# **21**st Annual

Richard L. Simmons Lecture in Surgical Science and Department of Surgery Research Day

## Wednesday, April 19, 2023 The University Club





**Richard L. Simmons, MD** Chair Emeritus, Department of Surgery Distinguished Service Professor of Surgery

Richard L. Simmons graduated magna cum laude in biochemical sciences from Harvard University and was elected to Phi Beta Kappa. He earned his MD at Boston University, graduating summa cum laude, and was elected to AOA. He completed his surgical residency at New York Presbyterian Hospital, where he was a National Institutes of Health (NIH) postdoctoral fellow, a visiting fellow in surgery at Columbia University, and an American Cancer Society (ACS) clinical fellow. During this time, he also won the Mead Johnson Award of ACS and was a clinical and research fellow in surgery at Massachusetts General Hospital and a research fellow at Harvard Medical School. He became principal investigator of an RO1 grant as a resident and was NIH funded for more than 40 consecutive years thereafter.

After heading the surgical research team of the U.S. Army in Vietnam in 1967, Simmons joined the surgical faculty of the University of Minnesota, where he was a Markle scholar in academic medicine and held professorships in both surgery and microbiology. Between 1987 and 1998, Simmons served as chair of the Department of Surgery at the University of Pittsburgh School of Medicine, and in 1996, he became the medical director of UPMC—a position he held until 2015.

During his tenure at Pitt, Simmons has received many honors. Locally, he was given the annual award from the Southwestern Pennsylvania Chapter of ACS and the Gift of Life Award from the National Kidney Foundation of Western Pennsylvania and was named Man of the Year (1998) in Science by Vectors of Pittsburgh. He was selected by Archives of Surgery as one of two dozen 20th-century surgeons who have made significant contributions to surgery, and in 2001, ACS dedicated the Surgical Forum to Simmons. In 2004. Simmons received the Medawar Prize for his work in transplantation immunology and infectious disease. He was awarded the Thomas E. Starzl Prize in Surgery and Immunology in 2005 and the Lifetime Achievement Award from the Society of University Surgeons in 2010. The Allegheny County Medical Society Foundation honored Simmons with the Ralph C. Wilde Leadership Award in March 2014. Most recently. Simmons was awarded the Pioneer Award from the American Society of Transplant Surgeons and the Scientific Medallion from the American Surgical Association. Simmons is past chair of the Surgical Forum and past president of the Society of University Surgeons, American Society of Transplant Surgeons, and Surgical Infection Society. Simmons also has served as a member of the Board of Directors of the American Board of Surgery. He has authored or edited 15 books and more than 1.000 articles. In 1994, he was elected to the Institute of Medicine of the National Academies.

Simmons continues to serve the Department of Surgery as chair emeritus and as an advisor and mentor.



#### **Dr. Adil Haider MD, MPH, FACS** Dean, Aga Khan University Medical College Kanji Jamal Endowed Professor of Surgery and Community Health Sciences

Adil H. Haider is the Dean of Aga Khan University Medical College and Kanji Jamal Endowed Professor of Surgery and Community Health Sciences. He is a proud AKU Alumnus from the MBBS Class of 1998, after which he attained a Master in Public Health degree from the Johns Hopkins Bloomberg School of Public Health. He is a practicing Trauma and Acute Care surgeon who completed his residency training in General Surgery at New York Medical College/ Westchester Medical Center and fellowship training in Surgical Critical Care (2005-6) and Trauma and Acute Care Surgery (2006-7) at Johns Hopkins School of Medicine.

Upon completing his training, he joined the faculty at Johns Hopkins Medicine, where his team identified disparities in outcomes after traumatic injury and helped found the field of surgical disparities research. In 2010, he was promoted to Associate Professor and Director of the Center for Surgery Trials and Outcomes Research, where he developed several novel methods of studying surgical outcomes. In 2014, Dr Haider moved to Boston to become the Kessler Director of the Center for Surgery and Public Health, a joint initiative between Brigham and Women's Hospital, Harvard Medical School, and Harvard TH Chan School of Public Health.

