu M**</u>, Keller G. BMP10 signaling promotes the development of endocardial cells from human pluripotent stem cell-derived cardiovascular progenitors. **Cell Stem Cell.** 2021 Jan 7;28(1):96-111.e7.<u>PMID: 33142114</u>

23. Gillich A, Zhang F, Farmer CG, Travaglini KJ, Tan SY, <u>**Gu M**</u>, Zhou B, Feinstein JA, Krasnow MA, Metzger RJ. Capillary cell-type specialization in the alveolus. **Nature.** 2020 Oct 14. 586(7831):785-789. <u>PMID: 33057196</u>

24. Wilson K, Ameen M, Guo H, Abilez OJ, Tian L, Mumbach MR, Diecke S, Qin X, Liu Y, Yang H, Ma N, Gaddam S, Cunnigham N, <u>Gu M</u>, Neofytou E, Prado M, Hildebrandt TB, Karakikes I, Chang H, Wu JC. Endogenous retrovirus-derived BANCR promotes cardiomyocyte migration in humans and non-human primates. **Developmental Cell.** 2020 Jul 28;S1534-5807(20)30580-3. <u>PMID: 32763147</u>

25. Paige S, Galdos FX, Lee Ssoah, Chin ET, Ranjbarvaziri S, Feyen D, Darsha AK, Xu S, Ryan J, Beck A, Qureshi Y, Miao Y, <u>Gu M</u>, Bernstein D, Nelson T, Mercola M, Rabinovitch M, Ashley E, Parikh V, Wu SM. Patient-Specific Induced Pluripotent Stem Cells Implicate Intrinsic Impaired Contractility in Hypoplastic Left Heart Syndrome. **Circulation.** 2020 Oct 20;142(16):1605-1608. <u>PMID: 33074758</u>

26. Palomares A, <u>**Gu M**</u>, Grubert F, Berest I, Sa S, Kasowski M, Arnold C, Shuai M, Srivas R, Miao S, Li D, Synder M, Rabinovitch M, Zaugg J. Remodeling of active endothelial enhancers is associated with aberrant gene-regulatory networks in pulmonary arterial hypertension. **Nature Communication.** 2020 Apr 3;11(1):1673. doi: 10.1038/s41467-020-15463-x. <u>PMID: 32245974</u>

27. Zhang J, He Y, Yan X, Chen S, He M, Lei Y, Zhang J, Gongol B, <u>**Gu M**</u>, Miao Y, Bai L, Cui X, Wang X, Zhang Y, Fan F, Li Z, Shen Y, Chou C, Huang H, Malhotra A, Rabinovitch M, Jing Z, Shyy J. MicroRNA-483 Amelioration of Experimental Pulmonary Hypertension. **EMBO Molecular Medicine.** 2020 May 8;12(5):e11303. doi: 10.15252/emmm.201911303. <u>PMID: 32324970</u>

28. Zhang H, Tian L, Shen M, Wu H, <u>**Gu M**</u>, Tu C, Paik D, Wu JC. Generation of Quiescent Cardiac Fibroblasts from Human Induced Pluripotent Stem Cells for In Vitro Modeling of Cardiac Fibrosis. **Circulation Research.** 2019 Aug 16;125(5):552-566. <u>PMID: 31288631</u>

29. Saito T, Miyagawa K, Chen SY, Tamosiuniene R, Wang L, Sharpe O, Samayoa E, Harada D, Moonen JR, Cao A, Chen PI, Hennigs J, <u>Gu M</u>, Li GC, Leib R, Li D, Adams C, A. del Rosario P, Bill M, Haddad F, Montoya J, Robinson W, Fantl W, Nolan G, Zamanian R, Nicolls M, Chiu C, Ariza M, Rabinovitch M. Upregulation of HERV-K is Linked to Immunity and Inflammation in Pulmonary Arterial Hypertension. **Circulation**. 2017 Nov 14;136(20):1920-1935. <u>PMID: 28935667</u>

30. Churko J, Lee J, Ameen M, <u>Gu M</u>, Venkatasubramanian M, Diecke S, Sallam K,

Im H, Wang G, Gold JD, Salomonis N, Synder M, Wu JC. Transcriptomic and epigenomic differences in human induced pluripotent stem cells generated from six reprogramming methods. **Nature Biomedical Engineering**. 2017 Oct;1(10):826-837. <u>PMID: 30263871</u>

