

**CURRICULUM VITAE**  
**Abhinav Diwan, MBBS, FACC, FAHA**

**Date:** 12-22-2020

**Address and Telephone Numbers**

*Lab Website:* [www.diwanlab.com](http://www.diwanlab.com)

*Office:* 827 CSRB-NTA, Center for Cardiovascular Research  
St. Louis, MO 63110; Tel: 314-747-3457; Fax: 314-362-0186



**Present Position:**

- 5/15/2008-present: Staff Physician, Internal Medicine Service, VAMC, St. Louis, MO (5/8<sup>th</sup> appointment).
- 1/1/2019-present: Associate Division Chief for Research and Academic Affairs, John Cochran VA medical center
- 7/1/2020-present: Professor of Medicine (*with tenure*), Cardiovascular Division, Department of Internal Medicine, Washington University School of Medicine, St. Louis, MO
- 7/1/2020-present: Professor of Cell Biology and Physiology (Secondary appointment), Washington University School of Medicine, St. Louis, MO
- 7/1/2020-present: Professor of Obstetrics and Gynecology (Secondary appointment), Washington University School of Medicine, St. Louis, MO

**Education:**

*Undergraduate:* Delhi Public School  
Bhilai, CG, India

*Graduate and Postgraduate:*

- 01/1991-02/1997: M.B.B.S. (Bachelor of Medicine, Bachelor of Surgery), All India Institute of Medical Sciences, New Delhi, India
- 07/1997-07/1998: Internship in Internal Medicine, Baylor College of Medicine, Houston, TX
- 07/1998-07/2001: Residency in Internal Medicine (Medical Resident Investigator Track under the PSTP pathway), Baylor College of Medicine, Houston, TX
- 07/2001-07/2004: Fellowship in Cardiovascular Science, Section of Cardiology, Department of Medicine, Baylor College of Medicine, Houston, TX

**Medical Licensure and Board Certification:**

- 7/1997 Permanent Certification, ECFMG
- 11/2000 Diplomate of American Board of Internal Medicine in Internal Medicine
- 11/2003 State Medical License - Indiana (inactive)
- 12/2003 State Medical License - Ohio (inactive) 06/2004 Diplomate of National Board of Echocardiography in Adult Comprehensive Echocardiography (includes transthoracic, transesophageal and stress echocardiography)
- 11/2004 Diplomate of American Board of Internal Medicine in Cardiology
- 07/2008 State Medical License - Missouri (active)
- 12/2010 Recertified, American Board of Internal Medicine in Internal Medicine

## Curriculum Vitae

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12/2013 Recertified, American Board of Internal Medicine in Cardiology

10/2019 Recertified, ReASCE Examination of Special Competence in Adult Echocardiography (REASC)

## Current Clinical Title and Responsibilities:

5/15/2008- current: Cardiology Staff Physician, Barnes Jewish Hospital

Responsibilities: Echocardiography

5/15/2008-current: Staff Physician, John Cochran VA Medical Center, St. Louis

Responsibilities: Echocardiography and attending on Cardiology consult Service. Associate Division Chief for Research and Academic Affairs.

## Teaching Title and Responsibilities:

- 1) Professor of Medicine: Supervising residents and medical students on VA Inpatient Medicine Service, 4 weeks per year; Echocardiography at Barnes Jewish Hospital: two half-days/week- all ongoing
- 2) Lecturer, Molecular Foundations of Medicine course on Proteostasis for medical students, Washington University, Fall 2019
- 3) Member, Molecular and Cellular Biology program, DBBS, Washington University: supervising graduate trainees
- 4) Member, HOPE Center for Neurologic Disorders, Washington University: teaching graduate trainees
- 5) Member, Center for Regenerative Medicine, Washington University: teaching graduate trainees
- 6) Member, Children's Discovery Institute, St. Louis Children's Hospital: Teaching trainees
- 7) Member, Center for Reproductive Health Sciences (CRepHS), Washington University

## Previous Academic Positions/Employment:

7/15/2004-5/14/2008: Staff Physician, VAMC, Cincinnati, OH

7/15/2004-5/14/2008: Assistant Professor of Medicine, Clinical Track, Division of Cardiovascular Diseases, University of Cincinnati, Cincinnati, OH

5/15/2008-12/31/2015: Staff Physician, Internal Medicine Service, VAMC, St. Louis, MO

5/15/2008-12/31/2015: Assistant Professor of Medicine (*tenure track*), Cardiovascular Division, Department of Internal Medicine, Washington University School of Medicine, St. Louis, MO

7/1/2013-12/31/2015: Assistant Professor of Cell Biology and Physiology (Secondary appointment), Washington University School of Medicine, St. Louis, MO

1/1/2016-6/30/2020: Associate Professor of Medicine (*with tenure*), Cardiovascular Division, Department of Internal Medicine, Washington University School of Medicine, St. Louis, MO

1/1/2016-6/30/2020: Associate Professor of Cell Biology and Physiology (Secondary appointment), Washington University School of Medicine, St. Louis, MO

7/1/2018-6/30/2018: Associate Professor of Obstetrics and Gynecology (Secondary appointment), Washington University School of Medicine, St. Louis, MO

## University and Hospital Appointments and Committees

### *Clinical:*

07/2004-05/2008: Staff Physician, University Hospital, Cincinnati, OH

07/2004-05/2008: Assistant Director, Echocardiography Laboratory, VAMC, Cincinnati OH

07/2004-05/2008: Member, VA Research and Development Committee, VAMC, Cincinnati OH

08/2006-12/2006: Director, Echocardiography Laboratory, University Hospital, Cincinnati OH

01/2010-02/2012: Member, Institutional Review Board, Washington University School of Medicine

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1/2015-present: Member, VA Institutional Animal Care and Use Committee (IACUC), John Cochran VA Medical Center, St. Louis, MO

### *Research:*

- 8/2011-11/2014 Member, K08 mentoring committee for Chris Holley, MD, PhD (Mentor: Jean Schaffer), Washington University, St. Louis, MO
- 9/2011-9/2012: Member, IRB committee, Human Research Protection Office, Washington University, St. Louis, MO
- 7/2012-5/2013: Member, MA/MD Research Advisory Committee for Katherine Liu (Mentor: Scot Matkovich), Washington University, St. Louis, MO
- 11/2012-5/2013: Member, MA/MD Research Advisory Committee for Roy Emmanuel (Mentor: Babak Razani), Washington University, St. Louis, MO
- 1/2013-5/2016: Member, DBBS thesis committee for MSTP student Daniel Kaufman (Mentor: Michael Crowder), Washington University, St. Louis, MO
- 4/2013-6/2015: Member, DBBS thesis committee for graduate student Katherine Liu (Mentor: William Frazier), Washington University, St. Louis, MO
- 7/2013-3/2016: Member, DBBS thesis committee for graduate student Nana Owusu-Boaitey (Mentor: Indira Mysorekar), Washington University, St. Louis, MO
- 11/2013-11/2019: Member, DBBS PhD Admissions Committee, Molecular and Cellular Biology, Washington University, St. Louis, MO
- 11/2013-12/31/19: Member, DBBS Molecular and Cellular Biology program, Washington University, St. Louis, MO
- 11/2013-present: Vice Chairman, Institutional Animal Care and Use Committee (IACUC), VAMC, St. Louis, MO
- 5/2014-present: Member, Hope Center for Neurological Disorders, Washington University, St. Louis, MO
- 1/2015-3/2018: Member, DBBS thesis committee for graduate student Youjin Lee (Mentor: C. Chris Weihl), Washington University, St. Louis, MO
- 1/2015-4/2020: Chair, Center for Cardiovascular Research Seminar Committee, Washington University School of Medicine, St. Louis, MO
- 1/2016-present: Vice Chairman, Institutional Animal Care and Use Committee (IACUC), John Cochran VA Medical Center, St. Louis, MO
- 7/2016-present: Member, Faculty search committee, Center for Cardiovascular Research, Washington University School of Medicine, St. Louis, MO
- 7/2016-present: Mentor, K08 mentoring committee for Ali Javaheri, MD, PhD, Washington University, St. Louis, MO
- 5/2017-6/30/19: Member, DBBS thesis committee for graduate student Christina Mikulka (Mentor: Mark Sands), Washington University, St. Louis, MO
- 9/2017-8/2018: Member, DBBS thesis committee for graduate student Yedda Li (Mentor: Mark Sands), Washington University, St. Louis, MO
- 12/2018-06/2020: Member, DBBS thesis committee for graduate student Percy Griffin (Mentor: Erik Musiek), Washington University, St. Louis, MO
- 12/2018-present: Member, DBBS thesis committee for graduate student Brian Egan (Mentor: Kerry Kornfeld), Washington University, St. Louis, MO
- 12/2018-12/2019: Member, Faculty search committee, Center for Reproductive Health Sciences, Washington University School of Medicine, St. Louis, MO
- 1/2018-12/2020 Member, Research Fellowship Awards Committee, American College of Cardiology
- 7/2018-now Member, Research Committee, Heart Failure Society of America

