

Molecular Cardiovascular Biology

Division Details

RESEARCH AND TRAINING DETAILS

Faculty	9
Research Fellows and Post Docs	21
Research Graduate Students	14
Total Annual Grant Award Dollars	\$8,859,631

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Division Publications

- Luongo TS; Lambert JP; Gross P; Nwokedi M; Lombardi AA; Shanmughapriya S; Carpenter AC; Kolmetzky D; Gao E; van Berlo JH. **The mitochondrial Na⁺/Ca²⁺ exchanger is essential for Ca²⁺ homeostasis and viability.** *Nature*. 2017; 545:93-97.
- Wu B; Wang Y; Xiao F; Butcher JT; Yutzey KE; Zhou B. **Developmental Mechanisms of Aortic Valve Malformation and Disease.** *Annual Review of Physiology*. 2017; 79:21-41.
- Wang Y; Wu B; Farrar E; Lui W; Lu P; Zhang D; Alfieri CM; Mao K; Chu M; Yang D. **Notch-Tnf signalling is required for development and homeostasis of arterial valves.** *European Heart Journal (Elsevier)*. 2017; 38:ehv520.
- Mukherjee R; Mareninova OA; Odinkova IV; Huang W; Murphy J; Chvanov M; Javed MA; Wen L; Booth DM; Cane MC. **Mechanism of mitochondrial permeability transition pore induction and damage in the pancreas: inhibition prevents acute pancreatitis by protecting production of ATP.** *Gut*. 2016; 65:1333-1346.
- Yutzey KE. **Cardiomyocyte Proliferation Teaching an Old Dogma New Tricks.** *Circulation Research*. 2017; 120:627-629.
- Cai CL; Molkenin JD. **The Elusive Progenitor Cell in Cardiac Regeneration Slip Slidin' Away.** *Circulation Research*. 2017; 120:400-406.
- Wallner M; Duran JM; Mohsin S; Troupes CD; Vanhoutte D; Borghetti G; Vagnozzi RJ; Gross P; Yu D; Trapanese DM. **Acute Catecholamine Exposure Causes Reversible Myocyte Injury Without Cardiac Regeneration.** *Circulation Research*. 2016; 119:865-879.
- Liu R; van Berlo JH; York AJ; Vagnozzi RJ; Mailliet M; Molkenin JD. **DUSP8 Regulates Cardiac Ventricular Remodeling by Altering ERK1/2 Signaling.** *Circulation Research*. 2016; 119:249-260.