Dr Haider has over 390 peer-reviewed publications to his credit and has been a Principal Investigator on extramurally funded research grants of over USD 20 million. He has served as a visiting professor at more than 30 universities and has held numerous leadership positions, including the Association for Academic Surgery President. Dr Haider has received more than 20 major awards, including the Ellis Island Medal of Honour (2017), the Diversity Leadership Award from Johns Hopkins University (2014), and the Joan L. and Julius H. Jacobson II Promising Investigator Award from the American College of Surgeons for clinical research (2013). He also continues to serve as the Deputy Editor of JAMA Surgery, the #1 scientific journal in the field.

In 2019, Dr Haider was appointed Dean of his Alma Mater, the AKU Medical College, now ranked amongst the top 100 globally for clinical medicine. In 2020, he also became the Chairman of the Academic Board of the Pakistan Medical Commission (Pakistan's medical and dental regulator). In addition, from 2020-22, he served as a member of the Prime Minister of Pakistan's National Task Force on Health, which has a broad mandate to reform health delivery and health education across all sectors in Pakistan.

## Schedule

7-8 a.m.	Breakfast
7:30-8 a.m.	Poster Viewing 1
8-9 a.m.	Richard L. Simmons Lecture in Surgical Science
	"Leading the Way: Applying American Surgical Leadership Principles to Improve Health Care For All"
	<b>Dr. Adil Haider MD, MPH, FACS</b> Dean, Aga Khan University Medical College Kanji Jamal Endowed Professor of Surgery and Community Health Sciences
9-9:30 a.m.	Poster Viewing 2 / Break
9:30-10:45 a.m.	Oral Presentations, Session 1
10:45-11:15 a.m.	Poster Viewing 3 / Break
11:15 a.m12:30 p.m.	Oral Presentations, Session 2
12:30 p.m.	Closing Remarks <b>Timothy R. Billiar, MD</b>
12:30-2 p.m.	Lunch

## Session 1

Long Oral Presentations (10-minute talk followed by 5 minutes for discussion)

9:30-9:45 a.m.	<b>David Silver, MD, MPH</b> Experience Matters: The Volume Outcome Link in Trauma for EMS (VOLT-EMS)
9:45-10 a.m.	<b>Christof Kaltenmeier, MD</b> Co-inhibition of inducible nitric oxide synthase (iNOS) and cyclooxygenase 2 (COX2) promotes T cell function and inhibits hepatocellular cancer (HCC) growth via activation of the CD112/ CD226 pathway Mentor: <b>Kaltenmeier</b>
10-10:15 a.m.	<b>Andrew Sayce, MD, DPhil</b> The Unfolded Protein Response in Trauma and Sepsis Mentor: <b>Billiar/Rosengart</b>
10:15-10:30 a.m.	<b>Shravan Leonard-Murali, MD</b> Uveal Melanoma Immunogenomics Predict Immunotherapy Resistance and Susceptibility Mentor: <b>Kammula</b>
10:30-10:45 a.m.	<b>Mohammadreza Zarisfi, MD</b> Long wavelength light exposure reduces systemic inflammation and acute organ injury following polytrauma in mice

Mentor: Neal

## Session 2

Long Oral Presentations (10-minute talk followed by 5 minutes for discussion)

11:15-11:30 a.m. Ruigi Yang Exercise training prevents exosome mediated pre-metastatic niche formation in the liver Mentors Vazdani/Tohme 11:30-11:45 a.m. Yekaterina Khamzina, MD Derivation and Validation of the Risk Analysis Index Frailty Score Using Administrative Data Mentor: Reitz 11:45-noon Caleb King, MD Breast-Enhanced Recovery After Surgery Protocol Decreases Opioid Usage, Anti-Emetic Requirement and Hospital Length of Stay in Patients Undergoing Total Mastectomy Without Reconstruction Mentor: **Diego** noon-12:15 p.m. Dana Meshkin, BSN Income inequality is associated with mortality but not incidence of colorectal cancer outside of major metropolitan areas Mentor: Tessler 12:15-12:30 p.m. Katrina Morgan, MD "Social Determinants of Adolescent Firearm Injury in Western Pennsylvania"? Mentor: Leeper

## Poster Viewing 1 7:30-8 a.m

## Basic Science 1 / Ballroom A (left)

### Tony Haykal, MD

Neutrophil Extracellular Traps induced by surgical stress regulate cancer metabolism leading to tumor growth. Mentor: **Tohme** 