31. Sun X, Fu Y, <u>**Gu M**</u>, Zhang L, Li D, Li H, Chien S, Shyy JY, Zhu Y. Activation of Integrin  $\alpha$ 5 Mediated by Flow Requires Its Translocation to Membrane Lipid Rafts in Vascular Endothelial Cells. doi: 10.1073/pnas.1524523113. **Proc Natl Acad Sci.** 2016 Jan 19;113(3):769-74. <u>PMID: 26733684</u>

32. Liang P, Sallam K, Wu H, Li Y, Itzhaki I, Garg P, Zhang Y, Termglinchan V, Lan F, **Gu M**, Gong T, Zhuge Y, He C, Ebert AD, Sanchez-Freire V, Churko J, Hu S, Sharma A, Lam CK, Scheinman MM, Bers DM, Wu JC. Patient-specific and genome-edited induced pluripotent stem cell-derived cardiomyocytes elucidate single cell phenotype of Brugada Syndrome. **J Am Coll Cardiol.** 2016 Nov 8;68(19):2086-2096. <u>PMID: 27810048</u>

33. Hopper RK, Moonen JA, Diebold I, Cao A, Rhodes CJ, Tojais NF, Hennigs JK, <u>**Gu</u>** <u>**M**</u>, Wang L, Rabinovitch M. In Pulmonary Arterial Hypertension, Reduced BMPR2 Promotes Endothelial-to-Mesenchymal Transition via HMGA1 and its Target Slug. **Circulation.** 2016 Apr 4. pii: CIRCULATIONAHA.115.020617. <u>PMID: 27045138</u></u>

34. Wu H, Lee J, Vincent LG, Wang Q, <u>**Gu M**</u>, Lan F, Churko JM, Sallam KI, Matsa E, Sharma A, Gold JD, Engler AJ, Xiang YK, Bers DM, Wu JC. Epigenetic Regulation of Phosphodiesterases 2A and 3A Underlies Compromised ß-Adrenergic Signaling in an iPSC Model of Dilated Cardiomyopathy. **Cell Stem Cell.** 2015 Jul 2;17(1):89-100. <u>PMID:</u> 26095046

35. Rhodes CJ, Im H, Cao A, Hennigs JK, Wang L, Sa S, Chen PI, Nickel NP, Miyagawa K, Hopper RK, Tojais NF, Li CG, <u>**Gu M**</u>, Spiekerkoetter E, Xian Z, Chen R, Zhao M, Kaschwich M, Del Rosario PA, Bernstein D, Zamanian RT, Wu JC, Snyder MP, Rabinovitch M. RNAseq Reveals a Novel Pathway of Endothelial Dysfunction in Pulmonary Arterial Hypertension. **American Journal of Respiratory and Critical Care Medicine.** 2015 Aug 1;192(3):356-66. <u>PMID: 26030479</u>

36. Nickel NP, Spiekerkoetter E, <u>**Gu M**</u>, Li CG, Li H, Kaschwich M, Diebold I, Hennigs JK, Kim K, Miyagawa K, Wang L, Cao A, Sa S, Jiang X, Stockstill RW, Nicolls MR, Zamanian RT, Bland RD, Rabinovitch M. Elafin Reverses Pulmonary Hypertension via Caveolin-1-Dependent Bone Morphogenetic Protein Signaling. **American Journal of Respiratory and Critical Care Medicine.** 2015 Jun 1; 191 (11): 1273-1286. <u>PMID: 25853696</u>

37. Wang Y, Liang P, Lan F, Wu H, Lisowski L, <u>**Gu M**</u>, Hu S, Kay MA, Urnov FD, Shinnawi R, Gold JD, Gepstein L, Wu JC. Genome Editing of Isogenic Human Induced Pluripotent Stem Cells Recapitulates Long QT Phenotype for Drug Testing. Journal of the American College of Cardiology. 2014; 64 (5): 451-459. <u>PMID: 25082577</u>

38. Fu Y, Hou Y, Fu C, <u>**Gu M**</u>, Li C, Kong W, Wang X, Shyy JY, Zhu Y. A Novel Mechanism of gamma/delta T-Lymphocyte and Endothelial Activation by Shear Stress: The Role of Ecto-ATP Synthase beta Chain. **Circulation Research.** 2011; 108 (4): 410-417. <u>PMID: 21193741</u>

39. Pei X, <u>Gu M</u>, Huang H, Xu L, Chou B, Wu U, Kang J, Wang N, Wang YD. The Role

of Milk Immunoglobulin in Health. Progress in Modern Biomedicine. 2007 Mar 15.

