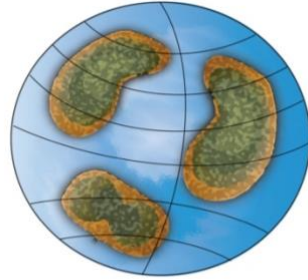


# **5<sup>TH</sup> CLINICAL AND SCIENTIFIC ADVANCES IN URINARY TRACT INFECTIONS**

**Hyatt Regency Hotel  
Columbus, Ohio  
July 19-21, 2024**



**NATIONWIDE CHILDREN'S**  
*When your child needs a hospital, everything matters.™*



*Urinary Tract Infection  
Global Alliance*

# 5<sup>th</sup> Clinical and Scientific Advances in Urinary Tract Infections

**July 19-21, 2024**

Hyatt Regency Columbus

**Friday, July 19**

3:00 – 7:00 pm

## **Registration**

**Foyer of the Hayes/McKinley Conference Rooms-First Floor**

4:00 – 5:45 pm

## **Opening Reception and Cash Bar**

5:45 – 6:00 pm

## **Welcome, Opening Remarks and Announcements**

**Joanne Turner**, PhD, Abigail Wexner Research Institute at Nationwide Children's

**Molly Ingersoll**, PhD, Institute Pasteur

## **Opening Keynotes:**

6:00 – 6:35 pm

### **Antibiotic resistant uropathogenic *E. coli* – it's all about the clones**

*Mark Schembri*, PhD, University of Queensland

6:35 – 7:10 pm

### **Recurrent UTI: Current concepts and future directions**

*Ann Stapleton*, MD, University of Washington

7:10 – 7:45 pm

### **Two's a party, three's a crowd? Implications of polymicrobial bacteriuria in patients with long-term catheters**

*Chelsie Armbruster*, PhD, University of Buffalo

## *Lifetime Achievement Presentation*

7:45 – 8:20 pm

### **UPEC: from MRHA to Gene Expression during UTI**

*Harry Mobley*, PhD, University of Michigan

## Saturday, July 20

7:00 am – 5:00 pm

### Registration

Foyer of the Hayes/McKinley Conference Rooms-First Floor

### Panel Discussion: Diagnosis of UTI

Moderator: *Barbara Trautner, MD, PhD, Baylor College of Medicine*

8:00 – 8:15 am

#### What is acute cystitis (in women) and how do we diagnose it?

*Nazema Siddiqui, MD, Duke University*

8:15 – 8:30 am

#### What is asymptomatic bacteriuria and how do we diagnosis it?

*Barbara Trautner, MD, PhD Baylor College of Medicine*

8:30 – 8:45 am

#### What is a contaminated urine culture, and how do we distinguish this from true bacteriuria?

*Thomas Mac Hooton, MD, University of Miami*

8:45 – 9:00 am

#### What is prostatitis, and how often does it occur with male cystitis?

*Dimitri Drekonja, MD, University of Minnesota*

9:00 – 9:10 am

#### Discussion

9:10 – 9:25 am

#### BREAK

### Session I: Microbial Pathogenesis

Moderator: *Sarguru Subash, DVM, PhD Texas A & M University*

9:25 – 9:45 am

#### Niche-specific requirements for UPEC during UTI

*Maria Hadjifrangiskou, PhD, Vanderbilt University Medical Center*

9:45 – 10:05 am

#### Gain of function enterococcal cytolysin targets bladder epithelial cells and the urinary microbiota

*Nicole De Nisco, PhD, University of Texas-Dallas*

10:05 – 10:25 am

#### Unveiling CAUTIs' Achilles heels to develop efficient intervention strategies

*Ana Flores-Mireles, PhD, Notre Dame University*

10:25 – 10:32 am

#### Delineating the Pathogenesis of *Pseudomonas aeruginosa* Urinary Tract Infections

*Seth Reasoner, Vanderbilt University Medical Center*

10:32 – 10:39 am

#### The effects of diabetes mellitus and sex on the susceptibility to urinary tract infection susceptibility

*Bidhan Gautam, University of Louisiana*

10:39 – 10:46 am

#### Dysregulated host fibrinolysis exacerbates catheter associated urinary tract infection severity and predisposes hosts to septicemia from mono- and polymicrobial infections

