



The 3rd **Acute Kidney Injury: From Bench to Bedside** Conference The Impact of Computational Biology and Artificial Intelligence in AKI Research

Sunday, May 4 – Wednesday, May 7, 2025

Lansdowne Resort, Leesburg, VA

All events will take place in the Terrace Ballroom and Foyer unless noted otherwise.

Conference Co-Chairs

Mark de Caestecker, MBBS, PhD, Vanderbilt University Medical Center

Kelly Hyndman, PhD, University of Alabama at Birmingham

Leah Siskind, PhD, University of Louisville

Sunday, May 4

Registration (3-8 p.m.)

Welcome Reception (5-6 p.m.), Dinner (6-8 p.m.), and Keynote (7-7:40 p.m.)

- Past, Present, and Future of Big Data in AKI Research – *Benjamin Humphreys, MD, PhD, Washington University in St. Louis*

Monday, May 5

Breakfast (7-8 a.m.) – *Riverside Terrace*

Session 1: Interrogating Human Disease – Part 1 (8-9:50 a.m.)

Chair: *Tahagod Mohamed, MD, Nationwide Children's Hospital*

- Artificial Intelligence for AKI Risk Classification and Phenotyping – *Javier Neyra, MD, MS, University of Alabama at Birmingham*
- Transcriptional Networks in Human Kidney Diseases – *Jennifer Schaub, MD, University of Michigan*
- Selected short talks by trainees/junior faculty:
 - Natural Killer Cells in Acute Cardiorenal Syndrome – *Kevin Burfeind, MD, PhD, Oregon Health & Science University*
 - Defining Proximal Tubule-Metabolite Interactions in AKI via an Integrated Metabolomics and Graph Neural Network Pipeline – *Meltem Su, BA, University of California, Berkeley*
 - Leveraging Machine Learning for the Development and Validation of Neonatal AKI Prediction Model (KID-GUARD): A Comprehensive Evidence Based Neonatal AKI Risk Stratification Tool – *Tahagod Mohamed, MD, Nationwide Children's Hospital*

Break (9:50-10:20 a.m.)

Session 2: Clinical Trials and Biomarker Discovery – Part 1 (10:20 a.m. – 12:40 p.m.)

Chair: *Kavita Mistry, MD, PhD, Beth Israel Deaconess Medical Center*

- Biomarker Discovery – *Joseph Bonventre, MD, PhD, Brigham and Women's Hospital*
- Use of Biomarkers in Interventional Trials for Sepsis and AKI – *John Kellum, MD, University of Pittsburgh, Spectral Medical*
- Functional Biomarkers of Tubular Injury – *Navjot Pabla, PhD, Ohio State University*
- Monitoring GFR in Real Time on the ICU – *Stuart Goldstein, MD, Cincinnati Children's Hospital*
- Selected short talks by trainees/junior faculty:
 - Urinary Single-Cell RNA Sequencing Detects Immune Cell Populations Present in Inflamed Kidney Tissue in Patients with Immune Checkpoint Inhibitor-Associated Nephritis – *Kavita Mistry, MD, PhD, Beth Israel Deaconess Medical Center*
 - Brain-Derived Neurotrophic Factor (BDNF) as a Potential Biomarker in AKI – *Cheng Xue, MD, PhD, Shanghai Changzheng Hospital*

Lunch (12:40-2 p.m.) – *Riverside Terrace*

Monday, May 5 (continued)

Session 3: Disease Models – Part 1 (2-4 p.m.)

Chair: *Sophia Sears, PhD, University of Louisville*

- Immune Cells and Kidney Organoids – *Jack Song, PhD, University of Alabama at Birmingham*
- Fish and Organoids: Comparative Insights into AKI – *Neil Hukriede, PhD, University of Pittsburgh*
- Mitochondrial Therapeutics in AKI – *Amandeep Bajwa, PhD, University of Tennessee, Memphis*
- Aging and AKI – *Monica Chang-Panesso, MD, Washington University in St. Louis*
- Selected short talk by trainee/junior faculty:
 - Developmental Windows of Susceptibility to Neonatal AKI and Failed Repair – *Meredith Schuh, MD, Cincinnati Children's Hospital*

Break (4-4:30 p.m.)