## Books, Chapters, Reviews, Previews, Commentary, Case Reports, Guidelines (peer-reviewed).

1. Yu Z, Liu Z, Ravichandran V, Lami B, <u>Gu M</u>. Endocardium in Hypoplastic Left Heart Syndrome: Implicates from In Vitro Study. **Journal of Cardiovascular Development and Disease.** 2022 Dec 8.

2. Yu Z, Pek N, <u>Gu M</u>. Delving into the molecular world of single ventricle congenital heart disease. **Current Cardiology Reports.** 2022 Feb 26. doi: 10.1007/s11886-022-01667-8. <u>PMID: 35218503</u>

3. Chang X, <u>**Gu M**</u>, Tchieu J. Harnessing the Power of Stem Cell Models to Study Shared Genetic Variants in Congenital Heart Diseases and Neurodevelopmental Disorders. **Cells.** 2022 Jan 28;11(3):460. doi: 10.3390/cells11030460. <u>PMID: 35159270</u>

4. Pek N, <u>**Gu M**\*</u>. Growing With the Flow: Insights into How Flow Mediates Endocardial Fibroelastosis. **JACC Basic Transl Sci**. 2021 Dec 27;6(12):1000-1002. <u>PMID: 35024505</u>

5. <u>**Gu M\***</u>, Zorn AM\*. Follow your heart and trust your gut: Co-development of heart and gut tissue in organoids. **Cell Stem Cell.** 2021 Dec 2;28(12):2037-2038. <u>PMID:</u> <u>34861142</u>

6. Wang M, <u>**Gu M**</u>, Liu L, Liu Y, Tian L. Single-cell RNA sequencing in cardiac tissue: Applications and limitations. **Vascular Health and Risk Management.** 2021 Oct 2;17:641-657. <u>PMID: 34629873</u>

7. Bejjani AT, Wary N, <u>**Gu M**\*.</u> Hypoplastic left heart syndrome (HLHS): molecular pathogenesis and emerging drug targets for cardiac repair and regeneration. **Expert Opinion on Therapeutic Targets.** 2021 Sep 07. <u>PMID: 34488532</u>

8. <u>**Gu M.</u>** Molecular Mechanism of Congenital Heart Disease and Pulmonary Hypertension. March 2020, SpringerOpen</u>

9. <u>**Gu M\*.</u>** Efficient Differentiation of Human Pluripotent Stem Cells to Endothelial Cells. **Curr Protoc Hum Genet.** 2018 Jul 6:e64. doi: 10.1002/cphg.64. <u>PMID: 29979824</u></u>

10. Plews J, <u>Gu M</u>, Longaker MT, Wu JC. Large animal induced pluripotent stem cells as pre-clinical models for studying human disease. Journal of Cellular and Molecular **Medicine.** 2012; 16 (6): 1196-1202. <u>PMID: 22212700</u>

# • Preprint

1. Ameen M, Sundaram L, Banerjee A, Shen M, Kundu S, Nair S, Shcherbina A, <u>**Gu</u></u> <u><b>M**</u>, Wilson KD, Varadarajan A, Vadgama N, Balsubramani A, Wu JC, Engreitz J, Farh K, Karakikes I, Wang K, Quertermous T, Greenleaf W, Kundaje A. Integrative single-cell analysis of cardiogenesis identifies developmental trajectories and non-coding mutations in congenital heart disease. **bioRxiv.** June 29, 2022</u>

# • Digital media

Single-cell RNA-seq browser for human fetal heart and iPSC-derived endothelial cells

https://singlecell.broadinstitute.org/single\_cell/study/SCP1021/single-cell-rna-seq-ofnormal-human- fetal-heart#study-visualize

https://singlecell.broadinstitute.org/single\_cell/study/SCP1020/single-cell-rna-seq-of-ipsc-derived- endocardium-endothelium-from-hypoplastic-left-heart-syndrome-patient