*Jonathan Molina, MS, University of Notre Dame*

## Session II: Treatment of UTI

Moderator: Christina Ching, MD, The Abigail Wexner Research Institute

- 10:50 – 11:10 am      **Avoiding the Blame Game: UTI Management in Individuals with Neurogenic Bladder**  
*Hillary Copp, MD, University of California San Francisco*
- 11:10 – 11:30 am      **Pediatric UTI - How Long to Treat?**  
*Joshua Watson, MD, Nationwide Children's Hospital*
- 11:30 – 11:50 am      **Morphological plasticity as a therapeutic target**  
*Sheryl Justice, PhD, The Ohio State University*
- 11:50 – 11:57 am      **Vaginal *Lactobacillus* directly inhibits and modulates host immune response to uropathogenic *E. coli* in a human vaginal epithelial organoid model**  
*Samantha Ottinger, MS, Baylor College of Medicine*
- 11:57 – 12:04 pm      **Dual function of N-acetyl cysteine in eradicating *P. aeruginosa* catheter-associated UTIs**  
*Arthika Manoharan, PhD, The University of Sydney*
- 12:04 – 12:11 pm      **Identification of A Copper-responsive Small Molecule Inhibitor of Uropathogenic *E. coli***  
*Braden Hanson, Texas A & M University*
- 12:11 – 1:00 pm      **LUNCH PROVIDED IN XXX**  
**“LUNCH AND LEARN” ALLIANCE FOR PATIENT-CENTERED UTI RESEARCH**  
**UTI HEALTH ALLIANCE, LIVE UTI FREE, CHRONIC UTI AUSTRALIA, CUTIC**

## Session III: Comorbidities with UTI

Moderator: John David Spencer, MD The Abigail Wexner Research Institute

- 1:00 – 1:20 pm      **Asymptomatic Bacteriuria and Urinary Tract Infection in pregnant women**  
*Suzanne Geerlings, MD, Amsterdam UMC, the Netherlands*
- 1:20 – 1:40 pm      **Urinary Tract Infections in renal transplantation**  
*Frederike Bemelman, MD, Amsterdam UMC, the Netherlands*
- 1:40 – 2:00 pm      **Urinary Tract Infections in pediatrics**  
*Emily Stonebrook, MD, Nationwide Children's Hospital*
- SUPER Summer Students*
- 2:00 – 2:05 pm      **Insulin Sensitization and UTI**  
*Drew Kauffman, Tulane University*
- 2:05 – 2:10 pm      **Urinary tract transcriptomic changes during UTI**  
*Rishil Patel, Ohio State University*
- 2:10 – 2:15 pm      **Phagocyte immune responses and UTI**  
*Macie Kercsmar, University of Tennessee*
- 2:15 – 2:20 pm      **Impact of diabetes of urinary antimicrobial peptides**  
*Natalie Holdsworth, Ohio University College of Medicine*

## Poster Session

2:20 – 4:15 pm

**Please visit Posters in the McKinley room**

## **Session IV: Immunological Responses to UTI**

*Moderator: Molly Ingersoll, PhD, Institut Pasteur*

4:15 – 4:35 pm

**Tissue-resident memory T cells mediate mucosal immunity to recurrent urinary tract infection**

*Matthieu Rousseau, PhD, Institut Pasteur*

4:35 – 4:55 pm

**The pros and cons of neutrophils in UTI**

*Katy Patras, PhD, Baylor College of Medicine*

4:55 – 5:15 pm

**Innate immune modulation to treat bacterial infections, including antibiotic-resistant strains**

*Inès Ambite, PhD, Lund University*

5:15 – 5:22 pm

**Neutrophil NADPH oxidase (NOX2) orchestrates immunity against urinary tract infections while fine-tuning inflammation via the Nrf2-Keap1 system**

*Israel Cotzomi-Ortega, PhD, Nationwide Children's Hospital*

5:22 – 5:29 pm

**Investigating the role of Irg1/itaconate axis in the epithelial and immune compartments of the aging bladder in response to a UTI**