Session 4: Patient Advocacy (4:30-5:45 p.m.)

Chair: *Kelly Hyndman, PhD, University of Alabama at Birmingham*

- Advancing Health Equity for Kidney Diseases – *Deidra Crews, MD, ScM, Johns Hopkins University*
- Health Inequities in Kidney Transplantation: A Personal Story – *Ken Sutha, MD, PhD, Stanford University*

Dinner (6-7:30 p.m.) – Outdoor Terrace

Poster Session with Refreshments (7:30-9 p.m.) – Terrace Ballroom

Tuesday, May 6

Breakfast (7-8 a.m.) – Riverside Terrace

Posters available for viewing (8 a.m. - 5 p.m.)

Session 5: Clinical Trials and Drug Discovery – Part 2 (8-10 a.m.)

Chair: *Mark de Caestecker, MBBS, PhD, Vanderbilt University Medical Center*

- Challenges Conducting Clinical Trials of AKI – *Paul Palevsky, MD, University of Pittsburgh*
- Experiences with AKI Clinical Trial Design – *Sudarshan Hebbar, MD, CalciMedica, Inc.*
- Regulatory Requirements – *Rekha Kambhampati, MD, MHS, FDA (CDER)*
- Pragmatic Trials in Nephrology – *Laura Dember, MD, University of Pennsylvania*
- Selected short talk by trainee/junior faculty:
 - Clustering Analysis of Multi-Site Electronic Health Records Reveals Distinct Subphenotypes in Stage-1 AKI – *Deyi Li, MS, University of Florida*

Break (10-10:30 a.m.)

Session 6: Highly Dimensional Image Analysis (10:30 a.m. - 12:50 p.m.)

Chair: *James Odum, MD, University of Alabama at Birmingham*

- Using Machine Learning for Image Analysis – *Yuankai Huo, PhD, Vanderbilt University*
- Quantitative 3D Image Analysis of the Kidneys – *Chetan Poudel, PhD, University of Washington*
- Computational Analysis of Cellular Neighborhoods in Cancer – *John Hickey, PhD, Duke University*
- Spatial Transcriptomics of the Kidneys – *Benjamin Humphreys, MD, PhD, Washington University in St. Louis*
- Selected short talks by trainees/junior faculty:
 - Neuroimmune SUMOylation and ACE2 Shedding: Underexplored Mechanisms with Therapeutic and Prognostic Implications in AKI – *Bilal Khan Mohammed, MD, MBBS, Northwestern University*
 - Using Spatial Transcriptomic Profiling to Characterize Murine Renal Endothelial Heterogeneity Early in Sepsis-Associated AKI – *James Odum, MD, University of Alabama at Birmingham*

Lunch and Free Time (12:50-5 p.m.) – Riverside Terrace

Optional Hiking Activity (2-4 p.m.) – meet 2 p.m. at Terrace Ballroom Foyer to depart; water and light refreshments provided

Session 7: Roundtable Discussion about Clinical Trials in AKI (5-6 p.m.)

Chair: *John Kellum, MD, University of Pittsburgh, Spectral Medical*

Panelists:

- *Nicholas King, MS, Critical Path Institute (C-Path)*
- *Aliza Thompson, MD, MS, FDA (CDER)*
- *Olivier van Till, MD, PhD, PharmMed, Novartis*

Reception (6-7 p.m.) and Dinner (7-9 p.m.) – Outdoor Terrace

Breakfast (7-8 a.m.) – *Riverside Terrace*

Session 8: Interrogating Human Disease – Part 2 (8-9:50 a.m.)

