



# STS Meeting Bulletin

The Society of Thoracic Surgeons  
56th Annual Meeting  
New Orleans, Louisiana | sts.org  
#STS2020

SUNDAY | JAN. 26, 2020

## Sunday Program

**7:00 a.m. – 6:30 p.m.**

Registration

Hall B1 Lobby

**7:45 a.m. – 9:45 a.m.**

Failures, Successes, and Resilience in Research  
(organized by Women in Thoracic Surgery)

Room 225

Managing Esophageal Surgery Complications

Room 215

Multidisciplinary Care in Cardiac Surgery

Room 207

MyTube: Adult Cardiac Video and Expert Panel Session

Room 217

MyTube: Congenital Video and Expert Panel Session

Room 211

MyTube: Pushing the Limits of Minimally Invasive Thoracic Surgery and Avoiding Pitfalls

Room 220

Utilizing the STS National Database in Your Daily Practice

Room 208

**10:00 a.m. – 12:00 p.m.**

Adult Cardiac Surgery SOS: How to Get Out of Tough Situations

Room 217

Congenital Cardiac Surgery SOS: How to Get Out of Tough Situations

Room 208

Residents Symposium: Transitioning from Training to Practice

Rivergate Room

State-of-the-Art Management of Pulmonary Embolism

Room 207

STS/CATS: Surgery for Advanced Stage Cancer—When Is Out of Bounds Not Out of Bounds?

Room 215

STS/SCA: Cardiac and Thoracic Enhanced Recovery after Surgery

Room 220

The Annals Academy: The Editor's Pick—Top Papers and Why

Room 211

**12:00 p.m. – 12:45 p.m.**

Lunch—options available for purchase in Lobbies B & C

Residents Luncheon

Great Hall B

see **SCHEDULE**, page 3



## Specialized Training Can Unleash Surgeon Innovation

**B**etter education and creating opportunities that support innovation and entrepreneurship in academic medicine are essential for accelerating advancements in cardiothoracic surgery.

“Twelve years of postgraduate training did not prepare me at all to be successful at innovation and

entrepreneurship, and almost all of my surgical colleagues are in the same boat,” said Mark S. Cohen, MD, who delivered the keynote address at Tech-Con 2020.

Dr. Cohen, from the University of Michigan in Ann Arbor, drew from his personal experiences as an innovator, as well as his roles at the University of Michigan, which

include executive director of the Michigan Surgical Innovation Prize Program, director of the Medical School Path of Innovation and Entrepreneurship, and innovation chief at the University of Michigan Rogel Cancer Center.

Building a culture of innovation and entrepreneurship requires see **KEYNOTE**, page 5

## Shark Tank Puts Best of New Ideas Front and Center at Tech-Con

**T**ech-Con’s popular Shark Tank presentations on Saturday featured four entrepreneurs pitching new devices designed to improve outcomes for cardiothoracic surgery.

M. Blair Marshall, MD, from Brigham and Women’s Hospital in Boston, and Steven Bolling, MD, from the University of Michigan Hospital in Ann Arbor, served as judges to provide feedback.

The first pitch—from George V. Letsou, MD, from Baylor College of Medicine in Houston—described a non-blood-contacting biventricular cardiac assist device for the treatment of acute heart failure syndrome.

Heart failure affects approximately 1 million people, he said, with serious complications occurring in a substantial proportion of patients. Approximately 25% of people with heart failure need biventricular support.

“Better short-term support is needed for these patients,” said Dr. Letsou.

The cardiac assist device offers many benefits, including easy insertion and both active and passive compression. “The big difference is that the pericardium holds the device in place, so it can’t slip off the heart,” said Dr. Letsou, adding that the device expands the market for cardiac assist devices by \$2 billion because it can be used for patients who are ineligible for

existing devices.

Both Dr. Marshall and Dr. Bolling said the pitch was good, but Dr. Bolling added that it lacked information on how much investment funding was needed and a timeline for the backing.

A novel chest drainage unit was proposed by Jens Eckardt, MD, from Odense University Hospital in Denmark, who noted that 15% of patients have recurrence of pneumothorax within 24 hours after removal of a chest tube. He described a chest drainage unit with an integrated CO<sub>2</sub> detector that can distinguish between a false and true air leak. “No chest drainage unit on the market

see **SHARK TANK**, page 11



## Don’t Miss the Exhibit Hall Opening Reception

**T**he STS Exhibit Hall will open its doors this afternoon, and you’ll be able to learn about products and services offered by more than 120 companies and organizations. Food and refreshments will be available throughout the Hall.