9. Quinn ME; Goh Q; Kurosaka M; Gamage DG; Petrany MJ; Prasad V; Millay DP. **Myomerger induces fusion of non-fusogenic cells and is required for skeletal muscle development.** *Nature Communications*. 2017; 8:15665.
 10. Kanisicak O; Khalil H; Ivey MJ; Karch J; Maliken BD; Correll RN; Brody MJ; Lin SCJ; Aronow BJ; Tallquist MD. **Genetic lineage tracing defines myofibroblast origin and function in the injured heart.** *Nature Communications*. 2016; 7:12260.
 11. Bakeer N; James J; Roy S; Wansapura J; Shanmukhappa SK; Lorenz JN; Osinska H; Backer K; Huby AC; Shrestha A. **Sickle cell anemia mice develop a unique cardiomyopathy with restrictive physiology.** *Proceedings of the National Academy of Sciences of the United States of America*. 2016; 113:E5182-E5191.
 12. Gupta MK; Robbins J. **Making the connections: Autophagy and post-translational modifications in cardiomyocytes.** *Autophagy*. 2016; 12:2252-2253.
 13. Rydeen AB; Waxman JS. **Cyp26 Enzymes Facilitate Second Heart Field Progenitor Addition and Maintenance of Ventricular Integrity.** *PLoS biology*. 2016; 14:e2000504.
 14. Kamal FA; Travers JG; Schafer AE; Ma Q; Devarajan P; Blaxall BC. **G Protein-Coupled Receptor-G-Protein beta gamma-Subunit Signaling Mediates Renal Dysfunction and Fibrosis in Heart Failure.** *Journal of the American Society of Nephrology : JASN*. 2017; 28:197-208.
 15. Goh Q; Millay DP. **Requirement of myomaker-mediated stem cell fusion for skeletal muscle hypertrophy.** *eLife*. 2017; 6.
 16. Vanhoutte D; Schips TG; Kwong JQ; Davis J; Tjondrokoesoemo A; Brody MJ; Sargent MA; Kanisicak O; Yi H; Gao QQ. **Thrombospondin expression in myofibers stabilizes muscle membranes.** *eLife*. 2016; 5.
 17. Cunha DA; Cito M; Carlsson PO; Vanderwinden JM; Molkentin JD; Bugliani M; Marchetti P; Eizirik DL; Cnop M. **Thrombospondin 1 protects pancreatic beta-cells from lipotoxicity via the PERK-NRF2 pathway.** *Cell Death and Differentiation*. 2016; 23:1995-2006.
 18. Gomez-Stallons MV; Wirrig-Schwendeman EE; Hassel KR; Conway SJ; Yutzey KE. **Bone Morphogenetic Protein Signaling Is Required for Aortic Valve Calcification.** *Arteriosclerosis, Thrombosis, and Vascular Biology*. 2016; 36:1398-1405.
 19. Correll RN; Makarewich CA; Zhang H; Zhang C; Sargent MA; York AJ; Berretta RM; Chen X; Houser SR; Molkentin JD. **Caveolae-localized L-type Ca²⁺ channels do not contribute to function or hypertrophic signalling in the mouse heart.** *Cardiovascular Research*. 2017; 113:749-759.
 20. Hulin A; Moore V; James JM; Yutzey KE. **Loss of Axin2 results in impaired heart valve maturation and subsequent myxomatous valve disease.** *Cardiovascular Research*. 2017; 113:40-51.
 21. Seidlmayer LK; Kuhn J; Berber A; Arias-Loza PA; Williams T; Kaspar M; Czolbe M; Kwong JQ; Molkentin JD; Heinze KG. **Inositol 1,4,5-trisphosphate-mediated sarcoplasmic reticulum-mitochondrial crosstalk influences adenosine triphosphate production via mitochondrial Ca²⁺ uptake through the mitochondrial ryanodine receptor in cardiac myocytes.** *Cardiovascular Research*. 2016; 112:491-501.
 22. Mitani Y; Vagnozzi RJ; Millay DP. **In vivo myomaker-mediated heterologous fusion and nuclear reprogramming.** *The FASEB journal : official publication of the Federation of American Societies for Experimental Biology*. 2017; 31:400-411.
 23. Kim JH; Kim K; Kim I; Seong S; Jeong BC; Nam KI; Kim KK; Molkentin JD; Kim N. **RCANs regulate the convergent roles of NFATc1 in bone homeostasis.** *Scientific Reports*. 2016; 6:38526.
 24. Adolphi MC; Herpin A; Regensburger M; Sacquegno J; Waxman JS; Scharlt M. **Retinoic acid and meiosis induction in adult versus embryonic gonads of medaka.** *Scientific Reports*. 2016; 6:34281.
 25. Liu R; Molkentin JD. **Regulation of cardiac hypertrophy and remodeling through the dual-specificity MAPK phosphatases (DUSPs).** *Journal of Molecular and Cellular Cardiology*. 2016; 101:44-49.
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Grants, Contracts, and Industry Agreements

Annual Grant Award Dollars

Investigator	Title	Sponsor	ID	Dates	Amount
Jeffery D Molkentin, PhD	Improving Cardiac Function after Myocardial Infarction	National Institutes of Health (Temple University School of Medicine)	P01 HL108806	05/07/2012 - 03/31/2017	\$397,800
Jeffrey A Whitsett, MD Burns C Blaxall, PhD	Cleveland Clinic Center for Accelerated Innovations (CCCAI) - CCHMC	National Institutes of Health (Cleveland Clin Lerner Col of Med of CWRU)	U54 HL119810	09/26/2013 - 07/31/2020	\$21,841
Matthew J Brody, PhD	The Role of Thrombospondin-4 in the Secretary Pathway, Extracellular Matrix Production and Homeostasis, and ER Stress	National Institutes of Health	F32 HL124698	08/01/2014 - 07/31/2017	\$56,750
Jeffery D Molkentin, PhD	Understanding Cardiovascular Disease Mechanisms	National Institutes of Health	T32 HL125204	12/01/2014 - 11/30/2019	\$305,222
Jeffery D Molkentin, PhD	Thrombospondin 4 Regulates Adaptive ER Stress Response	National Institutes of Health	R01 HL105924	01/01/2015 - 12/31/2018	\$436,655
Ronald J Vagnozzi, PhD	The Role of Sca-1+ and ABCG2+ Cardiac Progenitor Cells in Endogenous Heart Regeneration	National Institutes of Health	F32 HL128083	04/01/2015 - 03/31/2018	\$59,482
Douglas P Millay, PhD	Deciphering Mechanisms of Myoblast Fusion	National Institutes of Health	R01 AR068286	07/01/2015 - 06/30/2020	\$343,200
Douglas P Millay, PhD	Molecular Dissection of Cell Fusion	The Pew Charitable Trusts	28646	08/01/2015 - 07/31/2019	\$60,000
Onur Kanisicak, PhD	In vivo Characterization and Ablation of Murine Cardiac Fibroblasts within Normal and Pathological Heart	American Heart Association - National	15POST25480009	07/01/2015 - 06/30/2017	\$48,000
Burns C Blaxall, PhD	Small Molecule Targeting of MLK3 for Heart Failure	National Institutes of Health	R01 HL129772	12/14/2015 - 11/30/2019	\$390,000
Burns C Blaxall, PhD	Targeting Gβγ-GRK2 Signaling in Fibrotic Remodeling	National Institutes of Health	R01 HL132551	03/01/2016 - 02/29/2020	\$390,000
Katherine E Yutzey, PhD	Cincinnati Children's SURF	American Heart Association	16UFEL27940011	02/01/2016	\$20,000

