

Michael E. DeBakey Department of Surgery

10th Annual Research Symposium



May 31
June 1
2022

Denton A. Cooley Auditorium
Texas Heart Institute

Baylor
College of
Medicine

MICHAEL E. DeBAKEY
DEPARTMENT OF
SURGERY

10th Annual Research Symposium



The Pursuit of Excellence is Our Objective

The overarching mission of the Michael E. DeBakey Department of Surgery is to be internationally recognized as the premier department of surgery in innovating breakthrough improvements in the quality and efficiency of patient care, and for training the next generation of surgical scientists, educators and innovators as leaders of our field.

We are excited to present our 10th Annual Research Symposium, which highlights the academic achievements of our department trainees and staff. The mission of the department's research program is to conduct important research in surgical disease that will improve treatment and quality of life for affected patients and to train future leaders in academic surgery. This year's symposium underscores both aspects of this mission by highlighting the exciting research activities of our residents, fellows, staff, and students. Our trainees and staff will present work that spans our divisions and affiliated hospitals. Their accomplishments also reflect the outstanding mentorship provided by our faculty members.



Keynote Speaker

Omaida Velazquez, M.D., FACS

Professor and Chair, DeWitt Daughtry Family Department of Surgery, University of Miami Leonard M. Miller School of Medicine; Surgeon-in-Chief for University of Miami (UHealth) and Jackson Health Systems; and the David Kimmelman Endowed Chair in Vascular and Endovascular Surgery at the University of Miami Leonard M. Miller School of Medicine.



Dr. Omaida C. Velazquez, serves as Professor and Chair, David Kimmelman Endowed Chair, and Surgeon-in-Chief, at University of Miami and Jackson Health Systems. She is a member of the American Surgical Association and is a nationally and internationally renowned surgeon-scientist. Her seminal contributions allowed her induction into the American Society for Clinical Investigators.

Her preclinical research focuses on stem cells and angiogenesis, wound healing, atherosclerosis, and limb salvage, all related to peripheral vascular disease and vascular complications of diabetes. She publishes in high-impact scientific journals such as *Annals of Surgery*, *Journal of Vascular Surgery*, *Stem Cells*, *Journal Clinical Investigation*, *Mol Cell Biol*, *Atherosclerosis*, and *PLoS One*. She has continuous NIH funding for 15 years and her discoveries yielded several patents with great translational potential.

She discovered mechanisms for homing and pro-repair functions of stem cells in post-natal revascularization of ischemic tissue. These findings have paved the way to ongoing clinical trials for PVD and diabetic non-healing wounds. These unsolved pathologies account for over one hundred thousand amputations annually, in the U.S. alone.

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Recently, Velazquez's work led to the development of a new gene and cell therapy that may one-day eradicate the need for most amputations. She has advanced clinical endovascular treatments. Her work is highly quoted, accounting for an H-index of 45. She has enhanced clinical protocols for several unsolved vascular diseases. Her leadership as an academic surgeon is greatly valued as evidenced by her appointment as the first Latina Chair of Surgery and Surgeon-Chief in the USA, in 2015. In 2021, she received the Latina Pioneer of the Year Award.

In addition to her roles as a surgeon, educator, and scientist, Dr. Velazquez served as the Executive Dean of Research at the University of Miami Miller School of Medicine from 2012 to 2015. Under her leadership, investigators across campus welcomed many administrative advances to the clinical and pre-clinical research infrastructure; processes were de-mystified and interdepartmental communications increased in transparency and efficiency. She is currently a member of the Joint Operational Leadership Team for the University of Miami Health System and Chairs the Workforce Management Committee (Resilience and Recovery) during the COVID-19 pandemic crisis.

Dr. Velazquez obtained her B.S. from Stevens Institute of Technology in 1987 with High Honors & Scientific Thesis and obtained her M.D. degree from the UMDNJ/NJMS-Rutgers graduating Valedictorian in her class of 1991. She completed post-graduate training in General Surgery, Vascular Surgery, and Surgical Research training at University of Pennsylvania. She was the recipient of the Jonathan E. Rhoads Research Award, the von Liebig Foundation Award, and the Joel J. Roslyn Faculty Research Award (2003) from the Society of University Surgeons. In 2015, Velazquez received the Penn Surgery Julius A. Mackie Distinguished Graduate Award from the University of Pennsylvania, an honor bestowed to the most distinguished former trainees. Before joining the Miller School of Medicine, She served on the faculty at the University of Pennsylvania for eight years and became an Associate Professor with tenure.