### Tony Haykal, MD

Surgery promotes long-lasting protumorigenic changes in bone marrow derived cells leading to increased cancer growth. Mentor: **Yazdani** 

### Renee Anderko, PhD

Patient-derived tumor organoids: toward personalized therapeutic selection in PDAC. Mentor: **Zureikat** 

### Anna Ramos, MD

cGAS is a Key Regulator of Mitochondrial Dynamics in the Intestinal Epithelium during Inflammation. Mentor: **Mollen** 

### Sidrah Khan, MD / Nazih Bizri, MD

Intestinal Epithelial cGAS Deficiency is Associated with Decreased Intestinal Autophagy and Increased Intestinal Epithelial Tumorigenesis. Mentor: **Kahn** 

## Basic Science 4 / Ballroom B (left)

### Haotong Zhang

Intraabdominal Polymicrobial Sepsis Suppresses Interferon Responses in Immune Cells. Mentor: **Billiar** 

### Yusuf Surucu, MD

Early-Onset Metformin Regimen Inhibits Radiation-Induced Fibrosis In Mice Model. Mentor: **Soran** 

### Joud Mulla, MS

Endothelial cell caspase-11 regulates IL-6-mediated inflammation and organ damage in mice following severe injury. Mentor: **Scott** 

### Mehves Ozel, MD

Single Cell RNA Sequencing Analysis of Age Dependent Response to Major Elective Surgery and Polytrauma. Mentor: **Billiar** 

### Rohan Kulkarni, MD

Purinergic Receptor P2Y6 Mediates Perfusion Recovery After Femoral Artery Ligation. Mentor: **McEnaney** 

## Clinical Science 1 / Ballroom A (right)

#### Jack Donohue, BA

Mechanism Matters: An Investigation into the risk of Mortality and Inflammatory Biomarker Differences Between Blunt and Penetrating Traumatic Injuries. Mentor: **Sperry** 

#### Tanner Wilson, MD

Gastrointestinal Bleeding Reinforcement Learning Agent for Blood Product Transfusion

#### Stuthi Shankar Iyer, BA

Peripheral Artery Disease Prevalence Among Adults with Sepsis. Mentors: Reitz/Marron

#### Jia Yu, BS (Katya Khaminza, MD presenting)

The Association Between Frailty and Outcomes Following Ruptured Abdominal Aortic Aneurysm Repair. Mentors: **Reitz/Tzeng** 

### Jamison Beiriger, BS

Where you get hurt matters: Impact of geography and EMS system resource availability on air medical transport after trauma. Mentor: **Brown** 

## Clinical/Disparities/Education / Ballroom B (right)

### Alison Althans, MD

Exploring barriers to giving and receiving quality feedback on the surgery clerkship: a group concept mapping approach. Mentor: **Myers** 

### Alison Althans, MD

Use of perioperative lidocaine as part of an abdominal surgery ERP does not significantly impact postoperative pain. Mentor: **Holder-Murray** 

### Nerone Douglas, BS, MSc

Are We Speaking The Same 'Language' Regarding Groups URiM And Increasing Diversity Within The Field of Plastic Surgery? Mentor: **Egro** 

### Nikita Desai, BS

Neurocognitive skills underlying technical surgical performance. Mentor: Littleton

#### Callie Hlavin, MD, MPH

Predictors of Hernia Recurrence After Concomitant Laparoscopic Ventral Hernia Repair and Bariatric Surgery. Mentor: **Courcoulas** 

## **Poster Viewing 2**

9-9:30 a.m

## Basic Science 2 / Ballroom A (left)

## Meredith Rosa Flanagan, BS

Urolithin-A improves intestinal inflammation severity by restoring mitochondrial bioenergetics

### Bowen Xie, MD

AIM2 Inflammasome Deters Myogenic Potential of Muscle Satellite Cells in Peripheral Arterial Disease (PAD) and Serves as a Therapeutic Target to Attenuate Myopathy. Mentor: **Sachdev** 

### Xuejing Sun

Evidence that GasderminD Contributes to the Systemic Release of Cellular Metabolites after Hemorrhagic Shock with Tissue Trauma in Mice and Humans. Mentor: **Billiar** 