Watch residents compete for the international Jeopardy Championship



Hear top poster authors describe their research



Have a headshot taken—free of charge—and much more.

4:30 p.m. – 6:30 p.m.  
Hall B2







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**Prof. Dr. Med. Farhad Bakhtiary**  
Chief Physician at Helios Hospital,  
Siegburg-Bonn, Germany

BOOTH **225**

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# STS University Participants Gain Hands-On Experience with Complex Procedures

**S**TS University jumpstarted the 2020 Annual Meeting on Saturday by providing physicians of all experience levels with hands-on exposure to the latest techniques and technologies in cardiothoracic surgery. Ten courses were offered, including extracorporeal membrane oxygenation (ECMO) cannulation—a new addition this year.

“We had participants who were interested in starting their own ECMO program or in bringing their current program up to a new level,” said course director HelenMari Merritt-Genore, DO, from Nebraska Medicine in Omaha.

Participants rotated through four stations—venoarterial ECMO, venovenous ECMO, “Meet Your Pump,” and extracorporeal cardiopulmonary resuscitation—demonstrated by physicians from several different institutions, providing participants with a broad

perspective. “It was great to see surgeons and intensivists discussing logistics and sharing ideas,” said Dr. Merritt-Genore.

The Aortic Root Enlargement Procedures and Aortic Valve Leaflet Reconstruction course provided practice with techniques for complex aortic root procedures. Anthony J. Rousou, MD, from Baystate Cardiac Surgery in Springfield, Massachusetts, said he knew of only one technique for aortic root enlargement before attending the course. Now, he is aware of new solutions for the common challenge of patient-prosthesis mismatch in root enlargement, as well as the advantages and disadvantages of each one.

The Robotic Lobectomy course included more stations than last year, allowing a greater number of participants to practice with robotic systems. Course director Lana Y. Schumacher, MD, from Massachusetts General Hospital in Boston, said that surgeons and

residents found the course beneficial because it provided an introduction to techniques that can be challenging to master.

“The advantage of robotic-assisted procedures is visualization because it is 10 times greater [than direct visualization] and is in 3D,” she said. “The disadvantage is that there is no tactile feedback. Practice is important to avoid damaging tissue and other complications.”

see **STS UNIVERSITY**, page 14



## Celebrate Mardi Gras at the President’s Reception

**E**xperience the fun and flamboyance of New Orleans during Mardi Gras season by attending the President’s Reception tonight from 7:00 p.m. to 10:00 p.m. at Mardi Gras World. You’ll see where show-stopping parade floats are designed and assembled, learn about Mardi Gras traditions, and sample authentic cuisine while connecting with friends and colleagues. Visit Registration in the Hall B1 Lobby to see if space is still available for this unique reception; you must purchase a ticket to attend. ●



### SCHEDULE

cont. from page 1

**12:45 p.m. – 1:45 p.m.**  
Ethics Debate: Should Opioid Addicts Have a Second Valve Replacement for Endocarditis?  
Room 211

Meet the Experts: Lymphatic Intervention after Congenital Heart Surgery  
Room 225

Mesothelioma: Still a Surgical Disease?  
Room 220

STS Advocacy: Supporting the Specialty and Your Patients  
Room 215

Temporary Mechanical Support for Post-Cardiotomy Shock  
Room 207

Vivien T. Thomas Symposium: STS and ACC Diversity and Inclusion Efforts  
Room 217

**12:45 p.m. – 2:45 p.m.**  
Evolving Impact: TAVR in Low-Risk Patients—Results of the Evolut Low Risk and PARTNER 3 Trials  
Room 208

**2:00 p.m. – 3:00 p.m.**  
Adult Cardiac: Advanced Heart Failure  
Room 207

Adult Cardiac: Arrhythmia/Atrial Fibrillation  
Room 217

Congenital: Adult Congenital Heart Disease  
Room 211

General Thoracic: Basic Science Research  
Room 225

Meet the Experts: STS/ACS Thoracic Surgery Verification  
Room 215

Using the STS National Database for Research  
Room 229

What’s New in Esophageal Cancer  
Room 220

**3:15 p.m. – 4:30 p.m.**  
Opening Session  
Great Hall A

**3:15 p.m. – 3:30 p.m.**  
Welcome  
**3:30 p.m. – 4:30 p.m.**  
Vivien T. Thomas Lecture: Clyde W. Yancy

**4:30 p.m. – 6:30 p.m.**  
Opening Reception in STS Exhibit Hall  
Hall B2

**4:45 p.m. – 5:30 p.m.**  
Jeopardy Championship  
**5:30 p.m. – 6:30 p.m.**  
Poster Presentations

**7:00 p.m. – 10:00 p.m.**  
President’s Reception: Mardi Gras World

You must purchase a separate ticket to attend this event.  
This session will be streamed live at sts.org/streamSTS2020.