## • Quality review of publications

1. Miao Y, Tian L, Martin M, Paige SL, Galdos FX, Li J, Klein A, Wei Y, Moonen JR, Zhang H, Ma N, Zhang B, Grossfeld P, Mital S, Chitayat D, Wu JC, Rabinovitch M, Nelson JT, Nie S, Wu SM, <u>Gu M\*.</u> Intrinsic Endocardial Defects in Hypoplastic Left Heart Syndrome. **Cell Stem Cell.** 2020 Aug 10;S1934-5909(20)30353-2. <u>PMID: 32810435</u>

In this study, we uncovered how endocardial cells contribute to the development of a complex congenital heart disease- Hypoplastic Left Heart Syndrome (HLHS). HLHS is characterized by the underdevelopment of left ventricle, associated valves, ascending aorta, and atrial septal defect. While it is intuitive to assume that abnormal growth of the cardiac muscle cells contributes to the disease phenotypes, the role of endocardial cells which give rise to the valves and septum has long been neglected. Here, we identified a developmentally impaired endocardial population in HLHS through single-cell RNA profiling of hiPSC-derived endocardium and human fetal heart tissue with an underdeveloped left ventricle. Interestingly, we also found that the intrinsic endocardial defect also impaired the proliferation and maturation of neighboring cardiomyocytes through a FN1 dependent mechanism. Collectively, the discovery of endocardial defects in causing HLHS transforms our understanding and the textbook description of the etiology of this devastating disease, and offered a new therapeutic target.

This work demonstrated my independence as a junior faculty. As the corresponding author, I conceived and designed the experiments, coordinated efforts from different groups, involved in the trouble shooting of data analysis, edited the manuscript.

# Citation: 66

2. <u>**Gu M**</u>, Shao NY, Sa S, Li D, Termglinchan V, Ameen M, Karakikes I, Sosa G, Grubert F, Lee J, Cao A, Taylor S, Ma Y, Zhao Z, Chappell J, Hamid R, Austin ED, Gold JD, Wu JC, Snyder MP, Rabinovitch M. Patient-Specific iPSC-Derived Endothelial Cells Uncover Pathways that Protect against Pulmonary Hypertension in BMPR2 Mutation Carriers. **Cell Stem Cell**, 2017 Apr 6;20(4):490-504.e5. <u>PMID: 28017794</u>

The mechanism accounting for reduced penetrance of a mutation in causing disease is frequently confounded by an inability to identify protective modifiers or to investigate how presumptive modifiers might protect against the pathological features of the disease. In this study, we used familial pulmonary arterial hypertension (FPAH), a disease with a 20% penetrance of the BMPR2 mutation, to show that induced pluripotent stem cells (iPSCs) differentiated to endothelial cells (ECs) are highly informative of the protective mechanism in unaffected mutation carriers versus affected FPAH patients from the same family. The protective modifiers we identified in unaffected mutation carriers provided a new therapeutic target for FPAH. Collectively, we demonstrated that patient-specific iPSCs

could provide an *in vitro* modeling system to address clinically relevant questions that were not addressable using traditional animal models. The paper provides a proof of concept that iPSC-differentiated cells can be used in other diseases to uncover the mechanism of reduced penetrance or of phenotypic variability seen with the same mutation across family members, and between families.

As the first author, I conceived and designed the experiments, coordinated efforts from different groups, and wrote the manuscript.

## Citation: 167

3. <u>**Gu M**</u>, Nguyen PK, Lee AS, Xu D, Hu S, Plews J, Han L, Huber BC, Lee WH, Gong Y, de Almeida PE, Lyons J, Ikeno F, Pacharinsak C, Connolly AJ, Gambhir SS, Robbins RC, Longaker MT, Wu JC. Microfluidic Single Cell Analysis Show Porcine Induced Pluripotent Stem Cell-Derived Endothelial Cells Improve Myocardial Function by Paracrine Activation. **Circulation Research.** 2012; 111 (7): 882-893. <u>PMID: 22821929</u>

Although several groups have created iPSCs from porcine adult tissue, the generation of a therapeutic cell type from these large animals has remained challenging. Using a modified protocol for the derivation of human endothelial cells from iPSCs, we successfully generated endothelial cells from porcine iPSCs that shared similar morphological and functional properties as endothelial cells from the aorta. Transplantation of these iPSC-ECs into the murine myocardium after myocardial infarction resulted in significant improvement in ejection fraction 4 weeks after transplantation. Using a novel microfluidic PCR technique to determine gene expression at the single-cell level, we discovered that iPSC-ECs can release proangiogenic and antiapoptotic factors in the ischemic environment. These paracrine factors promoted the formation of new blood vessels in the peri-infarct area. We also demonstrated that the pattern of paracrine release varied among different cell subpopulations. In summary, further development of these large-animal iPSC models may provide additional insight to facilitate the development of autologous iPSC-based therapy in humans.