### Sultan Abdelhamid, MD (Jack Killinger presenting)

Gasdermind, A Pyroptosis Effector Molecule, Drives Changes In Circulating Proteins After Hemorrhagic Shock And Tissue Trauma. Mentor: **Billiar** 

### Alexander Kreger, MD

Chemical Pancreatectomy Treats Diet-Induced Pancreatitis and Pancreatogenic Diabetes. Mentor: **Gittes** 

## Basic Science 5 / Ballroom B (left)

### Lauren Rosenblum, MD, PhD

Intraoperative Molecular Imaging with 111In-dinutuximab-IR800 in a Rat Model of Neuroblastoma

### Devin Michael Dishong, BS

Use of a Microfluidic Model to Evaluate Platelet Function in Traumatic Brain Injury Patients Pre- and Post- Platelet Transfusion. Mentor: **Shea** 

### Nijmeh Alsaadi, MD

Effect of Plasma-derived Exosomes Resuscitation in A Murine Model of Hemorrhagic Shock

### Katelin Rahn, BS

Comparison of Platelet Quality and Hemostatic Function Across Apheresis Collection Platforms

### Rassam Rassam, BS/MS

A Novel Microfluidic Model of Ischemic Stroke Recapitulating Arterial Occlusion and Prolonged Retraction. Mentor: **Shea** 

## Clinical Science 2 / Ballroom A (right)

### Daryl Fields, MD, PhD

Cerebral spinal fluid 5-hydroxyindoleacetic acid levels increase with traumatic spinal cord injury and secondary hypo-perfusion insults

### Daryl Fields, MD, PhD

Pre-injury frailty best predicts one year mortality in older adults with traumatic spinal column fractures

### Ahmed Hamed, MD

Predicting Early Recurrence to Optimize Patient Selection for Cytoreductive Surgery-Hyperthermic Intraperitoneal Chemotherapy in High-Grade Appendiceal Mucinous Carcinoma Peritonei. Mentor: **Choudry** 

#### Ahmed Hamed, MD

Application of a User-Friendly Interactive Clinical Interface to Advance Real-Time Decision-Making for Cytoreductive Surgery-Hyperthermic Intraperitoneal Chemotherapy Mentor: **Choudry** 

### Kazim Senol, MD

Lymphedema early detection, prevention, and tailored therapy: reduced infection and hospitalization. Mentor: **Soran** 

## Clinical Science 4 / Ballroom B (right)

#### Mario Alessandri Bonetti, MD

A 12-Year Experience In Lower Extremity Acute Burns Reconstruction. Mentor: Egro

### Suchet Taori, BA

Gamma Knife stereotactic radiosurgery to treat patients with brain metastases from gastroesophageal primary cancers. Mentor: **Lunsford** 

### Tiffany Jeong, MS

14 Year Experience in Burn Eyelid Surgery- A Single Center Retrospective Cohort Study. Mentor: **Egro** 

### Yusuf Surucu, MD

Protein Calorie Malnutrition is Associated with Higher Risk for Amputation in Diabetic Patients with Lower Extremity Ulcers. Mentor: **Parent** 

### Lara Hoteit, MD

Evaluating platelet function post transfusion with cold-stored vs room temperature platelets in patients with traumatic brain injury. Mentor: **Neal** 

## **Poster Viewing 3** 10:45-11:15 a.m

## Basic Science 3 / Ballroom A (left)

### Celine Tohme, MS

ZLN005: A Surrogate for Exercise, Protects the Liver against Ischemia Reperfusion Injury and Metastatic Progression. Mentors: **Yazdani/Tohme** 

### Ruiqi Yang

Characterizing the role of Paired Immunoglobin Receptor (PIR) B in murine models of acute and chronic liver injury. Mentor: **Tohme/Yazdani** 

### Lillian Tran, MD (Edwyn Assaf, MD presenting)

Transcriptomic profiling identifies ferroptosis as a novel targetable pathway occurring in ischemic muscle satellite cells affected by peripheral arterial disease. Mentor: **Sachdev** 

### Suchet Taori, BA

LBR regulates cholesterol biosynthesis and DNA damage response for glioma stem cell maintenance. Mentor: **Rich** 

### Edwyn Assaf, MD

Thrombin-activated platelet releasate reduces myoblast fusion capacity in muscle cells affected by peripheral artery disease. Mentor: **Sachdev** 