**The Society of Thoracic Surgeons**

**STS Meeting Bulletin**

The Official Newspaper of the STS 56th Annual Meeting

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1. European Heart Journal, Volume 34, Issue 37, 1 October 2013, Pages 2862–2872,  
<https://academic.oup.com/eurheartj/article/34/37/2862/503604>.



**Visit us at STS booth 425**

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**GETINGE** 

# Chamberlain Papers Will Examine Timely Topics at Monday Plenary

Failure to rescue after cardiac surgery, real-time molecular imaging of lung nodules, and the role of transcatheter aortic valve replacement (TAVR) in young and middle-aged adults are the focuses of this year’s prestigious J. Maxwell Chamberlain Memorial Papers, which will be presented during Monday’s plenary session.

## Mortality Rates after Cardiac Surgery Tied to a Hospital’s Ability to Rescue

Mortality rates after cardiac surgery varied significantly across 90 hospitals, according to a study that analyzed data from the STS Adult Cardiac Surgery Database (ACSD) to evaluate the role of failure to rescue (FTR) in operative mortality.

“The variation in mortality rates after cardiac surgery is driven in large part by a hospital’s failure to rescue rate, rather than its complication rate,” said Donald S. Likosky, PhD, from the Institute for Healthcare Policy & Innovation at the University of Michigan in Ann Arbor. Dr. Likosky will present the Chamberlain Paper for Adult Cardiac Surgery.

The study drew from the results of six physician-led quality improvement collaboratives and is one of the largest experiences to date concerning FTR in the setting of coronary artery bypass grafting and/or valve surgery.

“Our findings further establish the importance of identifying and disseminating optimal complication recovery approaches across cardiac surgical hospitals and practices,” Dr. Likosky said.



“The variation in mortality rates after cardiac surgery is driven in large part by a hospital’s failure to rescue rate, rather than its complication rate.”

Donald S. Likosky, PhD

## New Molecular Imaging Technology May Improve NSCLC Surgical Outcomes

Intraoperative molecular imaging using a drug that targets folate receptors within cancer cells improved outcomes for 26% of patients undergoing pulmonary resection for non-small cell lung cancer (NSCLC).

Specific to adenocarcinoma, “this new technology involves an IV injection of OTL38, a drug that directly localizes to the tumor, and an imaging system specifically developed to target the wavelength for which the drug fluoresces,” said Inderpal S. Sarkaria, MD, from the UPMC Hillman Cancer Center in Pittsburgh. Dr. Sarkaria will present the Chamberlain Paper for General Thoracic Surgery.

Identifying nodules during thoracic surgery is becoming an increasing challenge in the era of minimally invasive surgery. “We no longer have the facility of our hands to palpate the lung and identify nodules,” Dr. Sarkaria said. In order to accurately stage patients and provide appropriate treatment, better technology is needed to identify nodules and occult cancers within the lung that aren’t seen in preoperative imaging or felt by palpitation, he added.

“We’re emerging into an era of non-invasive technologies for localization of tumors, assessment of tumor margin, and better identification

of occult cancers during minimally invasive operations using more imaging technologies,” Dr. Sarkaria said.

## Should TAVR Be Considered for Young and Middle-Aged Patients?

The use of TAVR has become more widespread, yet it is still relatively uncommon in adult patients younger than 55 years old.

To understand contemporary national practice patterns of surgical aortic valve replacement (SAVR) and TAVR in young and middle-aged adults, researchers combined data available for adults age 18 to 54 years in the ACSD and the STS Congenital Heart Surgery Database.

“Approximately one-sixth of the young and middle-aged adults who undergo aortic valve replacement have congenital heart disease other than an isolated bicuspid aortic valve. In the growing group of adults with congenital heart disease, anatomical considerations could present challenges for current TAVR devices. However, because adults with congenital heart disease often require repeated valve interventions over a lifetime, it is our responsibility to explore new therapies that could help patients avoid sternotomies,” said Jennifer S. Nelson, MD, MS, from Nemours Children’s Hospital in Orlando, who will present the Chamberlain Paper for Congenital



The Chamberlain Paper for General Thoracic Surgery describes new molecular imaging technology that may improve surgical outcomes for non-small cell lung cancer. Here, a tumor on the pleural surface of the lung is lit up by OTL38.

CREDIT: On Target Laboratories, Inc.

Heart Surgery.