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Resident and Fellow Poster Competition

Moderators: Drs. Qizhi Cathy Yao and Martin Zielinski

Poster #1

“Impact of Autonomic Regulation on Burnout and Performance in Thoracic Surgery Residents”

Dr. Lauren Barron

Mentor: Dr. Marc Moon

Poster #2

“Digital Biomarker to Predict Adverse Events Associated with Cancer-Related Toxicity”

Dr. Md Moin U. Atique

Mentors: Drs. Bijan Najafi

Poster #3

“Variation in Hospital Mortality After Inpatient Pediatric Surgery”

Dr. Steven Mehl

Mentor: Dr. Nader Massarweh

Poster #4

“STING Pathway Activation Promotes the Epigenetic Induction of Smooth Muscle Cell Phenotypic Alterations in the Aortic Wall”

Dr. Abhijit Chakraborty

Mentor: Drs. Ying Shen and Scott LeMaire

Poster #5

“National Trends in Racial Disparities for CABG versus PCI Treatment of Coronary Artery Disease”

Dr. Rodrigo Zea-Vera

Mentor: Dr. Ravi Ghanta

Poster #6

“Surgical Management and Outcomes of Patients with Multifocal Hepatoblastoma”

Dr. Richard Whitlock

Mentor: Dr. Sanjeev Vasudevan

Poster #7

“Global Surgery Training Programs Increase Exposure to Essential Surgeries for Operating in Resource-Limited Settings”

Dr. Youmna Sherif

Mentor: Dr. Rachel Davis

Poster #8

“cGAS-STING Pathway-Mediated Cholesterol Metabolism Promotes the Development of Atherosclerosis”

Dr. Yang Li

Mentors: Drs. Ying Shen and Scott LeMaire

Poster #9

“Hospital Variation in Resident Operative Autonomy”

Dr. Jorge Portuondo

Mentor: Dr. Nader Massarweh

Student Poster Competition

Moderators: Drs. Erin Greenleaf and Chad Wilson

Poster #23

"The Role of Endogenously Expressed IL-10 in Wound Closure and Tissue Repair"

Benjamin Padon

Mentor: Dr. Swathi Balaji

Poster #24

"The Impact of Pulsed Electromagnetic Fields (PEMF) on Postoperative Pain in Patients Undergoing Cardiothoracic Surgery"

Ryan Nowrouzi

Mentor: Dr. Samir Awad

Poster #25

"The Marginal Lung Allograft: A Re-Evaluation"

John Miggins

Mentor: Dr. Abbas Rana

Poster #26

"Outcomes and Readmissions after Bioprosthetic versus Mechanical Mitral Valve Replacement in Endocarditis in the United States"

Katie Hogan

Mentor: Dr. Ravi Ghanta

Poster #27

"Hospital Payer Mix and Amputation Rates Among Patients with Peripheral Artery Disease Complications"

Deeksha Bidare

Mentor: Dr. Neal Barshes

Poster #28

"Use of Diagnostic Laparoscopy for Gastric Adenocarcinoma in a Safety-Net Hospital"

Sommert Luu

Mentor: Dr. Eric Silberfien

Poster #29

"NQO1 Expression is a Biomarker of Sensitivity to mTOR Inhibitor Sapanisertib in Hepatoblastoma"

Saiabhiroop Govindu

Mentor: Dr. Sarah Woodfield

Poster #30

"Pleurectomy and Decortication is Associated with Better Survival for Bicavitary Cytoreductive Surgery for Mesothelioma Compared to Extrapleural Pneumonectomy"

Hudson Holmes

Mentor: Dr. R. Taylor Ripley

Poster #31

"Aortic Regurgitation After Root Replacement Surgery in Patients with Marfan Syndrome"