## Basic Science 6 / Basic Science 5 / Ballroom B (left)

### Reem Younes, MD

A rapid ABO and RhD test demonstrates high fidelity to blood bank testing for RhD typing

### Reem Younes, MD

Tranexamic Acid increases the cleavage of UL-vWf In a Murine Hypovolemic Shock Model

### José Antonio Arellano, MD

Establishment and Optimization of Long-Term Human Skin Perfusion Model as a Research Tool. Mentor: **Ejaz** 

### Mouhamad Al Moussawy

Activated memory T cells cross-talk to naïve T cells: A mechanism for generation of autoreactive T cells

### Jennifer Darby, MD

Preserved Mitochondrial Activity in Hemorrhagic Shock + Trauma (HS/T) After Exercise. Mentor: **Billiar** 

## Clinical Science 3 / Ballroom A (right)

#### **Neil Carleton**

An Electronic Medical Record-Based Nudge to Reduce Low-Value Axillary Surgery in Older Women with Breast Cancer. Mentor: **McAuliffe/Lee** 

### **Neil Carleton**

Prevalence and dynamics of circulating tumor DNA (ctDNA) in older women with ER+ breast cancer who forego surgery in favor of primary endocrine therapy: a prospective, feasibility study. Mentor: **McAuliffe/Lee** 

### Caleb King, MD

Decision making on postmastectomy radiation therapy for patients with T3N0M0 luminal breast cancer. Mentor: **Soran** 

### Hilary Liu, BS

Scar Contracture Recurrence After Axillary Burn Reconstruction: A Retrospective Review of a Single Institution's 13-Year Experience. Mentor: **Egro** 

### Hilary Liu, BS

Bibliometric Analysis of the 50 Most Cited Papers on Body Contouring After Massive Weight Loss. Mentor: **Egro** 

## Basic Science 7 / Ballroom B (right)

### **Refael Munitz**

The use of a Microfluidic Transection Model to Evaluate Coagulopathies and Hemostatic Resuscitation in Trauma. Mentor: **Shea** 

### Nijmeh Alsaadi, MD (Justin Curtis presenting)

Gasdermin D Regulates Immunothrombosis in a Murine Polytrauma Model. Mentor: Scott

### Marissa Jarosinski, MD

Dual-antiplatelet therapy prevails over low-dose rivaroxaban following lower extremity endovascular revascularization. Mentor: **Tzeng** 

### Ashti Milan Shah, BS

Analytical Dynamic Visual Spatial -Omics Representation (ADViSOR): A computational pipeline for the discovery of functional gene modules in liver regeneration. Mentor: **Vodovotz** 

### Bashar Al Matour, MD

The Effect of Endocytosis Inhibitor on Matrix Bound Nanovesicles Uptake in Hepatic Murine Cells. Mentor: **Scott** 

## **Past Lecturers**

#### 2003

#### "Hyperosmolar Solutions for Fluid Resuscitation During Critical Illness" Ori D. Rotstein, MD

Professor of Surgery, Department of Surgery University of Toronto

#### 2004

#### "The Inflammatory Reflex" Kevin J. Tracey, MD

Professor and Director, Center for Patient-Oriented Research Program Director, General Clinical Research Center

North Shore-LIJ Research Institute

#### 2005

#### "Why Are You Killing My Patient?" Michael B. Yaffe, MD, PhD

Associate Professor of Biology Massachusetts Institute of Technology

#### 2006

#### "Reparative and Regenerative Medicine: A Surgeon's Perspective"

Michael T. Longaker, MD, MBA, FACS Deane P. and Louise Mitchell Professor Director, Children's Surgical Research Program Deputy Director, Institute of Stem Cell Biology and Regenerative Medicine Director, Program in Regenerative Medicine Stanford University School of Medicine

#### 2007

#### "How Microbial Pathogens Sense Host Stress and Respond Accordingly" John C. Alverdy, MD, FACS

John C. Alverdy, MD, PACS Professor of Surgery Director, Minimally Invasive/Bariatric Surgery University of Chicago

#### 2008

#### "VEGF and VEGF Receptors in CRC: Beyond Angiogenesis" Lee M. Ellis, MD, FACS

Professor of Surgery and Cancer Biology William C. Liedtke Jr. Chair in Cancer Research Chair, Ad Interim, Department of Cancer Biology University of Texas MD Anderson Cancer Center

