

Welcome to

## Conversations with Scientists



### Online Webcast

Email questions for our speakers throughout the program at [ahw@mcw.edu](mailto:ahw@mcw.edu)

# BIOMEDICAL ENGINEERING

## Designing Tools for a Healthy Future

*Presented in partnership with the Marquette University and Medical College of Wisconsin Department of Biomedical Engineering*

**Tuesday, April 9, 2019**

**6:30 - 8:30 p.m.**

**Medical College of Wisconsin**

Milwaukee | Central Wisconsin | Green Bay

### *Speakers* **CREATING A BETTER DIAGNOSIS**



Opening Remarks

**Kevin Koch, PhD**



Acute Respiratory Distress Syndrome: Developing a Better Diagnostic Tool

**Said Audi, PhD**



Can we Improve Cervical Cancer Screening with Limited Resources?

**Bing Yu, PhD**



Understanding and Reducing the Radiation Exposure of CT Scanners

**Taly Gilat Schmidt, PhD**

# ABOUT THE SPEAKERS



**Said Audi, PhD**

Professor of Biomedical Engineering  
Marquette University and Medical College of Wisconsin

Said Audi, PhD, is Professor of Biomedical Engineering at Marquette University and Medical College of Wisconsin. Dr. Audi received his PhD in biomedical engineering from Marquette University in 1993.

**Area of Interest:** My research interests focus on developing experimental and computational approaches for understanding key biochemical factors involved in the progression of acute respiratory distress syndrome (ARDS), a devastating lung disorder and leading cause of admission to intensive care units. The long-term goal is to develop clinical tools for early detection of ARDS and novel therapies for ARDS patients. This is expected to improve outcomes of ARDS patients and reduce healthcare costs.

**Highlight of My Career:** The highlight of my career is the privilege to create new knowledge, develop new treatments, and educate the next generation that my position as Professor of Biomedical Engineering affords me.

**Fun Fact:** I am a first-generation college graduate. I grew up in Lebanon during the civil war (1975-1990). Currently, I serve as the Treasurer for the American-Syrian Lebanese Club of Milwaukee, the longest continuously active fraternal/charitable club in Milwaukee.

**Take Away Message:** Biochemical changes that occur early in the progression of ARDS are potentially important targets for early detection and treatment of ARDS. Medical imaging is potentially useful for detecting and tracking these changes.



**Bing Yu, PhD**

Assistant Professor of Biomedical Engineering  
Marquette University and Medical College of Wisconsin

Bing Yu, PhD, is an Assistant Professor of Biomedical Engineering at Marquette University and Medical College of Wisconsin. He received his PhD in electrical engineering from Virginia Tech, Blacksburg, VA, in 2005 and completed postdoctoral training in biomedical engineering at Duke University, Durham, NC, in 2008.

**Area of Interest:** I am interested in new optical technologies to improve cancer diagnosis and treatment. Cancer affects the life of millions of people every day. Current cancer diagnostic and therapeutic tools are not very effective and accessible, particularly in resource-limited areas. My research focuses on converting smartphones into a microendoscope for epithelial cancer screening in developing countries, developing a multimodal microscope for intraoperative tumor margin assessment, and investigating new methods of using laser to treat solid tumors.

**Highlight of My Career:** I earned all my degrees in electrical engineering, but I decided to become a biomedical engineer because of the opportunity to improve people's health through my passion for science.

**Fun Fact:** When I chose my college major, I told myself, don't be a teacher and don't be a medical doctor. Now I teach and work with surgeons, radiologists, pathologists and gynecologists.

**Take Away Message:** Cervical cancer is a treatable disease, but disproportionately affects resource-poor areas. The smartphone microendoscope (SmartME) may provide a low-cost solution that can improve the screening rate and accuracy for cervical cancer in developing countries.

# ABOUT THE SPEAKERS



## **Taly Gilat Schmidt, PhD**

Associate Professor of Biomedical Engineering  
Marquette University and Medical College of Wisconsin

Taly Gilat Schmidt, PhD, is Associate Professor of Biomedical Engineering at Marquette University and Medical College of Wisconsin. Dr. Gilat Schmidt received her PhD in electrical engineering from Stanford University, Stanford, CA, in 2005.