“We were able to provide a description of SAVR/TAVR use and early outcomes,” Dr. Nelson said. “These data help us better understand the risks and complications associated with TAVR versus SAVR in this age group, but it is obvious that new collaborations between adult and congenital heart teams will be paramount.” ●

## J. Maxwell Chamberlain Memorial Papers

Monday  
9:30 a.m. – 10:30 a.m.  
Great Hall A

## KEYNOTE

continued from page 1

understanding the challenges, pooling resources, and creating a custom curriculum for a range of learners—from students to professors.

According to Dr. Cohen, a major barrier is the lack of a medicine-focused curriculum in innovation. “Surgeons are natural innovators, but they have a unique skillset that must be addressed. Surgeons need customized training,” he said.

Educating surgeons in innovation offers many benefits such as accelerated development of research projects, new collaborations across institutions and with industry, novel

funding mechanisms, and research portfolio diversity. Surgeons also are better able to evaluate new technologies for incorporation into practice. Dr. Cohen noted the top five sectors of innovation in cardiothoracic surgery: stem cell therapy, nanotechnology, 3D bioprinting, augmented reality imaging, and artificial intelligence and machine learning.

Many roles are available for surgeons with this training, including entrepreneur, start-up team founder, consultant, advisory board member, product tester, clinical trial investigator, and researcher-licensee.

Dr. Cohen also highlighted the value of starting training in innovation and entrepreneurship

with medical students. “We asked ourselves, ‘What if we could more formally educate even our medical students to be leaders in innovation?’ Think of how much more they can accomplish as residents with these tools already under their belts.”

He described a pathway in medical school that includes education in design thinking, value propositions, delivering a compelling pitch, and adoption and reimbursement; mentored electives such as venture capitalism and business growth; and the development and presentation of a capstone.

Factors other than money should be considered when

evaluating a return on investment, said Dr. Cohen. At the University of Michigan, the return on investment for the innovation and entrepreneurship pathway has been outstanding. Since 2016, 126 medical students have developed new solutions to current problems. The university has experienced a 300% increase in the number of MD/MBA candidates and a 100% increase in the number of female medical students pursuing the pathway. Medical students have won 11 regional or national pitch competitions, and eight start-up companies have been established with more than \$18 million in follow-up funding. “Not bad for just 3 years,” said Dr. Cohen. ●

## Meet with Top Employers

The STS/CTSNet Career Fair gives you the chance to meet face-to-face with employers and discuss potential career opportunities. The Career Fair will be held in the Exhibit Hall at the back of aisles 1100 and 1200.

Sunday 4:30 p.m. – 6:30 p.m.  
Monday 9:00 a.m. – 4:30 p.m.  
Tuesday 9:00 a.m. – 1:30 p.m.

Baton Rouge General Hospital  
Booth #1141

Baylor Scott & White Health  
Booth #1137

Bon Secours Mercy Health  
Booth #1242

Carle Health System  
Booth #1139

Confluence Health  
Booth #1234

Duke Health  
Booth #1236

McLeod Health Physician  
Recruitment & Retention  
Department  
Booth #1241

Mercy  
Booth #1237

Metro Health, University of  
Michigan Health  
Booth #1239

Penn State Health  
Booth #1238

SoutheastHEALTH  
Booth #1240

St. Elizabeth Healthcare  
Booth #1135

The Permanente Medical  
Group  
Booth #1143

This list of employers is accurate as of Jan. 25, 2020.

## Free Wi-Fi Available



Complimentary wireless internet is available in the common areas and meeting rooms of the convention center for all STS Annual Meeting attendees. To connect, select “STS2020” from the available networks. A password is not required.

## Recording Policy



Video recording of STS 56th Annual Meeting sessions is strictly prohibited, except by authorized personnel.





### Leader Insight Jennifer S. Lawton, MD

All cardiothoracic surgeons should be members of STS because it is really a big family. Everyone supports everyone else, and you feel part of a very large organization of colleagues with the same interests and same types of practices. There's something for everyone.

# Training Doesn't End after CT Surgery Residency Is Over

**T**oday's cardiothoracic surgery residents need to be lifelong learners with strong clinical, technical, and leadership skills if they are to succeed in an increasingly complex practice environment.

"We are being challenged by hospitals to lead better in the operating room and incorporate new technology and new clinical trial results into our daily practice. The days when you could just 'operate' after training are gone," said Rishindra M. Reddy, MD, from the University of Michigan in Ann Arbor.

Monday's Education Summit will provide residents with an opportunity to learn about the new challenges and demands that they can expect as cardiothoracic surgeons, as well as the valuable

tools needed to navigate their futures.