#### 2009

#### "Liver Translational Research: The Bench Work Does Matter" David A. Geller, MD Professor of Surgery Codirector, UPMC Liver Cancer Center University of Pittsburgh

#### 2010

"Enhancing Vein Graft Patency: From the Molecular to the Obvious" Colleen M. Brophy, MD Professor of Surgery Division of Vascular Surgery Vanderbilt University

#### 2011

"Memory, Surgery, and Surgical Research" Daniel R. Meldrum, MD, FACS, FAHA Professor of Surgery and Physiology Section of Cardiothoracic Surgery Indana University School of Medicine

#### 2012

#### "Advancing Translational Research in Pancreatic Cancer"

Diane M. Simeone, MD Lazar J. Greenfield Professor of Surgery and Molecular and Integrative Physiology Chief, Division of HPB and Advanced Gastrointestinal Surgery University of Michigan Health System

#### 2013

#### "Regenerative Medicine: Current Concepts and Changing Trends" Anthony Atala, MD

Director, Wake Forest Institute for Regenerative Medicine W.H. Boyce Professor and Chair, Department of Urology-Wake Forest School of Medicine

#### 2014

#### "Small Molecules for Small Patients: A Surgical Journey into the Pathogenesis and Treatment of Necrotizing Enterocolitis"

David J. Hackam, MD, PhD, FACS Watson Family Professor of Surgery Associate Dean for Medical Student Research Professor of Surgery and Cell Biology and Physiology, University of Pittsburgh School of Medicine

Codirector, Fetal Diagnosis and Treatment Center, Children's Hospital of Pittsburgh of UPMC

#### 2015

#### "The Challenges and Rewards of Translational Research-One Surgeon's Journey" Melina R. Kibbe, MD, FACS, FAHA

Professor and Vice Chair of Research Edward G. Elcock Professor of Surgical Research Department of Surgery, Northwestern University

#### 2016

## "Trauma Care: A Case Study in Translating Research into Policy"

Avery B. Nathens, MD, PhD, FRCS(C) Surgeon-in-Chief, Sunnybrook Health Sciences Centre Professor of Surgery, University of Toronto DeSouza Chair in Trauma Research

#### 2017

#### "Gut Integrity in Sepsis"

Craig M. Coopersmith, MD, FACS, FCCM Professor and Vice Chair, Surgery Emory University School of Medicine Director, 5E Surgical ICU Associate Director, Emory Critical Care Center

#### 2018

#### "Considerations on the Creative Process in Clinical Problem Solving" Elliot L. Chaikof, MD, PhD

Surgeon in Chief, Beth Israel Deaconess Medical Center Chair, Roberta and Stephen R. Weiner Department of Surgery Johnson and Johnson Professor of Surgery Harvard Medical School

#### 2019

#### "New Approaches to Pancreatic Cancer Immunotherapy" George Miller, MD

H. Leon Pachter Professor Departments of Surgery and Cell Biology Leader, Cancer Immunology Program New York University (NYU) School of Medicine

#### 2020

#### "Bench to Bedside: 1) Congenital Diaphragmatic Hernia; 2) Chronic Pancreatitis; 3) Diabetes Mellitus"

George K. Gittes, MD

Benjamin R. Fisher Chair of Pediatric Surgery, Professor of Pediatric Surgery and Pediatrics, and Chief of Pediatric General and Thoracic Surgery, Department of Surgery, University of Pittsburgh School of Medicine

Surgeon in Chief Emeritus and Scientific Codirector of Research, UPMC Children's Hospital of Pittsburgh Director, Richard King Mellon Foundation Institute for Pediatric Research

#### 2021

#### "What We Become"

Yolonda L. Colson, MD, PhD Hermes C. Grillo Professor of Surgery, Harvard Medical School Chief, Division of Thoracic Surgery, Massachusetts General Hospital

#### 2022

#### "Chasing Cure of a GI Cancer" Ronald P. DeMatteo, MD, FACS

John Rhea Barton Professor of Surgery Chair, Department of Surgery Penn Medicine

## University of Pittsburgh Clinical and Translational Science Institute (CTSI)

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