Chair: *Leah Siskind, PhD, University of Louisville*

- Using Machine Learning for Molecular Phenotyping in the ICU – *Pratik Sinha, MD, PhD, Washington University in St. Louis*
- Integrating Highly Dimensional Clinical and Molecular Data in the Kidney for KPMP – *Matthias Kretzler, MD, University of Michigan*
- Selected short talks by trainees/junior faculty:
 - Calcineurin Inhibition Deactivates Pyruvate Dehydrogenase and Induces Proximal Tubule Cell Metabolic Dysfunction, Causing Profibrotic Phenotype – *Yasuhiro Oda, MD, PhD, University of Tokyo*
 - Targeting Methylthioadenosine Phosphorylase for Renoprotection in AKI – *Afaf Saliba, PhD, University of Texas Health Science Center at San Antonio*
 - Examining NAD⁺ Production and Consumption Imbalances and the Potential Protective Roles of NAD⁺ Supplements in AKI – *Praveena Prasad, MS, Pennsylvania State University*

Break (9:50-10:20 a.m.)

Session 9: Disease Models – Part 2 (10:20 a.m. – 12:40 p.m.)

Chair: *Jeffrey Beamish, MD, PhD, University of Michigan*

- Failed Repair after AKI – *Shayna Bradford, PhD, Northwestern University*
- Nerve-Kidney Interactions in AKI – *Mark Okusa, MD, University of Virginia*
- Cardiorenal Syndromes – *Michael Hutchens, MD, MA, Oregon Health & Science University*
- Large Animal Models of Trauma-Associated AKI – *David Burmeister, PhD, Uniformed Services University*
- Selected talks by trainees/junior faculty:
 - Adeno-Associated Virus-Based Hemopexin Therapy Attenuates Sepsis-Induced Kidney Injury in a Humanized Mouse Model of Sickle Cell Disease – *Olufunke Falayi, MS, University of Missouri*
 - Pax8 Inactivation in the Proximal Tubule Confers Resilience to Ischemic Stress – *Jeffrey Beamish, MD, PhD, University of Michigan*

Boxed Lunch and Departures (12:40 p.m.)

Workforce Development Program for Trainees and Junior Faculty

All events will take place in the Terrace Ballroom and Foyer unless noted otherwise.

Wednesday, May 7 (1-7 p.m.)

Lunch with Conference Faculty (1-2 p.m.)

Session 1: Mentoring, Supporting, and Developing Diversity in Science (2-2:45 p.m.)

Chair: *Deidra Crews, MD, ScM, Johns Hopkins University*

Discussion facilitators:

- *Amandeep Bajwa, PhD, University of Tennessee, Memphis*
- *Shayna Bradford, PhD, Northwestern University*

Session 2: Writing and Publishing: Selling Your Science and Other Insider Tricks (3-3:45 p.m.)

Chair: *Ellen Carney, PhD, Nature Nephrology Reviews*

Discussion facilitators:

- *Benjamin Humphreys, MD, PhD, Washington University in St. Louis*
- *Kelly Hyndman, PhD, University of Alabama at Birmingham*

Session 3: Roundtable Discussions (4-4:30 p.m.) - choice of one topic

Topic 1: Non-Academic Careers in Science

- *Ellen Carney, PhD, Nature Nephrology Reviews*
- *Sudarshan Hebbar, MD, CalciMedica, Inc.*
- *Olivier van Till, MD, PhD, PharmMed, Novartis*

Topic 2: Collaborating with Industry

- *Joseph Bonventre, MD, PhD, Brigham and Women's Hospital*
- *Stuart Goldstein, MD, Cincinnati Children's Hospital*
- *John Kellum, MD, University of Pittsburgh, Spectral Medical*

Session 4: Imposter Syndrome (4:45-5:30 p.m.)

Chair: *Maureen Gannon, PhD, Vanderbilt University (via Zoom)*

Discussion facilitators:

- *Kelly Hyndman, PhD, University of Alabama at Birmingham*
- *Leah Siskind, PhD, University of Louisville*

Session 5: Assembling a Research Group: Hiring, Recognizing Talent, and Mentoring (5:45-6:30 p.m.)