As the first author, I conceived and designed the experiments, coordinated efforts from different groups, and wrote the manuscript.

Citation: 115

## • Patents

1. Provisional patent: Vascularized Organoids. 08/19/2021. Inventor.

2. New use of substance for inhibiting integrin alpha5 in preparation of products for preventing endothelial cell activation and/or atherosclerosis. Publication number: CN104027805A; Sep 20, 2014. co-Inventor.

## • Abstracts

1. Reconstructing pulmonary circulation to study lung alveologenesis in a dish. Nicole Pek, Minzhe Guo, Jeffrey Whitsett, Darrell Kotton, Yifei Miao, **Mingxia Gu.** Keystone Symposia on Molecular and Cellular Biology. April 3-6, 2022, Keystone, CO, USA

2. Abnormal Differentiation and Proliferation of Coronary Arterial Endothelium in Hypoplastic Left Heart Syndrome. Yu Z, Zhou X, Pastrana-Gomez V, Tian L, Nelson TJ,

Snyder MP, Wang N, Mital S, Chitayat D, Wu JC, Rabinovitch M, Wu SM, Miao Y and **Gu M**. Single Ventricle Investigators Meeting, 2021 March, Virtual Meeting

3. Single-cell transcriptomic analysis and patient-specific iPSCs reveal dysregulated cell cycle in coronary endothelial cell in hypoplastic left heart syndrome. Yifei Miao, Xin Zhou, Lei Tian, Marcy Martin, Timothy Nelson, **Mingxia Gu.** International Society for Stem Cell Research (ISSCR) Annual Meeting, 2020 June. Boston, USA.

4. Single-cell RNA-seq and patient-specific iPSCs reveal endocardial and endothelial abnormality in hypoplastic left heart syndrome. Yifei Miao, Lei Tian, Jingjing Li, Francisco Galdos, Sharon Paige, Ning Ma, Eric Wei, Sean Wu, Joseph Wu, Michael Snyder, **Mingxia Gu.** American Heart Association Scientific Session. 2019 Nov. Philadelphia, PA.

5. Single-cell RNA-seq and patient-specific iPSCs reveal endocardial and endothelial abnormality in hypoplastic left heart syndrome. Yifei Miao, Lei Tian, Jingjing Li, Francisco Galdos, Sharon Paige, Ning Ma, Eric Wei, Sean Wu, Joseph Wu, Michael Snyder, **Mingxia Gu.** NAVBO, 2019 Oct.

6. Single-cell RNA-seq and patient-specific iPSCs reveal endocardial and endothelial abnormality in hypoplastic left heart syndrome. Yifei Miao, Lei Tian, Jingjing Li, Francisco Galdos, Sharon Paige, Ning Ma, Eric Wei, Sean Wu, Joseph Wu, Michael Snyder, **Mingxia Gu.** International Society for Stem Cell Research (ISSCR) Annual Meeting, 2019 June. Boston, USA. Best abstract award.

7. Single-Cell RNA-Seq Reveals Abnormality in iPSC derived Endothelial cells from Hypoplastic Left Heart Syndrome Patients with Right Ventricular Failure. Yifei Miao, Lei Tian, Eric Wei, Jan-Renier Moonen, Francisco X. Galdos, Sharon L. Paige, Sushma Reddy, Sean M. Wu, Joseph C. Wu, Michael P. Snyder, **Mingxia Gu**. International Pediatric VAD and Heart Failure Summit. 2018 Sep. Stanford, CA.