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- 6/2019-present: Member, Nutrition Obesity Research Center, Washington University, St. Louis, MO
- 7/2019-present: Chair, Steering Committee for T32: Principles in Cardiovascular Research Training program, Washington University, St. Louis, MO
- 10/2019-present: Member, T32-PSTP Mentoring committee for Jesus Jimenez, Washington University School of Medicine, St. Louis, MO
- 4/2020- 6/2024: Special Government Employee and Standing Member, Cardiovascular Studies B (CARB) of Department of Veterans Affairs
- 7/2020-present: Mentor for Programs to Increase Diversity Among Individuals Engaged in Health-Related Research (PRIDE); Cardiovascular Disease Comorbidities, Genetics and Epidemiology (CVD-CGE)
- 8/2020-present: Member, DBBS thesis committee for graduate student Celia McKee (Mentor: Erik Musiek), Washington University, St. Louis, MO
- 1/2021-present: Member, Cardiac Bioelectricity and Arrhythmia Center, Washington University School of Medicine

## Honors and Awards:

- 1991 **5<sup>th</sup>** position nationwide in All India Central Board of Secondary Education's Pre-Medical Examination. Placed among the **top 34** candidates nationwide selected for All India Institute of Medical Sciences, the premier institute for medical education and research in India
- 1991 Placed in the **top 25** students nationwide in **Physics Olympiad** organized by Indian Association of Physics Teachers
- 1992-1996 Adjudged **Best Student** in the subjects of - Anatomy, Physiology, Biochemistry, Pathology, Microbiology, General Surgery and Internal Medicine, in medical school
- 1996 **New Zealand High Commissioner's Medal** for being adjudged the best student in Community Medicine in medical school
- 1996 **Catherine Sorel Freeman Prize** for being adjudged the best student in Pediatrics in medical school
- 1997 **Delhi Medical Association Medal** for the **Best All-Around Student** for the Medical School Class of 1991
- 1998 **Institute Medal** conferred by the All India Institute of Medical Sciences (AIIMS), New Delhi, India for the best graduating student, 1997
- 2001 **Outstanding Clinician Award** in Outpatient Medicine. Department of Medicine, Baylor College of Medicine
- 2001 **First Prize in Basic Research Competition**, Department of Medicine Research Symposium, Baylor College of Medicine
- 2001 **First Prize** in Basic Research Category, **Astra Zeneca 7<sup>th</sup> Cardiovascular Young Investigators Forum**, Jackson Hole, WY
- 2001 **Finalist, Melvin Marcus Young Investigator Award** in Cardiovascular Science, **American Heart Association 74<sup>th</sup> Scientific Sessions**, Anaheim, CA
- 2002 **First Prize in Basic Research Competition**, Department of Medicine Research Symposium, Baylor College of Medicine
- 2003 Award for **Clinical Excellence as a Fellow**, from Section of Cardiology, Department of Medicine, Baylor College of Medicine
- 2003 **American College of Cardiology / Merck Fellowship Research Award 2003**, American College of Cardiology 52<sup>nd</sup> Annual Scientific Sessions, Chicago, IL
- 2004 Award for the **Best Fellow in Clinical Research** at Baylor College of Medicine
- 2004 **Richard Van Reet Award** for the **Best All-Around Fellow in Cardiology** at Baylor College of Medicine

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- 2006 **First Prize** in Faculty Basic Research Category, **Northwestern Cardiovascular Young Investigators Forum**, Chicago, IL
- 2006 **Finalist, Arnold and Louis Katz Basic Science Research Prize**, American Heart Association, 79<sup>th</sup> Scientific Sessions, Chicago, IL
- 2007 **Finalist, Jay N. Cohn Young Investigator Award in Basic Cardiovascular Sciences**, Heart Failure Society of America Annual Scientific Sessions, Washington, DC
- 2007 **Jeremiah Stamler Distinguished Young Investigator Award** in the junior faculty basic science category in the Northwestern Cardiovascular Young Investigator's Forum, Chicago, IL
- 2014 Graduate of the **Academic Medical Leadership Program** for Physicians and Scientists, Washington University School of Medicine, Olin School of Business and BJC Health Care
- 2015 Member, **Digital Communications Committee**, Heart Failure Society of America
- 2016 **Distinguished Investigator Award**, St. Louis Veterans Affairs Medical Center, St. Louis, MO
- 2018 Inducted into **The American Society for Clinical Investigation (ASCI)**.
- 2020 Inducted into **Association of University Cardiologists**
- 2020 Inducted as National Council Affiliate member of the Autophagy, Inflammation and Metabolism **AIM Center** at University of New Mexico, Albuquerque
- 2021-2024: Appointed Chair of the **Research Fellowship Awards Committee** of the **American College of Cardiology**
- 2021: Appointed as member of the **Department of Veterans Affairs Science and Health Initiative** to Combat Infectious and Emerging Life-Threatening Diseases (**VA-SHIELD**) Programmatic and Scientific Review Board (**PSRB**)

## Editorial Responsibilities:

### *Ad-hoc Reviewer:*

- 1) Circulation
- 2) Circulation Research
- 3) JCI
- 4) Circulation - Heart Failure
- 5) Circulation - Arrhythmia and Electrophysiology
- 6) Journal of Biological Chemistry
- 7) Molecular and Cellular Biology
- 8) Journal of Cell Biology
- 9) Autophagy
- 10) American Journal of Physiology-Heart
- 11) Molecular Pharmacology
- 12) Journal of Molecular and Cellular Cardiology
- 13) American Journal of Cardiology
- 14) Cellular and Molecular Gastroenterology
- 15) Cardiovascular Research
- 16) Anesthesiology
- 17) Nature Medicine
- 18) PLOS Biology
- 19) Nature Communications
- 20) Science Signaling
- 21) PLOS Biology
- 22) EBiomedicine
- 23) Virulence

## Curriculum Vitae

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24) Neurobiology of Aging

25) Aging Cell

26) Journal of Neuroscience

## National Scientific Panels:

### *Peer Review Study Section Member:*

- 2008-2015: Cardiac Biology Study Group, American Heart Association
- 2012-2015: Research Grant Review Panel, Alzheimer's Association
- 2013: 2014 NSF Graduate Research Fellowship Program Panel on Cell Biology
- 2013-2014: US-Israel Binational Science Foundation Review Panel
- 2015-2016: Member, CDMRP review panel for Heart Disease, Department of Defense
- 2015-2016: Member, Department of Veterans Affairs, Cardiovascular Disease (CARA) study section
- 2015-2017: Expert panel member for Molecular and Cellular Biology, Research Foundation Flanders, Belgium
- 2015-2019 Member, Department of Veterans Affairs Cardiovascular Disease CARA and CARB Study sections
- 2017-2018: Member, ZRG1-CVRS-L Special Emphasis Panel on Cardiovascular and Respiratory AREA mechanism NIH
- 2018: Member, Special Emphasis panel HLBP1 workgroup for the NIH.
- 2018: Reviewer for Diabetes UK
- 2018: Member, ZRG1 CVRS-L (02) Special Emphasis Panel on Cardiovascular Sciences
- 2018: Member, CDMRP review panel for Heart Disease, Department of Defense
- 2019: Ad-hoc member, Clinical and Integrative Cardiovascular Sciences [CICS] NIH study Section
- 2019: Chair, Transformational Project Award review committee for the American Heart Association
- 2019: Reviewer, European Research Council, Starting Grant 2019 panel
- 2019: Ad-hoc member, NHLBI Institutional Training Mechanism [NITM] NIH study Section
- 2019: Reviewer, Austrian Academy of Sciences, Doctoral Fellowship Program
- 2019: Reviewer, Swiss National Science Foundation Grants program
- 2019-2020 Member, Special Emphasis Panel (SEP) ZRG1 CVRS-L 02 M, NIH
- 2020: Co-chair, Transformational Project Award review committee for the American Heart Association
- 2020: Member, Special Emphasis Panel ZRD1 SPLO-K (01) 2, Department of Veterans Affairs
- 2020: Member, Idea Development and Clinical Translational Research (ID\_CTR) peer review Panel of the 2020 Tuberous Sclerosis Complex Research Program (TSCR) for the Department of Defense Congressionally Directed Medical Research Programs (CDMRP)
- 2020-2024 Member, ZRD1-CARB per review committee
- 2021-2023 Member, FWO (Fonds Wettenschappelijk Onderzoek) Review College Panel, Belgium
- 2021-2024 Chair, Research Fellowship Awards Committee, American College of Cardiology