"We're aiming to give residents a bit of early preparation for their lives in 2030," said Dr. Reddy, who will co-moderate the session with Amy Fiedler, MD, from the University of Wisconsin School of Medicine and Public Health in Madison.

Experts will provide tips for implementing new technology and techniques into practice. For example, Dr. Reddy said he anticipates that three to five new robotic systems will emerge in the next several years, forcing all surgeons to decide when—not if—to incorporate these new technologies into their practice.

In addition, several of the session's non-clinical topics will be of immediate value to residents,



"We need to teach our residents and fellows to be lifelong learners who are not afraid of new ideas and new technology."

Rishindra M. Reddy, MD

including how to achieve financial security during residency and throughout their career, establishing leadership in the OR, and taking a long view of training—one that is often overlooked.

"I was told that 50%-75% of my operations in practice will be ones that I never did in training. I am now in my 11th year of practice, and this is 100% accurate," Dr. Reddy said. "I never performed robotic surgery as a trainee, and now it encompasses more than

half of my practice. Advanced endoscopy also soon will be added to my practice. We need to teach our residents and fellows to be lifelong learners who are not afraid of new ideas and new technology." ●

### Education Summit: Training Residents Today to Thrive in 2030

Monday  
1:15 p.m. – 3:15 p.m.  
Room 229

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The Patient Guide to Heart, Lung, and Esophageal Surgery is a trustworthy resource, reviewed by STS members, to share with your patients and their families. This website uses layman's terms to explain symptoms, diagnoses, treatment options, and recovery through text, pictures, animation, and videos.

Available in English and Spanish

# Radically New Insights on Bicuspid Aortic Valve Repair Influence Practice Worldwide

With ever-changing information emerging about the pathophysiology of bicuspid aortic valve (BAV), as well as the anatomy and physiology of the aortic root, it's essential for cardiac surgeons to familiarize themselves with the latest, state-of-the-art BAV repair paradigms.

Approximately 0.5%–1.0% of the world's population is afflicted with BAV. And the majority of patients who develop related disorders tend to be in the prime of their lives, as young as 45 years old.

"With so many patients needing intervention, we felt it was imperative to do a deep dive into bicuspid valve repair with aortic root aneurysm," said STS Past President Joseph E. Bavaria, MD, from the Hospital of the University of Pennsylvania in

Philadelphia. "This is an important tool in the armamentarium of surgeons across the globe."

A Monday session, which was developed by STS and the European Association for Cardio-Thoracic Surgery, will include detailed videos and precise how-to guidelines that will prove beneficial for both new and experienced surgeons. The session will be moderated by Dr. Bavaria and Davide Pacini, MD, from St. Orsola-Malpighi Hospital in Bologna, Italy.

"Several experts from North America and Europe will cover updated anatomical classifications, new repair techniques, surgical indications, and mid- and long-term outcomes," said Dr. Pacini.

He acknowledged that there are several schools of thought when it comes to BAV repair—some centers

prefer symmetric reconstruction, while others use an asymmetrical approach—but emphasized that treatments should be customized for each patient.

BAV repair becomes even more complex when it is performed in the setting of a root aneurysm. "There are several methodologies with merit. We will review the technical and outcome differences between reimplantation and remodeling," said Dr. Bavaria.

Stabilization of the annulus and preserving the mobility of the leaflet are hot topics for the BAV repair community. "I think we will hear more about the increasing importance of 4D MRI in assessing the aortic root's fluid dynamic," said Dr. Pacini.

Monday's session also may generate a heated debate about the fundamental BAV question: repair or



"Giving a 70-year-old a prosthetic valve is okay, but we don't want to consign a 40-year-old to an early death with a new valve, if possible."

Joseph E. Bavaria, MD

replace? Dr. Bavaria suggested that a good repair is always better than a replacement.

"Giving a 70-year-old a prosthetic valve is okay, but we don't want to consign a 40-year-old to an early death with a new valve, if possible," said Dr. Bavaria. "However, it's also essential to know when not to repair."