	Program	- National		-	01/31/2018
Jeffery D Molkentin, PhD	Molecular Examination of Mitochondrial Calcium Control	National Institutes of Health	R01HL132831	07/15/2016	\$1,566,779
				-	03/31/2020
Burns C Blaxall, PhD Prasad Devarajan, MD	Targeting Pathologic G-protein Signaling in Cardiac and Kidney Fibrosis	National Institutes of Health	R01 HL133695	09/01/2016	\$241,800
				-	07/31/2020
Jeffery D Molkentin, PhD	Paracrine Hypothesis Underlying Cardiac Stem Cell Therapy	National Institutes of Health (Temple University School of Medicine)	R01 HL132391	07/15/2016	\$390,000
				-	03/31/2020
Burns C Blaxall, PhD	Targeting Fibronectin in Cardiac Remodeling and Fibrosis	National Institutes of Health	R01 HL134312	09/15/2016	\$780,000
				-	05/31/2020
Inigo Valiente Alandi, PhD	Exploring Fibronectin as a Therapeutic Target in Cardiac Fibrosis	American Heart Association - National	16POST30180015	07/01/2016	\$48,600
				-	06/30/2018
Andrew Kim	Snai1 Function in EndMT and Myxomatous Valve Disease	American Heart Association - National	16PRE30180000	07/01/2016	\$25,950
				-	06/30/2018
Bidur Bhandary, PhD	Myofibroblast TGF-beta Signaling in Cardiac Fibrosis	American Heart Association - National	16POST30710005	07/01/2016	\$50,350
				-	06/30/2018
Joshua Waxman, PhD	Coup-tf Dependent Mechanisms of Ventricular and Hemangioblast Specification	National Institutes of Health	R01 HL112893	03/01/2016	\$344,250
				-	02/28/2018
Burns C Blaxall, PhD	Graft Integrity in Heart Transplant Mediated by MicroRNAs	Roche Organ Transplantation Research Fdn (University of Cincinnati)	blaxall, burns, uc	02/15/2016	\$109,806
				-	01/31/2017
Katherine E Yutzey, PhD	Regulatory Mechanisms of Adult Cardiomyocyte Proliferation	National Institutes of Health	R01 HL135848	12/15/2016	\$433,582
				-	08/31/2020
Katherine E Yutzey, PhD	Signaling Processes Underlying Cardiovascular Function	National Institutes of Health	P01 HL069779	06/01/2016	\$1,781,113
				-	05/31/2018
Jeffery D Molkentin, PhD	Molecular pathways controlling Cardiac Gene Expression	National Institutes of Health	R37 HL060562	07/01/2016	\$382,500
				-	06/30/2018
Bryan Maliken	Cardiovascular Impact of Gata4 Loss in the c-Kit	American Heart Association - National	17PRE33410368	01/01/2017	\$25,951
				-	

	Lineage				12/31/2018	
Jeffery D Molkentin, PhD	Targeting Mitochondria to Treat Heart Disease	Foundation LeDuq	Molkentin_Fondation	10/01/2016	\$150,000	
				-		
				09/30/2021		
Total Annual Grant Award Dollars						\$8,859,631