### *Abstract Grader:*

2013- present: Heart Failure Society of America Annual Scientific Meeting, American Heart Association Annual Scientific Sessions, BCVS AHA annual scientific meeting

### *Others:*

- 1) Moderator, Session on *Protection of Ischemic Myocardium VI* at the American Heart Association Annual Scientific Sessions 2012, Nov. 3-7 in Los Angeles, CA

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- 2) Moderator, Session on *Autophagy, Mitochondria and Protein Homeostasis* at the American Heart Association Annual Scientific Sessions 2013, Nov. 16-20 in Dallas, TX
- 3) Moderator, eAbstract Session on Cellular Biology and Function at the American Heart Association Annual Scientific Sessions 2015, Nov. 8-13 in Orlando, FL

## Professional Societies and Organizations:

- |               |  |
|---------------|--|
| 2004-present: | Member, Heart Failure Society of America, Association for Advancement of Science, American Heart Association, American College of Cardiology |
| 2006          | Fellow of American College of Cardiology   |
| 2006          | Fellow of American Society of Echocardiography   |
| 2011          | Fellow of American Heart Association   |
| 2015-2018:    | Member, Heart Failure Society of America (HFSA) Digital Communications Committee   |
| 2018-present: | Member, HFSA Research Committee  |
| 2018-present: | Member, American College of Cardiology's Research Awards Committee   |
| 2018:         | Inducted into the American Society of Clinical Investigation   |
| 2020:         | Inducted into the Association of University Cardiologists  |

## Major Invited Professorships and Lectureships:

1. Molecular Mechanisms of Heart Failure. Grand Rounds, Division of Cardiology, *University of Arkansas Medical Center*, September 2003
2. Molecular Mechanisms of Heart Failure. Grand Rounds, Department of Internal Medicine, *University of Cincinnati*, November 2005
3. Noninvasive Assessment of Left Ventricular Filling Pressures in Guiding Heart Failure Therapy. Echocardiography Conference, Division of Cardiology, *University of Pennsylvania*, Philadelphia, January 2006
4. Role of Autophagic Flux in Cardiac Myocyte Viability. Cardiology Research Conference, *University of Texas Southwestern Medical Center*, Dallas, January 2010
5. Enhancing Beneficial Autophagy to Prevent Cardiac Myocyte Death in Ischemia-Reperfusion Injury. Cardiovascular Research Conference, *University of Louisville*, Louisville, January 2012
6. Enhancing Autophagy for Cardioprotection - More is Better! Plenary talk at the *St. Louis VA Research Day*, July 2012
7. Targeting Lysosome Function to Manage Cardiac Ischemia-Reperfusion Injury. *Cardiovascular Research Day*, Division of Cardiology at Washington University, December 2012
8. Factors Causing Myocardial Dysfunction - From Nature to Nurture. Invited talk at the *Indian Association of Cardiothoracic Surgeons Annual Scientific Sessions*, Mumbai, India, February 2013
9. Transcription Factor EB Coordinates Mitochondrial Autophagy with Biogenesis. Invited short talk at the plenary session of the *Keystone Symposium on Mitochondria, Metabolism and Myocardial Function - Basic Advances to Translational Studies*, Keystone, CO, February 2013
10. Transcriptional Regulation of Lysosome Biogenesis in Cell Death. *Cell Biology Fall Seminar Series*, Department of Cell Biology and Physiology, Washington University, September 2013
11. Enhancing Lysosome Biogenesis to Attenuate Amyloid Plaque Pathogenesis. Invited talk at the *Zing Conference on Lysosomes and Lysosome Related Organelles*, Nerja, Spain, February 2014
12. Transcriptional regulation of the lysosome machinery in disease states. Invited presentation at the *James T. Willerson MD Cardiovascular Seminar*. Texas Heart Institute, March 2015
13. Intermittent fasting and activation of transcription factor EB (TFEB) ameliorate established protein-aggregate-induced cardiomyopathy triggered by the R120G mutant  $\alpha$ B-crystallin protein. Invited presentation at the *Society for Heart and Vascular Metabolism*, Tarrytown, NY 2015

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14. Harnessing the autophagy-lysosome machinery in cardiac myocytes for disease prevention and therapy. Invited talk at the *American Society of Cell Biology Symposium on 'Autophagy in disease and survival'*. San Diego, December 2015
15. Simple nutrients can bypass lysosomal insufficiency under starvation stress. Invited talk at the *Zing Conference on Lysosome Biology*. Cambridge, UK, July 2016
16. Cardiomyopathy. Series on Molecular Medicine and the Heart. *Invited Physician-scientist speaker at the Department of Cell Biology and Molecular Medicine and the Cardiovascular Research Institute at Rutgers*, The State University of New Jersey, November 2016
17. Harnessing the Autophagy-Lysosome Machinery in Cardiac Myocyte Organelle and Protein Quality Control. *Invited speaker at the American Heart Association Basic Cardiovascular Sciences 2017 Scientific Sessions: Pathways to Cardiovascular Therapeutics*, Portland, OR, July 2017
18. Peripheral Monocytes Migrate to the Amyloid Plaques in a Mouse Model of Alzheimer's Disease. *Invited presentation at the Cell Symposium: Neuro-Immune Axis: Reciprocal Regulation in Development, Health, & Disease*, Sitges, Spain, September 2017.
19. Harnessing the Benefits of Intermittent Fasting by Targeting Lysosomes. *Invited presentation at the Meeting on Preconditioning in Biology and Medicine: Adaptive Responses/ Preconditioning*. University of Massachusetts at Amherst, MA, April 2019
20. TRAF2: A Novel Mitophagy Mediator in the Heart. *Invited presentation at the 5th Wuhan International Conference on Liver and Cardiovascular Science*, Wuhan, China, April 2019
21. Targeting Lysosomal Pathways for Proteostasis and Cell Survival. *Invited speaker at the American Heart Association Basic Cardiovascular Sciences 2019 Scientific Sessions: Integrative Approaches to Complex Cardiovascular Diseases*, Boston, MA, July 2019
22. Macrophage lysosome function in myocardial infarction: Novel insights from an 'omics' approach. Invited speaker at *University of Alabama, Birmingham's Comprehensive Cardiovascular Center 8th Annual Symposium- New Horizons in Cardiovascular Disease: A Focus on Precision and Personalized Medicine*. Birmingham, AL, Sept 20<sup>th</sup> 2019.
23. Harnessing the Lysosome Machinery to Prevent and Treat Cardiovascular Disease. *Distinguished Invited Speaker, Division of Basic Biomedical Sciences*, University of South Dakota, Vermillion. October 3<sup>rd</sup>, 2019.
24. Harnessing Lysosome Biogenesis for Cellular protection. *Invited presentation at Northern Ontario School of Medicine*, Ontario, Canada; October 8<sup>th</sup>, 2019
25. *How to write a grant*: in the course titled *How to Become a Cardiovascular Investigator*, led by Course Director, Dr. Fuster and Course Co-director, Dr. Harrington and the American College of Cardiology, Washington DC Nov 2<sup>nd</sup> 2019.
26. Mitophagy and Cardioprotection: Mitochondria as Mediators and Therapeutic Targets in Heart Failure. Invited presentation at *Annual Scientific Sessions of the American Heart Association*, Philadelphia, PA, Nov 17<sup>th</sup>, 2019.
27. Diabetes and cardiomyopathy: I see smoke, where is the fire? Invited presentation at *Medicine Grand Rounds, Saint Louis University*, MO; February 2020.
28. The Autophagy-Lysosome Pathway as a Therapeutic Target for Aging-related Diseases. Invited presentation at *Cardiology Grand Rounds*, John Cochran VA Medical Center, MO; March 2020.
29. Alternate-day fasting for healthy cardiovascular aging. Invited speaker at the *European Congress of Cardiology Congress 2020*, Amsterdam, August 2020
30. Don't Mess with the Lysosomes (or the folks who study them). Invited speaker in the Pediatric Cardiology Research Conference, Saint Louis Children's Hospital, September 2020.