8. High-Throughput Drug Screen to Reverse Phenotype of Pulmonary Artery Hypertension iPSC Derived Vascular Cells Combined with Bioinformatics Uncovers Promising Therapies. **Mingxia Gu**, Michele Donato, Yifei Miao, Shuai Mao, Toshie Saito, Shoichiro Otsuki, Lingli Wang, Rebecca Harper, Silin Sa, Purvesh Khatri, Marlene Rabinovitch. 2018 Nov, American Heart Association Scientific Session, Chicago, IL. <u>Oral Presentation</u>.

9. High-Throughput Drug Screening of iPSC-Derived Vascular Cells to Reverse PAH Phenotype. **Mingxia Gu**, Silin Sa, Lei Tian, Ning-Yi Shao, Dan Li, Michele Donate, Purvesh Khatri, Joseph C Wu, Marlene Rabinovitch. 2017 Nov, American Heart Association Scientific Session, 2017, Anaheim, CA. <u>Oral Presentation.</u>

10. Patient-Specific iPSC Derived Endothelial Cells Uncover Protective Pathways of the *BMPR2* Mutation in Pulmonary Arterial Hypertension. **Mingxia Gu**, Ning-Yi Shao, Dan Li, Silin Sa, Vittavat Termglinchan, Mohamed Ameen, Ioannis Karakikes, Gustavo Sosa, Fabian Grubert, Jaecheol Lee, Aiqin Cao, Shalina Taylor, Yu Ma, Zhixin Zhao, James Chappell, Rizwan Hamid, Eric D. Austin, Joseph D Gold, Joseph C Wu, Michael P Snyder, Marlene Rabinovitch. 2016 American Heart Association Scientific Session, New Orleans, Louisiana. <u>Oral Presentation.</u>

11. Patient-Specific iPSC Derived Endothelial Cells Uncover Mechanisms Related to Penetrance of a BMPR2 Mutation in Causing Pulmonary Arterial Hypertension. **Mingxia Gu**, Silin Sa, Yu Ma, Joseph C. Wu, Marlene Rabinovitch. 2015 June, International Society for Stem Cell Research (ISSCR) Annual Meeting, Stockholm, Sweden. <u>Oral Presentation</u>.

12. Microfluidic Single-Cell Analysis Shows That Porcine Induced Pluripotent Stem Cell–Derived Endothelial Cells Improve Myocardial Function by Paracrine Activation. **Mingxia Gu**, Patricia K. Nguyen, Andrew S. Lee, Dan Xu, Shijun Hu, Jordan R. Plews, Leng Han, Bruno C. Huber, Won Hee Lee, Yongquan Gong, Patricia E. de Almeida, Jennifer Lyons, Fumi Ikeno, Cholawat Pacharinsak, Andrew J. Connolly, Sanjiv S. Gambhir, Robert C. Robbins, Michael T. Longaker, and Joseph C. Wu. 2012 Nov. American Heart Association Scientific Session, Los Angeles, CA. <u>Oral Presentation</u>.

#### • Invited talks / virtual visits

- 2023 "Science in the Desert" Biomedical Lecture Series, UArizona Phoenix, AZ, US
- 2023 Vascular Biology 2023, the NAVBO annual meeting, Newport, RI, US
- 2023 2023 RIKEN BDR-CuSTOM Joint Organoid Symposium, Kobe, Japan
- 2023 University of Virginia, Cardiovascular Research Center, Virginia, US
- 2023 Gordon conference, Vascular Cell Biology, Ventura, CA
- 2022 NIH LungMAP2 group meeting, Washington DC, US
- 2022 Brigham and Women's Hospital, Basic Science Research Seminar, Virtual
- 2022 AHA Scientific Session- 1) Developmental pathways that impact cardiac disease; 2) Highlighting the achievements of our ATVB young members, Chicago, IL, US
- 2022 Stem Cell Guest Lecture, Merck, South San Francisco, CA, US
- 2022 The 22<sup>nd</sup> International Vascular Biology Meeting, Oakland, CA, US
- 2022 The 16<sup>th</sup> Qianjiang International Cardiovascular Conference, virtual
- 2022 CCHMC Heart Institute Research Retreat, Cincinnati, OH, US
- 2022 CCHMC Electrophysiology Conference, Cincinnati, OH, US
- 2022 Peking University COPD symposium, virtual
- 2022 NIH Cardiovascular Bioengineering (CVBE) Symposium, Gottingen, Germany
- 2022 2nd Pulmonary Hypertension/Heart Failure Symposium, Berlin, Germany
- 2022 NIH LungMAP2 group meeting, San Diego, CA, US
- 2022 ATS International Conference, San Francisco, CA, US
- 2022 Vascular Innovation Symposium, Shanghai, China
- 2022 Cincinnati Children's CuSTOM/RIKEN BDR Joint Symposium, OH, US
- 2022 University of Illinois Chicago, College of Medicine, IL, US
- 2022 Endocrine Forum, Cincinnati Children's Hospital, Cincinnati, OH, US
- 2021 Endoderm Club, Cincinnati Children's Hospital, Cincinnati, OH, US
- 2021 NHLBI "How Can We Use Bioengineering Approaches to (Re)Build a Lung?" Workshop, virtual
- 2021 Indiana University School of Medicine, Wells Center Seminar Series, IN, US