Nandita Ramkumar

Mentors: Drs. Joseph Coselli and Irina Volguina

Clinical, Research, and Education Staff Poster Competition

Moderators: Drs. Harveen Lamba and Alexander Schutz

Poster #43

"Effects of Intradialytic Plantar Electrical Nerve Stimulation on Gait Performance in Individuals with Diabetes and End-Stage Renal Disease - Initial Results"

Naima Rodriguez

Mentor: Dr. Bijan Najafi

Poster #44

"Safety and Efficacy of Robotic First Rib Resection with Adjuvant Endovascular Therapy for Paget Schroetter Syndrome"

Alejandro Zulbaran-Rojas

Mentor: Dr. Bryan Burt

Poster #45

"SentiNOT2: Delayed Sentinel Lymph Node Biopsy in Ductal Cancer In Situ"

Ivan Marin

Mentor: Dr. Alastair Thompson

Poster #46

"Improving Daily Physical Activity in Patients Undergoing Routine Hemodialysis Using Plantar Electrical Nerve Stimulation - A Randomized Double-Blinded Controlled Trial"

Anmol Momin

Mentor: Dr. Bijan Najafi

Wednesday, June 1, 2022

7:00 – 7:35 am **Welcome**

Dr. Todd Rosengart

Opening Remarks

Dr. Mary Dickinson

Dr. Joseph Rogers

INSTINCT Highlights

Dr. Livia S. Eberlin

Office of Surgical Research Highlights

Dr. Lara Landry

Dr. Carmen de La Penha

Announcement of Recipients: Quality Improvement Seed Grant Awards for Advanced Practice Providers

Dr. Atif Iqbal

7:35 – 8:25 am **Keynote Address**

“The Surgeon Scientist: Is Extinction Inevitable”

Dr. Omaid Velazquez

8:25 – 9:15 am **Resident and Fellow Quick Shot Presentations**

Moderators: Drs. Rachel W. Davis and Yan Shi

“Right Ventricular Outflow Tract Obstruction After the Arterial Switch Operation for Taussig-Bing Anomaly Repair”

Dr. Carlos Bonilla-Ramirez

Mentor: Dr. E. Dean McKenzie

“Single-Cell Transcriptome Analysis Reveals Differential Profiles of Vascular Smooth Muscle Cells in Human Acute Ascending Aortic Dissection and Ascending Aortic Aneurysm”

Dr. Yanming Li

Mentors: Drs. Ying Shen and Scott LeMaire

“The Application of Digital Frailty Screening to Triage Non-Healing and Complex Wounds”

Dr. Ram Mishra

Mentor: Dr. Bijan Najafi

“Dynamic Risk Prediction for Hospital-Acquired Pressure Injury in Adult Critical Care Patients”

Dr. Vamsi Aribindi

Mentor: Dr. Hanmin Lee

“Differential Gene Expression in the Pancreatic Cancer Tumor Immune Microenvironment is Associated with Worse Outcomes in African American Populations”

Dr. Zachary Gao

Mentor: Dr. E. Ramsay Camp

“Use of Feedback Orientation Scale for General Surgery Residency Recruitment”

Dr. Jennifer Chen

Mentor: Dr. Aimee Gardner

“Aortic Stress Activates an Adaptive Program in Thoracic Aortic Smooth Muscle Cells That Maintains Aortic Strength and Protects Against Dissection”

Dr. Chen Zhang

Mentors: Drs. Ying Shen and Scott LeMaire

“In Vitro Evaluation of 3D Printed Hydroxyapatite, B-Tricalcium Phosphate, and Pore Architecture Gradients on Osteogenesis”

Dr. Brandon Smith

Mentor: Dr. Antonios Mikos

9:15 – 9:30 **Coffee Break**

9:30 – 10:10 **Clinical Research Abstracts of Distinction – Residents and Fellows**

Moderators: Drs. Neal R. Barshes and Jessie Z. Yu

“The Impact of Psychosocial Distress on Perioperative Morbidity and Survival Following Hepato-Pancreatico-Biliary Surgery”

Dr. Naveen Manisundaram

Mentor: Dr. E. Ramsay Camp

Invited discussant: Dr. Eric J. Silberfein

“Surgical Resection for Pediatric Synovial Sarcoma: What Margin is Adequate?”