## Consulting Relationships:

Serve as consultant to ERT systems for echocardiography in clinical trails



**Research Support:**

Active (all governmental):

- 1) 2 R01HL107594-06 (Diwan, PI) 7/1/2011 – 4/30/2021  
NHLBI \$253,637/year  
Innate Immunity Pathways in Autophagy Signaling in Cardiac Myocytes  
This grant will define the role of TRAF2-mediated autophagy signaling in organelle homeostasis and cardiac myocyte survival, as well as in preventing cardiomyocyte death with ischemia-reperfusion injury.
- 2) 1 R01 NS094692-01 (Lee, Diwan; co-PIs) 5/1/2017-4/30/2022  
NINDS \$349,610  
Targeting TFEB to Microglia and Monocytes to Enhance Amyloid Degradation  
This proposal will determine the efficacy of TFEB targeted to microglia and monocytes in stimulating amyloid degradation to attenuate pathologic changes in Alzheimer's disease.
- 3) I01BX004235 (Diwan, PI) 4/1/2018-3/31/2022  
Department of Veterans Administration Research Service-BLRD  
\$165,000 (non-salary) + \$48,498 (equipment)  
Targeting Macrophage Lysosome Biogenesis Program in Cardiomyopathy and Heart Failure.  
This grant will examine a strategy of macrophage-targeted overexpression of TFEB to attenuate myocardial inflammation and cardiomyocyte death in ischemia-reperfusion injury.
- 4) R01HL143431-01 (Diwan, PI) 7/1/2018-6/30/2022  
NHLBI \$421,000  
Maternal obesity and cardiometabolic health in the offspring  
This grant examines the mechanisms for the transgenerational inheritance of mitochondrial abnormalities and cardiac pathology from moms fed a high fat and high sucrose diet.
- 5) ICTS, Washington University (Diwan, PI) 4/1/2019-03/31/2020  
Washington University School of Medicine \$7,000  
Enhancing Protein Dis-Aggregation in Alzheimer's Disease and Cardiomyopathy  
This grant supports the generation of transgenic mice expressing dis-aggregases.
- 6) R01 HL149159 (Young, M: U of Alabama, Birmingham; Diwan, Co-I) 9/1/2019-6/30/2024  
NHLBI \$38,164  
Metabolic Rhythm Alterations as a Cause for Obesity Cardiomyopathy
- 7) 1I01 BX005065-01 (P1: Mann, co-I Diwan) 4/1/2020-3/31/2023 1.0 calendar months  
Department of Veterans Affairs \$165,000  
Autophagy in Myocardial Recovery and Remission  
This grant examines autophagic flux and its determinants in recovery from heart failure.
- 8) 1R01DK123163 (Remedi, PI; Diwan co-I) 7/1/2020 - 6/30/2025 0.12 cal months  
NIDDK  
Beta-Cell Exhaustion and Glucotoxicity in Diabetes  
Using mice and human stem-cell beta cells derived from pluripotent stem cells from diabetic patients, this project seeks to comprehend the disease progression and to understand mechanisms underlying loss of insulin-secreting cells, in a way that is impossible in humans, and thereby help to develop appropriate therapies to treat disease.

Training Grant:

- 1) 5T32HL007081-45 (Diwan, PI): 7/1/1975-5/31/2021  
NHLBI \$433,860  
Principles in Cardiovascular Research Training program. Through this program, M.D., Ph.D. and M.D./Ph.D. postdoctoral trainees are mentored by established investigators who are actively involved in high-impact cutting edge cardiovascular research.

Completed Research Support:

- 3) Merck Research Fellowship Grant (PI: Diwan) 7/1/2003 – 6/30/2004  
American College of Cardiology  
Mentors: William A. Zoghbi, MD and Douglas L. Mann, MD  
Characteristics of Cardiac Fibroblasts in Human Hibernating Myocardium: Implications for Recovery
- 4) Scientist Development Grant 0735135N (PI: Diwan) 7/1/2007 – 6/30/2011  
American Heart Association  
Targeting Apoptosis to Improve Outcomes in Myocardial Infarction and Heart Failure
- 3) VA MERIT grant BLRD I01 BX000448-01 (PI: Diwan) 4/1/2009 – 3/31/2012  
Veterans Administration Research Service  
Targeting Cell Death to Prevent Heart Failure
- 4) NHLBI R01 (PI: Diwan) 7/2011-6/2016  
Role of Autophagic Flux in Cardiac Myocyte Viability  
This grant proposal examines the role of impaired flux through the autophagic pathway as a mechanism for development of hypertrophic cardiomyopathy in Danon disease and causing cardiomyocyte cell death in ischemia reperfusion injury.
- 5) New Investigator Research Grant (PI: Diwan) 9/1/2012 – 8/31/2014  
Alzheimer's Association  
\$100,000 over 2 years
- 6) Enhancing Lysosome Biogenesis to Prevent Amyloid Plaque Pathogenesis 1I01BX001969 (PI: Diwan) 10/1/2013 – 3/31/2018  
Department of Veterans Administration Research Service-BLRD  
\$150,000 (non-salary) + \$42,468 (equipment) /year  
Enhancing Beneficial Autophagy to Prevent Heart Failure  
This grant will examine a strategy of cardiomyocyte specific expression of TFEB to attenuate cardiomyocyte death in ischemia-reperfusion injury.
- 7) R21 (PI: Lee, JM; co-I: Diwan) 10/1/2013 – 4/30/2016  
NINDS  
\$275,000 over 2 years  
Enhancing Lysosome Biogenesis to Prevent Amyloid Plaque Pathogenesis  
This proposal seeks to employ TFEB-mediated lysosomal biogenesis to promote complete APP proteolysis in astrocytes as a strategy to reduce amyloid peptide levels in the brain parenchyma and prevent amyloid plaque deposits.
- 8) CH-MI-II-2016-539 (PI: Diwan) 2/1/2016-1/31/2018

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Children's Discovery Institute \$86,000/year

Washington University School of Medicine

Metabolomics-guided Therapies for Lysosome Storage Diseases

The goal of this project is to use a worm model to obtain metabolomic insights that would help design nutritional modulation therapies for lysosome storage diseases.

- 9) Institute of Clinical and Translational Sciences (Diwan, PI) 4/1/2018-3/31/2019  
Washington University School of Medicine \$5000  
Targeting TFE3 to determine its Cell-type Specific Role in Lysosome Biogenesis  
This grant supports the generation of TFE3 floxed mouse.
- 10) Pilot and Feasibility Grant (PI: Diwan) 12/1/2011 – 11/30/2013  
Diabetes Research and Training Center (NIDDK), Washington University  
Intermittent Fasting as a Strategy to Treat Diabetes

## Patents:

(Co-inventor) U.S. 371 National Patent Application Serial No. 16/074,023

Composition and Methods for the Treatment of Atherosclerosis and Hepatosteatorosis and Other Diseases

## Mentor Roles:

### *Active*

- 1) Ali Javaheri, MD, PhD: I am the primary mentor for K08 grant 1K08HL138262 funded from the NHLBI: 7/1/17-6/30/22. Ali was recently appointed as Assistant Professor on the tenure track in the Department of Medicine.
- 2) Kartik Mani, MD: Staff Physician at John Cochran VAMC and Assistant Professor of Medicine at Washington University; post-doctoral trainee in the Diwan Laboratory. I was the primary mentor on his seed grant titled: Role of Autophagy Lysosomal Pathway in Proteotoxic Cardiomyopathy, from the John Cochran VAMC 10/1/17-9/30/19
- 3) Moydul Islam. Graduate student in Chemistry at Washington University School of Medicine. He is pursuing his thesis studies titled: Protein Aggregation in Cardiac Pathology and Physiology under my mentorship from 1/1/19.
- 4) David Rawnsley, MD, PhD: Cardiology fellow in training under the Physician Scientist Training Pathway at Washington University. I am his primary mentor in the physician-scientist training pathway from 7/1/19-6/30/21. David is supported by T32 HL007081.
- 5) Amy Clark, DO. Instructor in Pediatrics, in the Division of Endocrinology and Diabetes. I am co-mentoring Amy together with Mara Remedi towards her K08 application focused on understanding how metabolic stress affects pancreatic islet biology in pathogenesis and progression of type I diabetes. 10/1/19-current
- 6) Anastacia Garcia, PhD: Assistant Professor of Pediatrics, University of Colorado, Denver. I co-mentor Anastacia through the NIH funded PRIDE-CVD program (Programs to Increase Diversity Among Individuals Engaged in Health-Related Research (PRIDE)); Cardiovascular Disease

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Comorbidities, Genetics and Epidemiology (CVD-CGE)) on her proposal titled: Describing the Transcriptional Landscape in the Pediatric Failing Right Ventricle. 7/1/20-4/49/21

- 7) Meredith Jackrel, PhD. Assistant Professor of Chemistry at Washington University. I am one of the three co-mentors for Meredith's Career Development Award from the American Heart Association. 7/1/20-6/30/23