*Adwaita Parab, MS, Baylor College of Medicine*

5:29 – 5:36 pm

**Insulin resistance deregulates kidney's innate immune defenses that may increase UTI risk**

*Vidhi Tyagi, PhD, Nationwide Children's Hospital*

5:40 – 6:30 pm

**Adjourn with Cash Bar and appetizers.**

## Sunday, July 21

7:00 am – 12:00 pm

### Registration

Foyer of the Hayes/McKinley Conference Rooms-First Floor

### Session V: Selected from Abstracts

Moderator: Laura Schwartz, PhD The Abigail Wexner Research Institute

8:00 – 8:15 am

**Characterize interactions between *Enterococcus faecalis* and *Klebsiella pneumoniae* in Polymicrobial Catheter-Associated Urinary Tract Infections**  
*Zongsen Zou, PhD Washington University in St. Louis*

8:15 – 8:30 am

**The microbial and biochemical ecology of the urogenital microbiome is associated with recurrent UTI in postmenopausal women**  
*Michael Neugent, PhD, The University of Texas at Dallas*

8:30 – 8:45 am

**The Ins and Outs of *Proteus mirabilis* Sugar Transport during Urinary Tract Infection**  
*Allyson Shea, PhD, University of South Alabama*

8:45 – 9:00 am

**Exploring the impact of polymicrobial biofilm communities in urinary tract infections (UTIs) using a urine-tolerant human urothelial organoid model (3D-UHU)**  
*Ramon Garcia Maset, PhD, University College of London*

9:00 – 9:15 am

**Sex Effects on Human Urine Regulate *Klebsiella pneumoniae* Capsular Polysaccharide Properties**  
*Brooke Ring, MPH, University of Toledo*

### Poster Session

9:15 – 10:30 pm

Please visit Posters in the McKinley room

### Session VI: New Frontiers in UTI

Moderator: Sheryl Justice, PhD, The Ohio State University

10:30 – 10:50 am

**Why are UTIs so hard to diagnose and treat? Hints from a human urothelial microtissue model**  
*Jennifer Rohn, PhD, University College London*

10:50 – 11:10 am

**Pain in autistic people: when pain communication could impede diagnosis.**  
*Michelle Failla, PhD, The Ohio State University*

11:10 – 11:30 am

**Neuro-immune interactions underlying bladder hypersensitivity during UTI.**  
*Luke Grundy, PhD, Flinders University*

11:30 – 11:50 am

**Psychological Perspectives on Recurrent UTI**  
*Anne Dawson, PhD, Nationwide Children's Hospital*

11:50 am

### Closing Remarks and Adjournment

**Sheryl Justice, PhD, The Ohio State University**  
**Maria Hadjifrangiskou, PhD, Vanderbilt University Medical Center**

# 2024 Urinary Tract Infection Global Alliance Travel Awards

## **International Awardees**

Ramon Garcia-Maset, University College of London

Arthika Manoharan, The University of Sydney

Benjamin Sellner, University of Basel

## **Domestic Awardees**

Surbhi Gupta, University of Michigan

Benjamin Hunt, University of Buffalo

Bishnu Joshi, Baylor College of Medicine

Michael Neugent, University of Texas-Dallas

Zongsen Zou, Washington University in St. Louis

# Clinical Definitions

**Asymptomatic bacteriuria (ABU):** bacteria in the urine in the absence of symptoms

**Blood urea nitrogen (BUN):** blood test measuring nitrogen that comes as a result of urea; reflects kidney and liver function

**CAUTI:** “catheter associated urinary tract infection”

**Creatinine:** produced as a result of muscle metabolism; reflects kidney function

**Cystatin C:** protein used to measure glomerular filtration rate; reflects kidney function

**Cystitis:** inflammation of the bladder; can be caused by infection

**Cystoscopy:** minimally invasive direct visualization of the inside of the bladder with a small lens placed through the urethra

**DMSA:** an imaging study to evaluate for renal scarring

**Hematuria:** blood in the urine

**Hydronephrosis:** urine in the renal pelvis that is not normally seen; can be concerning for obstruction or urinary reflux

**Myelomeningocele:** most serious form of spina bifida where both the spine and the spinal cord are abnormal. Specifically, the spine did not form or close normally exposing the spinal cord on the back.