Chair: *Benjamin Humphreys, MD, PhD, Washington University in St. Louis*

Discussion facilitators:

- *Stuart Goldstein, MD, Cincinnati Children's Hospital*
- *Mark Okusa, MD, University of Virginia*

Dinner and Networking with Conference Faculty (7-9 p.m.) - Pavilion

Poster Presentations

- Characterization of a Novel Macrocyclic Molecular Glue That Selectively Inhibits the Nucleoside Transporter, ENT1, and Demonstrates Tissue Protection in Ischemic-Reperfusion AKI In Vivo – *Matthew Olson, PhD, Rapafusyn Pharmaceuticals*
- Cold Storage-Induced Proteasome Dysfunction in Rat Kidney Transplants: A Plausible Role of p38mapk Signaling – *Dinesh Bhattarai, PhD, University of Arkansas for Medical Science*
- Cyp7b1 Downregulation Leads to Accumulation of 27-Hydroxycholesterol Sensitizing Proximal Tubular Epithelial Cells to Ferroptosis in Ischemic AKI – *Yilin Zhang, MD, PhD, Harvard Medical School*
- Deleting Tubular Foxo3 Protects Against AKI – *Husam Kivan, MD, Washington University in St. Louis*
- Discovery of MARY1: A Novel, Potent, and Selective 5-Hydroxytryptamine 2B Receptor Antagonist Induces Mitochondrial Biogenesis and Restores Renal Function Following AKI – *Paul Victor Santiago Raj, MS, University of Arizona*
- Distal Convoluted Tubule (DCT)-Specific Disruption of the COP9 Signalosome Induces Autophagy Leading to Kidney Injury – *Ryan Cornelius, PhD, Oregon Health & Science University*
- Dynamic Endocannabinoid/Cannabinoid-1 Receptor Response Guides Therapeutic Targeting in AKI and Its Maladaptive Repair – *Ariel Rothner, MSc, Hebrew University of Jerusalem*
- Dynamics of TREM2 Receptor in AKI – *Sarah Miller, PhD, University of Oklahoma Health Sciences Center*
- HDAC1 Modulates the Cell Cycle and Proliferation of Fibroblast During Renal Interstitial Fibrosis – *Huy Nguyen, MS, University of Alabama at Birmingham*
- Interplay of Myeloid Ferritin and Alpha-Synuclein in Kidney Disease – *Tanima Chatterjee, PhD, University of Alabama at Birmingham*
- Myeloid Ferritin Drives AKI-Mediated Disease Progression – *Subhashini Bolisetty, PhD, University of Alabama at Birmingham*
- Myocardial Infarction-Induced Cardiorenal Syndrome: Acute Adaptations Yield Long-Term Consequences – *Sophia Sears, PhD, University of Louisville*
- Novel Androgen Receptor PROTAC Degradar ARV-110 Ameliorates Androgen Mediated Renal Injury in a Mouse Model of Polycystic Ovary Syndrome – *Jelina Basnet (PhD candidate), University of Mississippi Medical Center*
- Regenerative vs. Non-Regenerative Repair of the Inner Medulla After Reversal of Urinary Obstruction – *Mark de Caestecker, MBBS, PhD, Vanderbilt University Medical Center*
- Role of Mitochondrial Fatty Acid Oxidation in the Tubular Response to AKI – *Safaa Hammoud, PhD, Washington University in St Louis*
- Role of the AP-1 Transcription Factor Complex in Mediating an Acute Injury Response in a Human Kidney Organoid Model of Cisplatin-Induced Injury – *Alan Davidson, PhD, University of Auckland*
- Sex-Based Differences in Cisplatin-Induced Nephrotoxicity – *Dianet Sanchez Vega, MS (PhD candidate), University of Louisville*
- Targeting Mitochondria to Reverse Maladaptive Repair and Prevent the Transition from AKI to CKD – *Tomofumi Moriyama, MD, PhD, Vanderbilt University Medical Center*
- Targeting STAT3 Signaling as a Novel Therapeutic Strategy to Restore Renal Mitochondrial Function and Alleviate Kidney Injury in Polycystic Ovary Syndrome – *Samar Rezaq, PhD, University of Mississippi Medical Center*
- Temporal Expression Patterns of Cytosolic Redox Proteins in the Mouse Kidney After Unilateral Ischemia-Reperfusion Injury – *Jose Godoy, DVM, PhD, Long Island University*



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Support for this independent program is provided by:



Cincinnati Children's Hospital Medical Center

DaVita

Spectral Medical

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UAB Medicine/Nephrology

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