### *Past mentees (with funding support):*

- 1) Deepthi Mosali, MD. Research Fund (University of Cincinnati): 7/05-8/06 Noninvasive Echocardiographic Evaluation of Left Ventricular Filling Pressures and Wall Stress in Minimally Symptomatic Patients with Heart Failure: Implications for Left Ventricular Remodeling. Current position: Cardiologist in private practice at Dayton, OH
- 2) Daniel 'Kai-Chun' Yang, MD: Mentors in Medicine Awardee, Department of Medicine, Washington University School of Medicine: 11/11-12/12. Current position: Assistant Professor in Cardiovascular Diseases at University of Washington, Seattle, WA; funded by VA Career Development Award (CDA2) BX004642-01: Dissecting the mechanism of how dominant negative MYH7 mutations lead to genetic cardiomyopathies.
- 3) Haedar Abuirqeba, PhD: Cardiovascular Biology Training Grant awardee, 8/13-6/14. Role of Transcriptional Repressors of the Lysosome Machinery in Cell Death. Current position: Laboratory supervisor, Department of Radiology at Weill Cornell Medical School.
- 4) Alexander Boyko: 5/14-8/14: Regulation of Mitochondrial Quality with Starvation Stress. Funded through uSTAR Summer Scholars Program, Washington University, for rising Sophomores. Current position: Medical Student at Boston University.
- 5) Rohan Khopar: Funded through uSTAR Summer Scholars Program, Washington University, for rising Sophomores. 5/15-8/15: Role of lysosomes During Starvation and Refeeding. Current position: Masters student at Washington University.
- 6) Clara (Jeong-Min) Oh: Summer Undergraduate Research Fellowship, Washington University. 5/15-8/15: Regulation of HLH30 Signaling by Cellular Phosphatases. Current position: Medical Student at University of Missouri, Columbia
- 7) Ali Javaheri, MD, PhD, Principles of Cardiovascular Disease training grant (T32) awardee, 1/1/2016-current: Role of macrophage lysosome biogenesis program in development of post-infarction cardiomyopathy. Current position: Assistant Professor of Medicine at Washington University School of Medicine on the investigator track in the Division of Cardiology.
- 8) Jeremie Ferey, PhD: post-doctoral trainee: Mentored him on NIH F32 grant proposal (5F32HL14084802) titled: Cardiac and Mitochondrial Deficiencies Across Three Generations Arising From Maternal Obesity; funded from 10/1/17-9/30/20; and on his Childrens' Discovery Institute Proposal (CHMIF2019770) titled: Targeted Interventions to Reverse the Cardiac Pathology Induced by Maternal Nutrient Excess: 7/1/18-6/30/20

### *Past (others):*

- 1) Premed student: Samuel Ang. Resident in Anesthesiology at NYU medical school
- 2) Premed student: Sarah R. Foyil. Orthopedics resident at Loyola University Chicago Stricht School of Medicine.
- 3) Premed student: Rebecca J. Godar. Currently employed as Research Administrator, Department of Pediatrics, University of Minnesota, Minneapolis
- 4) YouJin Lee: DBBS Molecular and Cellular Biology program at Washington University.
- 5) Jeong Min (Clara) Oh: Undergraduate through the BioMed 500 and uSTAR program
- 6) Hokyung Keum: Undergraduate through the BioMed 200 program

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- 7) Alexander Boyko: Undergraduate through the BioMed 500 and uSTAR program
- 8) Rohan Khopkar: Undergraduate through the BioMed 500 and uSTAR program
- 9) Alex Shaver, Undergraduate in the lab. Alex Shaver: Summer undergraduate trainee. BS (Biology) from University of Alabama. 5/2016-7/2018. Current position: Graduate student in pharmacology and molecular sciences at Johns Hopkins University.
- 10) Akhil Kaushik, Undergraduate in the lab through Amgen Scholars program
- 11) Smrithi Mani: Undergraduate through the BioMed 500 program
- 12) Julia Cao. Undergraduate at Washington University School of Arts and Sciences. I am her mentor through the Bio-200 program.
- 13) Kevin Qi, Undergraduate in the lab over the summer from Emory University in Atlanta.

## Mentee Awards and Honors:

- a. Ali Javaheri, MD PhD: Jay Cohn New Investigator Integrative Physiology/Clinical Award, Heart Failure Society of America, Orlando FL, 2016
- b. Ali Javaheri, MD PhD: First place Award in Fellows Basic Science Category, 12<sup>th</sup> Annual Northwestern Cardiovascular Young Investigators' Forum, Chicago IL, 2016
- c. Ali Javaheri, MD PhD: Second place Award in Faculty Basic Science Category, 14<sup>th</sup> Annual Northwestern Cardiovascular Young Investigators' Forum, Chicago IL, 2018
- d. Jeremie Ferey, PhD: Second Place Award in Young Investigator Awards Competition of the American College of Cardiology, Annual Scientific Sessions, New Orleans, LA 2019
- e. Kartik Mani, MBBS: Next Generation Investigator Award, Research and Development Service, John Cochran VA Medical Center, St. Louis MO 2019
- f. Ali Javaheri, MD PhD: American Society of Clinical Investigation's 2019 Young Physician-Scientist Awardee, Chicago IL, 2019

## Bibliography (chronological):

### *Original Contributions:*

1. Wang F, Trial J, **Diwan A**, Gao F, Birdsall H, Entman M, Hornsby P, Sivasubramanian N, Mann DL. Regulation of cardiac fibroblast cellular function by leukemia inhibitory factor. *Journal of Molecular and Cellular Cardiology* 2002; 34: 1309-1316.
2. Flesch M, Hoper A, Dell'Italia L, Evans K, Bond R, Peshock R, **Diwan A**, Brinsa TA, Wei CC, Sivasubramanian N, Spinale FG, Mann DL. Activation and functional significance of the renin angiotensin system in mice with targeted overexpression of tumor necrosis factor. *Circulation* 2003; 108: 598-604.
3. Vallejo JG, Nemoto S, Ishiyama M, Knuefermann P, **Diwan A**, Baker S, Tweardy D, Mann DL. Functional significance of inflammatory mediators in a murine model of resuscitated hemorrhagic shock. *American Journal of Physiology/Heart Circulatory Physiology* 2005; 288: H1272-H1277.
4. Dibbs ZI, **Diwan A**, Nemoto S, DeFreitas G, Abdellatif M, Carabello BA, Spinale FG, Feuerstein G, Sivasubramanian N, Mann DL. Targeted overexpression of transmembrane tumor necrosis factor provokes a concentric cardiac phenotype. *Circulation* 2003; 108: 1002-1008.