Dr. Pacini noted that a well-functioning prosthetic valve is always better than a badly repaired native aortic valve. "A good repair can

be achieved if the leaflets are well preserved. The results will not be good if the leaflets are calcified or restricted," he said. ●

**STS/EACTS: Bicuspid Aortic Valve Repair with Aortic Root Aneurysm—Techniques and Outcomes**  
Monday  
7:00 a.m. – 9:00 a.m.  
Room 225

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FEATURES INCLUDE:

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ERAS Recommendation Supported by Results of SternaLock® Blu Study.<sup>1</sup>

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Class (Strength) of Recommendation	Class IIa (Moderate)
Level (Quality) of Evidence	Level B-R (Randomized)

1. ERAS JAMA Publication  
Engelman DT, Ben Ali W, Williams JB, et al. Guidelines for perioperative care in cardiac surgery: Enhanced Recovery After Surgery Society recommendations [published online May 4, 2019]. JAMA Surg. doi:10.1001/jamasurg.2019.1153

Booth # 217



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# Learning Opportunities in the Exhibit Hall



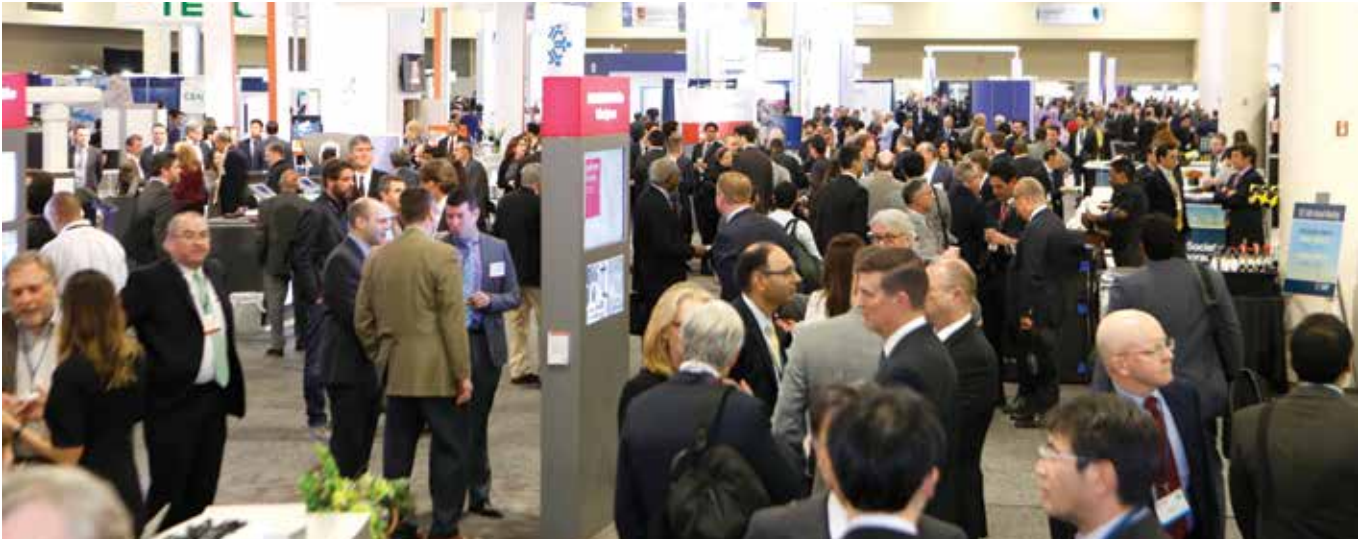
Exhibiting companies and others will present talks and demonstrations in the Learning Lab Theater, which is located at Booth #844.

**Sunday**  
4:45 p.m. – 5:30 p.m.  
STS Jeopardy Championship

**Monday**  
12:30 p.m. – 1:00 p.m.  
AngioVac and Its Use in the Right Heart  
Hosted by **AngioDynamics**

3:30 p.m. – 4:00 p.m.  
The Clinical Benefits of a New Thoracic Energy Device – Before and After the LigaSure™ Maryland Jaw Thoracic Sealer/Divider  
Hosted by **Medtronic**

*This list is accurate as of Jan. 25, 2020.*



# 2020 Annual Meeting Exhibitors

Tech-Con Exhibitor   New Exhibitor   STS Meeting Bulletin Advertiser

# Industry Symposia



The following programs are offered by industry and held in conjunction with the STS 56th Annual Meeting. They are not developed or sponsored by STS.

**Monday**  
6:30 p.m. – 10:00 p.m.  
State-of-the-Art Surgical and Transcatheter Treatment of Mitral and Tricuspid Valvular Diseases: Case-Based Discussions  
*Antoine's Restaurant, 713 Saint Louis St.*  
Hosted by **Abbott**

6:30 p.m. – 8:00 p.m.  
Optimizing the Diagnosis and Treatment of Atrial Fibrillation  
*Arnaud's Restaurant, 813 Bienville St.*  
Hosted by **AtriCure and MediaSphere Medical**

6:30 p.m. – 10:00 p.m.  
Monarch Robotic-Assisted Bronchoscopy: A Thoracic Surgery Perspective  
*Hilton New Orleans Riverside, Canal Room, 2 Poydras St.*  
Hosted by **Auris Health**