Dr. Andy Espinoza

Mentor: Dr. Sanjeev Vasudevan

Invited discussant: Dr. Eugene Choi

“The Impact of Frailty on Wound Healing in People with Diabetes-Related Foot Ulcers Treated with Skin Substitutes – A Randomized Controlled Trial”

Dr. Catherine Park

Mentor: Dr. Bijan Najafi

Invited discussant: Dr. Natasha Hansraj

“Crowdsourcing Complication Data Entry Using a Smartphone Application”

Dr. Lisa Brubaker

Mentor: Dr. William Fisher

Invited discussant: Dr. James W. Suliburk

10:10 – 10:50 **Basic Science Research Abstracts of Distinction – Residents and Fellows**

Moderators: Drs. Nilesh Chitnis and Crystal Shin

“Type 1 Regulatory T-Cells Improve Dysregulated Angiogenesis in Mouse Wounds”

Dr. Walker Short

Mentor: Dr. Sundeep Keswani

Invited discussant: Dr. Ying Shen

“Tumor-Derived Fibrinogen Promotes Basal Subtype of Pancreatic Ductal Adenocarcinoma Progression by Activating Epithelial-Mesenchymal Transition and IL-6/TNF-alpha Related AKT Signaling Pathways”

Dr. Dongliang Liu

Mentor: Dr. Qizhi Cathy Yao

Invited discussant: Dr. Hyun-Sung Lee

“Role of RIPK3-Mediated Smooth Muscle Cell Death in Sporadic Aortic Aneurysm and Dissection Development”

Dr. Kimberly Rebello

Mentors: Drs. Scott LeMaire and Ying Shen

Invited discussant: Dr. Megumi Mathison

“A Novel Role for Biomechanical Forces in the Pathogenesis of Idiopathic Constipation”

Dr. Oluyinka Olutoye, II

Mentor: Dr. Lily Cheng

Invited discussant: Dr. Alice King

10:50 – 11:20 **Student Quick Shot Presentations**

Moderators: Drs. Juliet Holder-Haynes and Zachary Pallister

“Shifts to Aerobic Glycolysis Drive Physiological Responses to Injury Resulting in Diverse Wound Repair”

Fayiz Faruk

Mentor: Dr. Swathi Balaji

“The Clinical Utility of Intraoperative Pathology in Surgical Treatment of Breast Cancer”

Rishabh Lohray

Mentor: Dr. Stacey Carter

“Midterm Outcomes of Aortic Root Surgery in Patients with Marfan Syndrome: A Prospective, Multicenter, Comparative Study”


Nathaniel Riggan

Mentors: Drs. Joseph Coselli and Irina Volguina

“Engineering Antioxidant and Oxygen-Releasing Lignin Hydrogel Composites to Accelerate Wound Healing”

Tanuj Prajapati

Mentor: Dr. Swathi Balaji



“Outcomes and Readmissions After Mitral Valve Replacement in Patients with Atrial Fibrillation and Pulmonary Hypertension”

John Trefalls

Mentor: Dr. Subhasis Chatterjee

11:20 – 11:50 **Clinical, Research, and Education
Staff Quick Shot Presentations**

*Moderators: Drs. Cary Hsu
and Catherine Seger*

“Continuous Delivery of Oxygen for Surgically-Closed Wounds Post Bilateral Breast Reduction”

Rasha Bara

Mentor: Dr. Bijan Najafi

“The Human Breast Cell Atlas”

Jessica Montalvan

Mentor: Dr. Alastair Thompson

“Training Program for Fetoscopic Repair of Gastroschisis”

Luc Joyeux

Mentor: Dr. Sundeep Keswani

“Favorable Results with Open Repair of Extent IV Thoracoabdominal Aortic Aneurysms”

Dr. Cuneyt Koksoy

Mentor: Dr. Joseph Coselli

“A Prospective, Multi-Center, Randomized, Double-Arm Trial to Determine the Impact of the SELENE System on Positive Margin Rates in Breast Conservation Surgery”

Huma Javaid

Mentor: Dr. Alastair Thompson

11:50 – 12:00 pm **Awards**

Scan for Book of Abstracts