5. **Diwan A**, Dibbs Z, Nemoto S, DeFreitas G, Carabello BA, Sivasubramanian N, Wilson EM, Spinale FG, Mann DL. Targeted overexpression of membrane bound and secreted forms of tumor necrosis factor provoke disparate cardiac phenotypes. *Circulation* 2004; 109: 262-268.
6. **Diwan A**, McCulloch MC, Reardon MJ, Lawrie G, Nagueh S. A novel Doppler time index for assessment of left ventricular filling pressures in patients with mitral valve disease. *Circulation* 2005; 111: 3281-3289. \*\*\* See Editorial: Oh JK. Echocardiography as a noninvasive Swan-Ganz catheter. *Circulation* 2005; 111: 3192-3194.
7. Matkovich SJ, **Diwan A**, Marreez Y, Odley AM, Koch W, Schwartz RJ, Brunskill EW, Dorn GW 2<sup>nd</sup>. Cardiac-specific ablation of GRK2 re-defines its role in heart development and beta-adrenergic signaling. *Circulation Research* 2006; 99: 996-1003.
8. Yuan Q, Fan GC, Dong M, Altschaf B, **Diwan A**, Ren X, Hahn HH, Zhao W, Waggoner JR, Jones LR, Jones WK, Bers DM, Dorn GW 2<sup>nd</sup>, Wang HS, Valdivia HH, Chu G, Kranias EG. Sarcoplasmic reticulum calcium overloading in junctin deficiency enhances cardiac contractility but increases ventricular automaticity. *Circulation* 2007; 115: 300-309.
9. Galvez AS, **Diwan A**, Odley AM, Hahn HS, Osinska H, Melendez JG, Robbins J, Lynch RA, Marreez Y, Dorn GW 2<sup>nd</sup>. Cardiomyocyte degeneration with calpain deficiency reveals a critical role in protein homeostasis. *Circulation Research* 2007; 100: 1071-1078.
10. **Diwan A**, Koesters AG, Odley AM, Pushkaran S, Baines CP, Spike BT, Daria D, Jegga AG, Geiger H, Aronow BJ, Molkentin JD, Macleod KF, Kalfa TA, Dorn GW 2<sup>nd</sup>. Unrestrained erythroblast development in Nix<sup>-/-</sup> mice reveals a mechanism for apoptotic modulation of erythropoiesis. *Proceedings of National Academy of Sciences, U. S. A.* 2007; 104: 6794-6799. PMID: PMC1849960
11. **Diwan A**, Krenz M, Syed FM, Wansapura J, Ren X, Koesters AG, Li H, Kirshenbaum LA, Robbins J, Hahn HS, Jones WK, Dorn GW 2<sup>nd</sup>. Inhibition of ischemic cardiomyocyte apoptosis through targeted ablation of Bnip3 restrains post-infarction remodeling. *Journal of Clinical Investigation* 2007; 117: 2825-2833. PMID: PMC1994631  
\*\*\* See Editorial: Whelan RS, Mani K, Kitsis RN. Nipping at cardiac remodeling. *Journal of Clinical Investigation* 2007; 117: 2751-2753. PMID: PMC1994642
12. Jeon HK, Shah GA, **Diwan A**, Cwajg JM, Park TH, McCulloch ML, Zoghbi WA. Lack of pathologic q waves: a specific marker of viability in myocardial hibernation. *Clinical Cardiology* 2008; 31: 372-377.
13. **Diwan A**, Wansapura J, Syed F, Matkovich SJ, Lorenz JN, Dorn GW 2<sup>nd</sup>. Nix-mediated apoptosis links myocardial fibrosis, cardiac remodeling, and hypertrophy decompensation. *Circulation* 2008; 117: 396-404. PMID: PMC2538800  
\*\*\* See Editorial: da Costa Martins PA, De Windt LJ. Nix: the cardiac Styx between life and death. *Circulation* 2008; 117: 338-340.
14. Liggett SB, Cresci S, Kelly RJ, Syed FM, Matkovich SJ, Hahn HS, **Diwan A**, Martini JS, Sparks L, Parekh RR, Spertus JA, Koch WJ, Kardina SL, Dorn GW 2<sup>nd</sup>. A G-protein coupled receptor kinase-5 polymorphism that inhibits  $\alpha$ -adrenergic signaling is protective in heart failure. *Nature Medicine* 2008; 14: 510-517. PMID: PMC2596476  
\*\*\* See Editorial: Eschenhagen T. Beta-adrenergic signaling in heart failure-adapt or die. *Nature Medicine* 2008; 14: 485-487.
15. **Diwan A**, Koesters AG, Capella D, Geiger H, Kalfa TA, Dorn GW 2<sup>nd</sup>. Targeting erythroblast-specific apoptosis in experimental anemia. *Apoptosis* 2008; 13: 1022-1030. PMID: PMC2556039
16. **Diwan A**, Matkovich SJ, Yuan Q, Zhao W, Brown JH, Molkentin JD, Kranias EG, Dorn GW 2<sup>nd</sup>. Endoplasmic reticular-mitochondrial crosstalk in NIX-mediated murine cell death. *Journal of Clinical Investigation* 2009; 119: 203-212. PMID: PMC2613462
17. Matkovich, SJ, Van Booven DJ, Youker, KA, Torre-Amione, G, **Diwan, A**, Eschenbacher WH, Dorn LE, Margulies KB, Dorn GW 2<sup>nd</sup>. Reciprocal regulation of myocardial miR and mRNA in human cardiomyopathy and reversal of the miR signature by biomechanical support. *Circulation* 2009; 119: 1263-1271. PMID: PMC2749457

## Curriculum Vitae

Abhinav Diwan, MBBS

18. Cresci S, Kelly RJ, Cappola TP, **Diwan A**, Dries D, Kardia SL, Dorn GW 2nd. Clinical and genetic modifiers of long-term survival in heart failure. *Journal of American College of Cardiology* 2009; 54: 432-444. PMID:PMC2749467
19. Matkovich SJ, Wang W, Tu Y, Eschenbacher WH, Dorn LE, Condorelli G, **Diwan A**, Nerbonne JM, Dorn GW 2<sup>nd</sup>. MicroRNA-133a protects against myocardial fibrosis and modulates electrical repolarization without affecting hypertrophy in pressure-overloaded adult hearts. *Circulation Research* 2010; 106: 166-175. PMID:PMC2804031  
\*\*\* See Editorial: Abdellatif M. The role of microRNA-133 in cardiac hypertrophy uncovered. *Circulation Research* 2010; 106: 16-18. PMID:PMC2838710
20. Kang MY, Zhang Y, Matkovich SJ, **Diwan A**, Chishti AH, Dorn GW 2<sup>nd</sup>. Receptor-independent cardiac protein kinase Calpha activation by calpain-mediated truncation of regulatory domains. *Circulation Research* 2010; 107: 903-912. PMID:PMC2948630
21. Chen Y, Lewis W, **Diwan A**, Cheng- EHY, Matkovich SJ, Dorn II GW. Dual autonomous mitochondrial cell death pathways are activated by Nix/Bnip3L and induce cardiomyopathy. *Proceedings of National Academy of Sciences, U.S.A.* 2010; 107: 9035-9042. PMID:PMC2889094  
\*\*\* See Commentary: Kitsis RN, Molkenin JD. Apoptotic cell death "Nixed" by an ER-mitochondrial necrotic pathway. *Proceedings of National Academy of Sciences, U S A* 2010; 107: 9031-9032. PMID:PMC2889108
22. Zhang Y, Matkovich SJ, Duan X, **Diwan A**, Kang MY, Dorn GW 2<sup>nd</sup>. Receptor-independent PKC {alpha} signaling by calpain-generated free catalytic domains induces HDAC5 nuclear export and regulates cardiac transcription. *Journal of Biological Chemistry* 2011; 286: 26943-26951. PMID:PMC3143653
23. Ma X, Godar RJ, Liu H, **Diwan A**. Enhancing lysosome biogenesis attenuates Bnip3-induced cardiomyocyte death. *Autophagy* 2012; 8: 297-309. PMID:PMC3337840
24. Ma X, Liu H, Foyil SR, Godar RJ, Weinheimer CJ, Hill JA, **Diwan A**. Impaired autophagosome clearance contributes to cardiomyocyte death in ischemia-reperfusion injury. *Circulation* 2012; 125: 3170-3181. PMID:PMC3397471
25. Schilling JD, Machkovech HM, He L, **Diwan A**, Schaffer JE. TLR4 activation under lipotoxic conditions leads to synergistic macrophage cell death through a TRIF-dependent pathway. *Journal of Immunology* 2013; 190: 1285-1296. PMID:PMC3552058
26. Divakaran VG, Evans S, Topkara VK, **Diwan A**, Burchfield J, Gao F, Dong J, Tzeng HP, Sivasubramanian N, Barger PM, Mann DL. Tumor necrosis factor receptor associated factor 2 signaling provokes adverse cardiac remodeling in the adult mammalian heart. *Circulation Heart Failure* 2013; 6: 535-543. PMID:PMC3672470
27. Xiao Q, Yan P, Ma X, Liu H, Perez R, Zhu A, Gonzales E, Burchett JM, Schuler DR, Cirrito JR, **Diwan A\***, Lee JM\* (\*contributed equally, co-corresponding authors). Astrocytic lysosome biogenesis facilitates A $\beta$  clearance and attenuates amyloid plaque pathogenesis. *The Journal of Neuroscience.* 2014 Jul 16;34(29):9607-20. PMID:PMC4099542
28. Emanuel R, Sergin I, Bhattacharya S, Turner J, Epelman S, Settembre C, **Diwan A**, Ballabio A, Razani B. Induction of lysosomal biogenesis in atherosclerotic macrophages can rescue lipid-induced lysosomal dysfunction and downstream sequelae. *Arteriosclerosis Thrombosis Vascular Biology* 2014 Sep; 34(9):1942-52.; PMID: PMC4140993.
29. Yang KC, Ma X, Liu H, Kovacs A, Barger PM, Mann DL, **Diwan A**. TNF-receptor associated factor-2 mediates mitochondrial autophagy. *Circulation Heart Failure.* 2015 Jan;8(1):175-87. PMID:PMC4303508
30. Ma, X; Liu, H; Murphy, JT; Foyil SR, Godar, RJ; Abuirqeba, H; Weinheimer, CJ; Barger, PM and **Diwan A**. Regulation of TFEB-PGC1 $\alpha$  Axis by BECLIN-1 Controls Mitochondrial Quality and Cardiomyocyte Death under Stress. *Molecular and Cellular Biology.* 2015 Mar 15;35(6):956-76. doi: 10.1128/MCB.01091-14. PMID:PMC4333088
31. Godar RJ, \* Ma X, \* Liu H, Murphy JT, Weinheimer CJ, Kovacs A, Crosby SD, Saftig P, **Diwan A**. (\*contributed equally) Repetitive Stimulation of Autophagy-Lysosome Machinery by Intermittent Fasting