- 2021 Penn State College of Medicine and Hershey Medical Center, PA, US
- 2021 Gordon Research Conference on Lung Development, Injury and Repair, Waterville Valley, US
- 2021 6th Bioengineering & Translational Medicine Conference, US
- 2021 iPS Lecture Series, Institute for Regenerative Medicine, University of Zurich, Switzerland
- 2021 Vascular Innovation Symposium, Shanghai, China
- 2021 Research Pearl, Cincinnati Children's Hospital, OH, US
- 2021 University of Cincinnati, Department of Internal Medicine Research Conference
- 2020 UCLA Cardiovascular Theme Research Seminar Series
- 2020 UConn Health, Genetics & Genome Sciences Seminar Series
- 2020 Development 2020 "From Stem Cells to Human Development", Dorking, UK
- 2020 Cincinnati Children's CuSTOM/RIKEN BDR Joint Symposium, Kobe, Japan
- 2019 Annual Meeting of the North American Vascular Biology Organization (NAVBO), Asilomar, California
- 2018 Frontiers in Organoid Medicine, Cincinnati Children's Hospital
- 2017 The 8th TAKAO International Symposium on Molecular Mechanism of Cardiopulmonary Disease, Shimane, Japan
- 2016 Pediatric Academic Societies Meeting, Baltimore, MD
- 2016 Seventh Annual Pediatrics Research Retreat, Stanford University, California
- 2015 ISSCR Annual Conference, Stockholm, Sweden
- 2014 NHLBI Progenitor Cell Biology Consortium Meeting, Stanford, California
- 2012 AHA Scientific Session, Los Angeles, CA, US

## **Teaching and Mentoring**

#### • Teaching

Summer 2022	UC/CCHMC SURF Summer Program
Spring 2021	CCHMC MDB Grant Writing Course
Spring 2021	CCHMC MDB Advanced Topics in Developmental Biology
Summer 2019	Lecture, SIMR/CIRM Stanford summer program
Summer 2018	Lecture, SIMR/CIRM Stanford summer program
Summer 2017	Lecture, SIMR Stanford summer program
2009 - 2010	Teaching Assistant of Physiology, Peking University

#### • Mentoring

2022 – current MSTP Senior Physician Scientist (SPS) Mentor Program

## • Past and Current Trainees

Role	Mentee	Dates	Level of Training	Program
Career Development Committee	Mihir Atreya	2022 -	Instructor	ССНМС
Mentor	Justin Freking	2022 -	Undergraduate from Notre Dame	UC/CCHMC SURF
Thesis Committee	Maria UscateguiCalderon	2022 -	Graduate Student	UC/CCHMC MDB
Mentor	Vidhya Ravichandran	2022-	Visiting Fellow	CCHMC
Mentor	Cheng Tan	2022-	Visiting Fellow	CCHMC
Mentor	Nicole Pek	2021 -	Graduate Student	UC/CCHMC MDB
Mentor	Ziyi Liu	2020 -	Postdoc Fellow	CCHMC
Mentor	Zhiyun Yu	2020 -	Graduate Student	UC CCB
Thesis Committee	Omar Brito-Estrada	2020 -	Graduate Student	UC/CCHMC MDB
Mentor	Yifei Miao	2018 -	Instructor	CCHMC
Mentor	Neil Wary	2020 - 2021	Undergraduate	Stanford
Mentor	Alyssa Klein	2019 - 2020	Premed Student	Stanford
Mentor	Bethel Bayrau	2019 - 2020	Undergraduate	Stanford