6:30 p.m. – 8:30 p.m.  
NEW PERSPECTIVES: Technology and Changing Perspective in Aortic Valve Replacement  
*Tommy's Cuisine, 746 Tchoupitoulas St.*  
Hosted by **CryoLife**

6:30 p.m. – 8:00 p.m.  
Lifetime Management of Aortic Valve Disease: How Should Shared Care Decision Making Change in 2020? Cocktails and Conversation  
*The Chicory, 610 S. Peters St.*  
Hosted by **Edwards Lifesciences**

6:30 p.m. – 7:30 p.m.  
Medtronic Reception  
*King's Room, Brennan's, 417 Royal St.*  
Hosted by **Medtronic**

7:30 p.m. – 10:00 p.m.  
Medtronic Dinner and Panel Discussion  
*Pelican Club Restaurant and Bar, 312 Exchange Pl.*  
Hosted by **Medtronic**

6:30 p.m. – 9:30 p.m.  
Expanding the Thoracic Surgeon's Role in Managing Early Stage Lung Cancer through a Novel Diagnostic  
*Pier 424, 424 Bourbon St.*  
Hosted by **OncoCyt**

6:30 p.m. – 8:00 p.m.  
Enhancing Recovery and Reducing Complications in Cardiac Surgery  
*Arnaud's Restaurant, 813 Bienville St.*  
Hosted by **Zimmer Biomet**

*This list is accurate as of Jan. 25, 2020.*

A&E Medical	517	Cook Medical	943	Johnson & Johnson Medical Devices Companies	125	Rultract/Pemco, Inc.	411
Abbott	414	CorMatrix	208	Kapp Surgical	1025	Saphena Medical	542
Abiomed, Inc.	817	CryoLife	1013	Karl Storz Endoscopy	905	Scanlan International	400
Abyrx, Inc.	329	CT Assist	734	Kinamed, Inc.	540	Society of Thoracic Surgeons, The	101
Acute Innovations	210	CTSNet	307	KLS Martin	431	Sontec Instruments	426
Advanced Neuromonitoring Associates, Inc.	1128	CV Staff Solutions	437	Koros USA, Inc.	443	STS Regional Data Managers	1129
American Association for Thoracic Surgery	1039	Designs for Vision	335	LifeNet Health	209	Summit International Medical Technologies	1036
AngioDynamics	842	EA Medical, LLC	643	LivaNova	117	SurgiTel/General Scientific Corp.	424
Applied Medical	929	EchoPixel	635	LocumTenens.com	538	SynCardia Systems, LLC	736
Ascyrus Medical	927	Eclipse Loupes and Products	1008	LSI Solutions	225	Talis Clinical	917
Atlas Medical USA	740	ECOM Medical, Inc.	1030	Med Alliance Solutions	725	Terumo	825
AtriCure, Inc.	801	Edwards Lifesciences	401	Medela Healthcare	737	THINK AORTA Working Group	1142
Auris Health	133	Elsevier	901	Medestim	511	ThinkMed Consulting	234
Aziyo	910	Essential	132	medpro	1002	Thompson Surgical	816
Baylis Medical	1012	European Association for Cardio-Thoracic Surgery	1134	Medtronic	601	Thynk Health	639
Baylor St. Luke's Medical Center	940	European Society of Thoracic Surgeons	1035	MedXpert North America	1105	Transonic	325
BD	811	Fehling Surgical	716	Merit Medical Endotek	937	Urethrotech	1004
Berlin Heart, Inc.	1107	Foldax	1040	Microsurgery Instruments, Inc.	1130	USB Medical	305
BFW, Inc.	818	Genesee BioMedical	432	Möller Medical GmbH	1034	Veran Medical Technologies	113
bioMérieux, Inc.	743	Getinge	425	Nadia International	308	Visit Austin	1101
Biom'up USA, Inc.	1031	Gore & Associates	109	Nova Biomedical	838	Vitalcor, Inc.	301
BioStable Science & Engineering	742	Harris Bay	1103	Olympus America, Inc.	717	Weatherby Healthcare	1131
Boston Medical Products, Inc.	935	Hayes Locums	840	On Call Medical Coats	1000	Western Thoracic Surgical Association	1140
Boston Scientific	911	HCA	1007	OncoCyt	541	Wexler Surgical, Inc.	110
C Change Surgical	1010	Heart Hospital Baylor Plano, The	535	Orasoptic	1028	Wolters Kluwer	1124
CardioQuip	925	Heart Valve Society	1138	Our Lady of the Lake Regional Medical Center	1024	Women in Thoracic Surgery	134
Cardiovascular and Thoracic Solutions, LLC	1026	Houston Methodist Hospital - DeBakey CV Education	1125	Oxford University Press	1126	Zimmer	217
Centese	536	International Society for Minimally Invasive Cardiothoracic Surgery	1136	Peters Surgical	617	Biomet Thoracic	
CHF Solutions	942	Intuitive Surgical	525	Pinnacle Biologics	135	ZipLine Medical, Inc.	1029
CHI Saint Joseph Medical Group	641	IQVIA	101	Presbyterian Healthcare Services	741	ZipperBelt	841
CinVivo	941	JACE Medical	213	Quest Medical, Inc.	309, 310		
ClearFlow	731			R&D Surgical USA, Inc.	836		
				Ronin Surgical Corp.	441		