- Preconditions the Myocardium to Ischemia-Reperfusion Injury. *Autophagy*. 2015 Sep 2;11(9):1537-60. doi: 10.1080/15548627.2015.1063768.; PMID: PMC4590628
32. Kanekura K, Ma X, Murphy JT, Zhu LJ, **Diwan A**, Urano F. IRE1 $\alpha$  prevents endoplasmic reticulum membrane permeabilization and cell death during pathological conditions. *Sci Signal*. 2015 Jun 23;8(382):ra62. PMID: PMC4492519
  33. Xiao Q, Yan P, Ma X, Liu H, Perez R, Zhu A, Gonzales E, Tripoli, DD, Czerniewski L, Ballabio A, Cirrito JR, **Diwan A\***, Lee JM\* (\*contributed equally, co-corresponding authors). Neuronal-targeted TFEB Accelerates Lysosomal Degradation of APP, Reducing A $\beta$  Generation and Amyloid Plaque Pathogenesis. *J Neurosci*. 2015 Sep 2;35(35):12137-51. PMID: PMC4556784
  34. He L, Weber KJ, **Diwan A**, Schilling JD. Inhibition of mTOR reduces lipotoxic cell death in primary macrophages through an autophagy-independent mechanism. *J Leukoc Biol*. 2016 Jun 16. pii: jlb.3A1015-463R.
  35. Lampropoulou V, Sergushichev A, Bambouskova M, Nair S, Vincent EE, Loginicheva E, Cervantes-Barragan L, Ma X, Huang SC, Griss T, Weinheimer CJ, Khader S, Randolph GJ, Pearce EJ, Jones RG, **Diwan A**, Diamond MS, Artyomov MN. Itaconate Links Inhibition of Succinate Dehydrogenase with Macrophage Metabolic Remodeling and Regulation of Inflammation. *Cell Metab*. 2016 Jun 28. pii: S1550-4131(16)30253-4. doi: 10.1016/j.cmet.2016.06.004.
  36. Sergin I ET, Zhang X, Bhattacharya S, Stokes CJ, Song E, Ali S, Dehestani B, Holloway KB, Micevych PS, Javaheri A, Crowley JR, Ballabio A, Schilling JD, Epelman S, Weihl CC, **Diwan A**, Fan D, Zayed MA,, B R. Exploiting Macrophage Autophagy-Lysosomal Biogenesis as a Therapy for Atherosclerosis. *Nature Communications*, 2017 Jun 7;8:15750. PMID: 28589926 PMID: PMC5467270
  37. Liu H, \* Javaheri A,\* Godar RJ, Murphy JT, Ma X, Rohatgi N, Mahadevan J, Hyrc K, Saftig P, Marshall C, McDaniel ML, Remedi MS, Razani B, Urano F, **Diwan A**. (\*contributed equally) Intermittent Fasting Preserves Beta-cell Mass in Obesity-induced Diabetes via the Autophagy-Lysosome Pathway. *Autophagy*. 2017;13(11):1952-1968. PMID: 28853981 PMID: PMC5788488
  38. Hartupee J, Szalai GD, Wang W, Ma X, **Diwan A**, Mann DL. Impaired Protein Quality Control During Left Ventricular Remodeling in Mice with Cardiac Restricted Overexpression of Tumor Necrosis Factor. *Circulation Heart Failure*. 2017 Dec;10(12). PMID: 29203562 PMID: PMC5728663
  39. Ma, X\*; Mani, M\*; Kovacs, A; Liu, H; Murphy, JT; Foroughi L; French, B; Benjamin, IJ; Hill, JA; Javaheri, A; **Diwan A**. (\*contributed equally) TFEB Rescues Advanced Mutant  $\alpha$ B-Crystallin-induced Cardiomyopathy by Normalizing Desmin Localization. *J Am Heart Assoc*. 2019;8:e010866. DOI: 10.1161/JAHA.118.010866. PMID: 30773991 PMID: PMC6405666  
 \*\*\* See editorial: Mukai R; Zablocki D; Sadoshima J. Intermittent Fasting Reverses an Advanced Form of Cardiomyopathy. *J Am Heart Assoc*. 2019;8:e011863. DOI: 10.1161/JAHA.118.011863
  40. Ferey J, Boudoures A, Reid M, Drury A, Scheaffer S, Modi Z, Kovacs A, Pietka T, DeBosch B, Thompson M, **Diwan A\***, and Moley K\* (\*contributed equally). Maternal Obesity Induces Transgenerational Cardiac Mitochondrial Dysfunction Independent of Maternal Mitochondrial Inheritance. *Am J Physiol Heart Circ Physiol*. 2019 Mar 22. doi: 10.1152/ajpheart.00013.2019.  
 \*\*\* See editorial: Basu M, Trask AJ, Garg V. Shaping the future heart: transgenerational outcomes of maternal metabolic syndrome. *Am J Physiol Heart Circ Physiol*. 2019 Mar 15. doi: 10.1152/ajpheart.00156.2019.
  41. Kumar S, Egan BM, Kocsisova Z, Schneider DL, Murphy JT, **Diwan A**, Kornfeld K. Lifespan extension in *C. elegans* caused by bacterial colonization of the intestine and activation of an innate immune response. *Dev Cell*. 2019 Apr 8;49(1):100-117.e6. PMID: PMC6946027  
 \*\*\* See editorial: Ye-Tang Lee and Meng C. Weng. The Bacteriovore's Solution: Fight and Flight to Promote Survival. *Developmental Cell*, April 8<sup>th</sup> 2019
  42. Murphy, JT\*; Liu, H\*; Ma, X; Shaver, S; Oh, C; Boyko, A; Mazer, T; Ang, S; Khopkar, R; Javaheri, A; Kumar, S; Jiang X; Ory, D; Mani, K; Matkovich, SJ; Kornfeld K \*; **Diwan A** \*. (\*contributed equally.) Simple Nutrients Activate a HLH-30-independent Pathway for Coupling Lysosomal Nutrient Sensing to TOR Activation. *PLoS Biol*. 2019 May 14;17(5):e3000245. PMID: PMC6516633



## Curriculum Vitae

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- \*\*\* See Primer: Alexander Soukas and Ben Zhou. Surviving Starvation Simply Without TFEB. *PLOS Biology*. *PLOS Biology*, May 28<sup>th</sup>, 2019
- \*\*\* See Commentary: Baugh R: F1000Prime Recommendation of [Murphy JT et al., PLoS Biol 2019 17(5):e3000245]. In *F1000Prime*, 20 Jun 2019; 10.3410/f.735767649.793561424
43. Javaheri, A; Bajpai, G; Picataggi, A; Mani, S; Foroughi, L; Evie, H; Kovacs, A; Weinheimer, C; Hyrc, K; Xiao, Q; Ballabio, A; Lee, JM; Matkovich, SJ; Razani, B; Schilling, JD; Lavine, K; **Diwan A**. Macrophage Transcription Factor EB activation attenuates post-myocardial infarction remodeling independently of Atg5-mediated Autophagy. *JCI Insight*, 2019 Nov 1;4(21). pii: 127312. doi: 10.1172/jci.insight.127312.. PMID: 31672943. PMCID: PMC6948771
44. Zhang X, Sergin I, Evans E, Jeong SJ, Rodriguez-Velez A, Kapoor D, Chen S, Song E, Holloway K, Crowley J, Epelman S, Weihl CC, **Diwan A**, Fan D, Mittendorfer B, Stitzel N, Schilling J, Lodhi I, Razani B. High protein diets increase cardiovascular risk by activating macrophage mTOR to suppress mitophagy. *Nature Metabolism*; Volume 2, Pages 110-125; January 2020.
45. Bécot A, Pardossi-Piquard R, Bourgeois A, Duplan E, Xiao Q, **Diwan A**, Lee JM, Lauritzen I, Checler F. The transcription factor EB reduces the intraneuronal accumulation of the beta-secretase-derived APP fragment C99 in cellular and mouse AD models. *Cells*. 2020 May 12;9(5):1204. doi: 10.3390/cells9051204.T
46. Zang R, Case JB, Yutuc ,E Ma X, Shen S, Castro MFG, Liu Z, Zeng A, Zhao H, Son J, Rothlauf PW, Kreutzberger AJB, Hou G, Zhang H, Bose S, Wang X, Vahey MD, Mani K, Griffiths WJ, Kirchhausen , Fremont DH, Guo H, **Diwan A**, Wang Y, Diamond MS, Whelan SPJ, Ding S. Cholesterol 25-hydroxylase suppresses SARS-CoV-2 replication by blocking membrane fusion. *Proc Natl Acad Sci U S A*. 2020 Nov 25:202012197. doi: 10.1073/pnas.2012197117. PMID: 33239446
47. Mia S, Sonkar S, Williams L, Latimer M, Robillard I, **Diwan A**, Frank S, Des Rosiers C, Young ME. Impact of Obesity on Day-Night Differences in Cardiac Metabolism. Accepted for publication at *FASEB J*. Dec 2020.