## • Mentee Accomplishments

- Zhiyun Yu, 4<sup>th</sup> year PhD candidate, <u>Albert J. Ryan Fellowship Award</u> and <u>American Heart Association predoctoral fellowship (\$128,144 for two years);</u> Oral Presentation and Travel Award at AHA Scientific Session 2022 in Chicago
- Nicole Pek, 2<sup>nd</sup> year PhD candidate, 2021-2022 URC Graduate Student Stipend and Research Cost Program for Faculty-Student Collaboration, Keystone Symposia Future of Science Fund scholarship, Thermo Fisher Scientific Scholarship, The Akeson Award for Academic Excellence from the MDB program, Best Image Award from the 2022 Graduate Student Retreat; <u>American Heart Association predoctoral fellowship</u> (\$128,144 for two years).
- Victor Pastrana-Gomez, Research Assistant, received offers from MSTP programs at Case Western Reserve University and University of Kentucky
- **Neil Wary**, Undergraduate Research Assistant, graduated from Stanford with BS in Human Biology, MS in Epidemiology and Clinical Research, and a minor in music. He declined an offer from Oxford and is heading to Zimbabwe to teach research methods at a residential high school through the Princeton in Africa Fellowship.

• **Justin Freking**, Undergraduate Summer Student from the SURF program, received an Honorable Mention (top 10%) for his poster presentation.

## Service and Leadership

## • Professional organizations (current):

American Heart Association (AHA), Premium Professional Membership International Society for Stem Cell Research (ISSCR) North American Vascular Biology Organization (NAVBO) American Thoracic Society (ATS)

## • Committees

2022 - current	ISSCR International Committee
2020 - 2023	CCHMC Medical Scientist Training Program ( <b>MSTP</b> ) Admission Committee
2021 - 2022	CCHMC-Riken Joint Symposium Organizing Committee
2021 - 2022	Technology Forward Committee, Cincinnati Children's Hospital
2020 - 2022	ISSCR Abstract Review Committee
2019 - 2020	Stanford K-to-R Study Group Organizing Committee
2019 - 2020	Stanford Pediatrics Research Advisory Committee
2019 - 2020	Stanford MCHRI Eureka Course in Translational Medicine Organizing Committee
2019 - 2020	Stanford "Connections" Task Force

## • Editorial Service

Editorial Board Member, Stem Cell Reports, 2022 - current Editorial Board Member, Global Translational Medicine, 2022 – current Guest Associate Editor, Frontiers in Cell and Developmental Biology, 2021 – current Review Editor, Frontiers in Cardiovascular Medicine, 2022 - current

## • Grant Reviews:

## 2022 Austrian Science Fund

2022	NIH (NHLBI) RIBT Study Section (Ad hoc)
2022	Additional Ventures Catalyst to Independence Award
2021 - 2022	American Heart Association Career Development Award
2021 - 2022	Funding Review, Internal Medicine, University of Cincinnati
2021	HLVI Pilot Grant Program, University of Cincinnati

#### • Manuscript Reviews:

Cell Stem Cell; Cell Reports; Science Advances; PNAS; eLife; Journal of the American College of Cardiology; iScience, Communications Biology, JCI insight, Scientific Reports; Journal of Molecular and Cellular Cardiology; JoVE, Pulmonary Circulation, Angiogenesis; Aging; Stem Cell Research & Therapy; Inflammation; Cardiovascular Pathology; Molecular Genetics & Genomic Medicine;

Average number of manuscripts reviewed each year: 12-15

#### • Recruitment Activities:

#### - Student recruitment/Interview:

2022, University of Cincinnati School of Medicine MD candidate interviewer

2020-2022, University of Cincinnati Molecular and Developmental Biology PhD program

2020-2022, University of Cincinnati School of Medicine MSTP program

## - Faculty Recruitment/Interview

2020-2022, Stem Cell and Organoid Medicine (CuSTOM), Reproductive Science, and Molecular Cardiovascular Biology

## **Distribution of Effort:**

Clinical Service	0	_%
Research and Scholarly Activities	80	_%
Teaching and Mentoring	10	_%
Service and Leadership	10	_%

"I have reviewed the curriculum vita for completeness and accuracy and agree with its contents."

**Faculty Member Signature and Date**