**Area of Interest:** My research investigates systems and algorithms to create images of internal patient anatomy using data acquired from outside of the patient. The overall goal of my research is to improve the image quality and safety of Computed Tomography (CT) scanners. Current projects aim to reduce image degradations caused by metal objects and motion, harness x-ray energy information to improve anatomical detail, and provide patient-specific estimates of CT radiation exposure.

**Highlight of My Career:** We developed an algorithm to improve the imaging of coronary arteries, which is now used in CT scanners throughout the world. Another highlight is seeing former students launch successful careers.

**Fun Fact:** I love music and played trumpet in a Big 10 college marching band. Now I enjoy the concerts of my three kids who each play two or three instruments!

**Take Away Message:** CT scans are very important for diagnosing disease but carry a small risk due to radiation exposure. Biomedical engineers are developing tools to provide patient-specific radiation exposure estimates, which will improve efforts to reduce the radiation used by CT scanners.

# DO MORE ... THINK BIG

## ● Watch

- **Explore ARDS risk factors, progression, diagnosis and treatment options:**  
<https://www.youtube.com/watch?v=K9W8II0vpgI>
- **Understand what is cervical cancer?**  
<https://www.youtube.com/watch?v=CVj19sMBuds>
- **Hear the latest advances in cervical cancer screening and treatment:**  
[https://www.youtube.com/watch?v=6klhwmNq\\_Ng](https://www.youtube.com/watch?v=6klhwmNq_Ng)

## ● Read

- **Facts and resources about ARDS for patients and caretakers:**  
<http://ardsglobal.org>  
<https://www.thoracic.org/patients/lung-disease-week/2014/ards-week/general-info.php>
- **What should I know about cervical cancer screening:**  
[https://www.cdc.gov/cancer/cervical/basic\\_info/screening.htm](https://www.cdc.gov/cancer/cervical/basic_info/screening.htm)
- **Cervical cancer screening in developing countries: Report of a WHO consultation:**  
[https://www.who.int/cancer/media/en/cancer\\_cervical\\_37321.pdf](https://www.who.int/cancer/media/en/cancer_cervical_37321.pdf)
- **Information about medical imaging scans, radiation, and patient safety:**  
[www.radiologyinfo.org/en/submenu.cfm?pg=safety](http://www.radiologyinfo.org/en/submenu.cfm?pg=safety)
- **FDA update on radiation in medical imaging:**  
[www.fda.gov/ForConsumers/ConsumerUpdates/ucm095505.htm](http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm095505.htm)

## ● Do

- **Support the World Health Organization (WHO):**  
[https://www.who.int/cancer/detection/cervical\\_cancer\\_screening/en/](https://www.who.int/cancer/detection/cervical_cancer_screening/en/)
- **Support Cervical Cancer Prevention Initiative (CCPI):**  
<http://www.cervicalcanceraction.org/initiative/>
- **Keep track of your family's medical imaging with this form:**  
[www.imagewisely.org/~media/ImageWisely%20Files/IW%20Medical%20Imaging%20Card\\_F.pdf](http://www.imagewisely.org/~media/ImageWisely%20Files/IW%20Medical%20Imaging%20Card_F.pdf)

## JOIN US NEXT WEEK!

### Creating a Better Diagnosis

Tuesday, April 9, 6:30 - 8:30 p.m.

Join us next week as Marquette University and Medical College of Wisconsin experts explore how biomedical engineers are improving tools to give patients a better diagnosis, including how imaging advancements are diagnosing diseases and offering hope for healthier outcomes with every diagnosis.



ADVANCING A HEALTHIER  
WISCONSIN ENDOWMENT

Driven by a vision of a healthier Wisconsin, the Advancing a Healthier Wisconsin Endowment was established at the MCW Medical School to propel the most promising work and ideas to build a healthier Wisconsin for generations to come.

Conversations with Scientists is a free, public learning series presented by AHW to bring the research of MCW experts to the public, translating new discoveries into community knowledge and taking discussions out of the classroom or health clinic and into public conversation.

[www.AHWendowment.org](http://www.AHWendowment.org)

A network diagram graphic consisting of a central dark blue circle with five lines radiating outwards to smaller circles of various colors (red, yellow, grey, white, and green). The background is a complex network of light blue and yellow lines connecting various white and grey circles of different sizes, creating a web-like structure.

**Conversations with Scientists**