## Invited Reviews/Editorials:

1. Misra A, **Diwan A**, Mann DL, Deswal A. Asymptomatic left ventricular dysfunction: An overlooked part of the continuum of heart failure. *Heart Failure Monitor* 2002; 3: 42-48.
2. **Diwan A**, Tran T, Misra A, Mann DL. Inflammatory mediators and the failing heart: A translational approach. *Molecular Medicine* 2003; Vol.3, No.2.
3. Wilson EM, **Diwan A**, Spinale FG, Mann DL. Duality of innate stress responses in cardiac injury, repair, and remodeling. *Journal of Molecular and Cellular Cardiology* 2004; 37: 801-811.
4. Syed F, **Diwan A**, Hahn HS. Murine Echocardiography: A practical approach to phenotyping genetically manipulated and surgically modeled mice. *Journal of American Society of Echocardiography* 2005; 18: 982-990.
5. **Diwan A**, Dorn GW 2<sup>nd</sup>. Decompensation of cardiac hypertrophy: Cellular mechanisms and novel therapeutic targets. *Physiology* 2007; 22: 56-64.
6. Dorn GW 2<sup>nd</sup>, **Diwan A**. The rationale for cardiomyocyte resuscitation in myocardial salvage. *Journal of Molecular Medicine* 2008; 86: 1085-1095.
7. Ma X, Liu H, Foyil SR, Godar RJ, Weinheimer CJ, **Diwan A**. Autophagy is impaired in cardiac ischemia-reperfusion injury. *Autophagy* 2012; 8: 1394-1396. PMCID:PMC3442889
8. Klionsky DJ..., **Diwan A**, ...Zuckerbraun B (1270 authors). Guidelines for the use and interpretation of assays for monitoring autophagy. *Autophagy* 2012; 8: 439-441. PMCID:PMC3404883
9. Hill JA, **Diwan A**. Ca<sup>2+</sup> leak in atrial fibrillation: Junctophyllin-2 stabilizes ryanodine receptor. *Journal of American College of Cardiology* 2013; 62: 2020-2022. PMCID:PMC3858001
10. Klionsky DJ, .....**Diwan A**, ...Zughaier SM. Guidelines for the use and interpretation of assays for monitoring autophagy (3rd edition). *Autophagy*. 2016 Jan 2;12(1):1-222.

## Curriculum Vitae

Abhinav Diwan, MBBS

11. Mani K, Javaheri A, **Diwan A**. Lysosomes mediated the benefits of intermittent fasting in cardiometabolic disease: The janitor is the undercover boss. *Comprehensive Physiology*, 2018; Sep 14;8(4):1639-1667. doi: 10.1002/cphy.c180005. PMID: PMC6423516
12. Mani K, **Diwan A**. Drugging the Hippo (Pathway): A Strategy to Stimulate Cardiac Regeneration. Invited Editorial at JACC: Basic and Translational Sciences. *JACC Basic Transl Sci*. 2018 Nov 12;3(5):654-656.. 2018. PMID: PMC6234515
13. Javaheri A, **Diwan A**. NO to Lysosomes: A Signal for Insulin Resistance in Obesity. Invited Editorial at *Cellular and Molecular Gastroenterology and Hepatology*. May 2019; DOI: <https://doi.org/10.1016/j.jcmgh.2019.04.006>. PMID: 31102588 PMID: PMC6599106
14. Lee JM, **Diwan A**, Zipfel G. Targeting muscles in the brain to enhance cerebral perfusion. Invited Editorial. *JACC Basic Transl Sci*. 2019 Dec 23;4(8):959-961. PMID: 31909771 PMID: PMC6938911
15. Islam M, **Diwan A**, Mani K. Come Together: Protein Assemblies, Aggregates and the Sarcostat at the Heart of Cardiac Myocyte Homeostasis. *Frontiers in Physiology* 2020 Jun 4;11:586. doi: 10.3389/fphys.2020.00586. eCollection 2020. PMID: 32581848 PMID: PMC7287178
16. Rawnsley, DR and **Diwan A**. Lysosome Impairment as a Trigger for Obesity: The Proof is in the Fat. Invited Commentary for *EBioMedicine*, 2020 Jun;56:102824. doi: 10.1016/j.ebiom.2020.102824. PMID: 32540774 PMID: PMC7300142
17. **Diwan A** and Gottlieb RA. Sensing Protein Quality in Cardiac Myocytes: p62 Triggers a Lysosomal Response. Invited Editorial in *Circulation Research*, 2020 Jul 31;127(4):519-521. PMID: 32762530 PMID: PMC7416846
18. **Diwan A**. More Energy to Relax: Targeting Epigenetic Effects of Acute Renal Injury to Prevent HFpEF. Accepted for publication at *JACC Basic Transl Sci*. Dec 2020.

## Book Chapters:

1. Quantification of cytokine mRNAs in human myocardial biopsy samples by real time quantitative PCR technology using Roche's Light Cycler. Zhu P, Wang F, Dibbs ZI, **Diwan A**, Torre G, Mann DL, Sivasubramanian N. In *Rapid Cycle Real-Time PCR: Methods and Applications*, Springer Verlag, 2002.
2. **Diwan A**, Dorn GW 2<sup>nd</sup>. The Molecular Basis for Heart Failure. In *Heart Failure: A Companion to Braunwald's Heart Disease*, 2<sup>nd</sup> edition, 2011.
3. **Diwan A**, Hill JA, Force TL. The Molecular Basis for Heart Failure. In *Heart Failure: A Companion to Braunwald's Heart Disease*, 3<sup>rd</sup> edition, 2014.
4. **Diwan A**, Hill JA. The Molecular Basis for Heart Failure. In *Heart Failure: A Companion to Braunwald's Heart Disease*, 4<sup>th</sup> edition, 2019.

## Mentions in the lay press:

1. Our study by Liu, Javaheri et al. was cited in a CNN news article along with expert commentary: <https://www.cnn.com/2018/10/09/health/diabetes-fasting-study/index.html>  
<https://gooddaysacramento.cbslocal.com/2018/10/10/intermittent-fasting-insulin-diabetes/>  
<https://www.wptv.com/news/health/after-intermittent-fasting-these-3-men-no-longer-take-insulin-for-diabetes-experts-stress-caution>
2. Our study by Ferey et al. was reported by Washington University News and re-posted by multiple news organizations including The Daily Mail, Le Figaro and Xinhua:  
<https://medicine.wustl.edu/news/obese-mouse-mothers-trigger-heart-problems-in-offspring/>  
<https://www.dailymail.co.uk/health/article-6836455/Mothers-obese-pregnant-children-heart-problems-study-mice-says.html>  
<http://sante.lefigaro.fr/article/et-si-votre-alimentation-mettait-en-danger-vos-arriere-petits-enfants/>  
[http://www.xinhuanet.com/english/2019-03/26/c\\_137923374.htm](http://www.xinhuanet.com/english/2019-03/26/c_137923374.htm)

<https://suomenkuvalehti.fi/jutut/tiede/lihavuus-raskausaikana-nostaa-jalkelaisten-sydanongelmien-riskia%e2%80%89-%e2%80%89ainakin-hiirilla/>  
[https://www.eurekalert.org/pub\\_releases/2019-03/wuso-omm031919.php](https://www.eurekalert.org/pub_releases/2019-03/wuso-omm031919.php)  
<https://www.news-medical.net/news/20190322/High-fat-high-sugar-diet-in-mouse-mothers-causes-problems-in-the-hearts-of-offspring.aspx>  
<https://www.sciencedaily.com/releases/2019/03/190322140528.htm>  
<https://medicalxpress.com/news/2019-03-obese-mouse-mothers-trigger-heart.html>

3. Our study by Murphy et al. was highlighted by the Children’s Discovery Institute and the Faculty of 1000 websites:  
<http://www.childrensdiscovery.org/m/ResearchCenters/CongenitalHeartDiseaseCenter/FeaturedArticles.aspx?CategoryID=1&ArticleID=273>  
<https://f1000.com/prime/735767649#eval793561424>
4. Our editorial in CMGH was highlighted in American Gastroenterology Society’s official newsletter: GI and Hepatology News: <https://www.mdedge.com/gihepnews/article/202465/obesity/inducible-nitric-oxide-synthase-promotes-insulin-resistance-obesity>
5. Our study by Javaheri et al. was highlighted in the Washington University News and re-posted by other news organizations:  
<https://medicine.wustl.edu/news/new-clues-found-to-help-protect-heart-from-damage-after-heart-attack/>  
[http://www.xinhuanet.com/english/2019-11/02/c\\_138522056.htm](http://www.xinhuanet.com/english/2019-11/02/c_138522056.htm)  
[http://www.china.org.cn/world/Off\\_the\\_Wire/2019-11/02/content\\_75365715.htm](http://www.china.org.cn/world/Off_the_Wire/2019-11/02/content_75365715.htm)