**Neurogenic bladder:** bladder dysfunction due to neurologic damage or abnormality

**Obstructive uropathy:** urinary tract obstruction that can affect kidney function

**Pyelonephritis:** inflammation of the kidney usually caused by infection

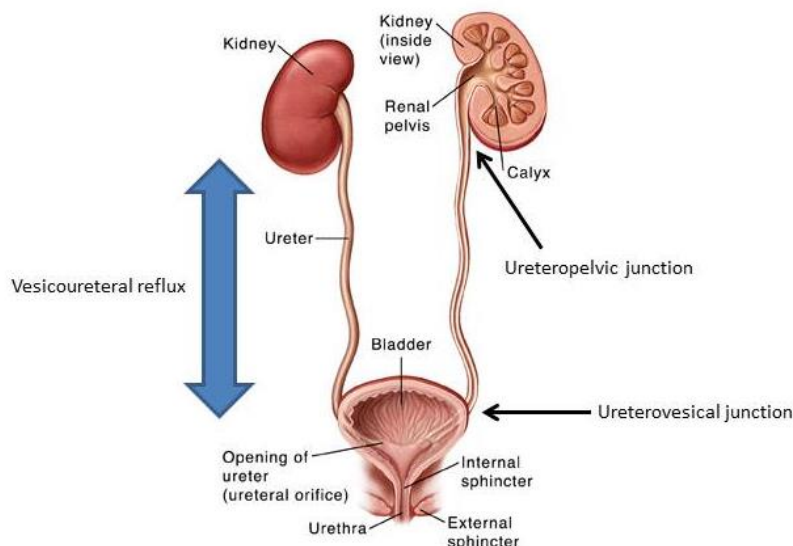
**Spina bifida:** developmental defect of the neural tube

**Ureteropelvic junction:** the transition point of the renal pelvis to the ureter

**Ureterovesical junction:** the transition point of the ureter to the bladder

**VCUG:** “voiding cystourethrogram” – a study to evaluate for vesicoureteral reflux

**Vesicoureteral reflux (VUR):** urine traveling from the bladder back up to the kidney





# Basic Science Definitions

**Adhesins/Fimbria/Pili:** Proteins on the bacterial surface that mediate binding to host cells. Fimbria/pili are typically complex multimeric hair-like structures that extend far beyond the bacterial surface.

**Biofilm:** An organized community of bacteria with a distinct architecture with a matrix composed of proteins, DNA, lipids and complex sugars. An important bacterial lifestyle during infection.

**Capsule:** A polysaccharide layer on the external surface of the bacterium that aids in protection from environmental stressors.

**Chimera:** A genetic hybrid, typically refers to two or more genes (or parts of genes) fused together to make a single protein.

**Clade:** A group of organisms evolved from a common ancestor.

**Cytokines:** Small molecules produced by epithelial and immune cells that are a category of signaling molecules that mediate and regulate immunity, inflammation and hematopoiesis.

**Genomics:** The analysis of the entire genetic content, whether human or bacterial. Typically, the focus is on gene encoding sequences.

**Macrophages:** Specialized phagocytic cells of the innate immune response that are stationary (resident) in the tissues and can be recruited to the site of infection. Responsible for removal of bacteria and cellular debris.

**Neutrophils:** Specialized phagocytic cells that are the first to be recruited to the site of infection to remove bacteria.

**Operons:** Two or more bacterial genes that are transcribed as a single unit and often encode for proteins that act in concert or in a complex.

**OTU:** “operational taxonomic unit” – classifies groups of closely related individuals, particularly in microbiome studies.

**SNP:** “single nucleotide polymorphism” – a form of genetic variation in which a single nucleotide in the DNA is changed.

**Transposon:** A mobile genetic element containing an antibiotic resistance gene. These elements randomly insert into the chromosome and are exploited by researchers to identify mutants that lose important phenotypes.