*Listing current as of Jan. 25, 2020.*





Exhibit Hall Hours

Sunday, January 26: 4:30 p.m. – 6:30 p.m.  
Monday, January 27: 9:00 a.m. – 4:30 p.m.  
Tuesday, January 28: 9:00 a.m. – 1:30 p.m.

Jeopardy Competition

Residents from the University of Michigan and Deutsches Herzzentrum Berlin will compete to win the international Jeopardy Championship today at 4:45 p.m. in the Learning Lab Theater.

Don't Miss...



Career Fair

Meet face-to-face with employers at the STS/CTSN Net Career Fair. Recruiters will be available to talk about career opportunities.



E-Posters

Scientific posters are electronic this year, and several monitors are available for viewing.

Show Floor Suites

154	254	255	354	355	454	455	554
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Food & Beverage

Learning Lab

844

Show Floor Suites

853	854	1048	1148	1055	1154	1155	1254
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1265
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E-Posters

236

134 132 135 234 133 Auris Health 335 Genesee BioMedical 432 Johnson & Johnson Medical Devices Companies 125 LSI Solutions 225 Transonic 329 Sototec Instrument 426 325 424 CV Staff Solutions 443 542 441 540 538 437 536 OncoCyte 541 The Heart Hospital Baylor Plano 535 KLS Martin 431 Intuitive Surgical 525 Getinge 425 643 742 641 740 639 Syncardia Systems 637 736 635 734 743 842 741 840 838 737 836 Medela Healthcare 843 942 841 940 943 1042 941 1040 AATS 1142 1039 1138 1037 1136 1035 1134 1143 1242 1243 1141 1240 1241 1139 1238 1239 1137 1236 1237 1135 1234 1235 Career Fair 937 1036 935 1034 931 1030 929 1028 927 1026 925 1024 1031 1130 1029 1128 1025 1124 1131 1129 Houston Methodist 1125 Terumo 825 STS Lounge 835 ClearFlow 731 Med Alliance Solutions 725

First-Time Exhibitors

Entrance

Wexler Surgical, Inc. 110 LivaNova 117 Zimmer Biomet Thoracic 217 Abbott 414 A & E Medical 517 Peters Surgical 617 Fehling Surgical 716 Olympus America 717 818 816 Abiomed Inc. 817 Talis Clinical 917 CryoLife 1013 BD 811 Aziyo 910 Boston Scientific 911 1012 1010 1008 1006 1004 1002 1000 Karl Storz Endoscopy 905 Elsevier 901 1001 HCA 1007 Berlin Heart Inc. 1107 1105 1103 1101 Headshot Studio 1001 AtriCure Inc. 801 Edwards Lifesciences 401 Medtronic 601 Scanlan International 309 307 305 301 Vitalcor, Inc. Quest Medical Inc. 213 Quest Medical Inc. 310 209 308 Quest Medical Inc. 210 208 Gore & Associates 113 Acute Innovations 210 208 STS 101

STS Booth (#101)

Hear about the latest the Society has to offer, including member benefits, advocacy efforts, educational courses, the STS Research Center, and the next generation STS National Database.

Headshot Studio (#1001)

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# Vivien Thomas Honored with Symposium, Keynote



“Vivien Thomas helped get our field off the ground in the 1940s, and his contributions went unrecognized for many years.”

Robert S.D. Higgins, MD, MSHA

This year’s Annual Meeting program includes a symposium and named lecture in honor of Vivien T. Thomas, a black surgical technician with only a high school education, who worked with Alfred Blalock, MD, and pioneered the anastomosis of the subclavian artery to the pulmonary artery, among other accomplishments.

“We’re proud to recognize a person of color who was not a physician, but who was responsible for training young surgeons to be great technicians,” said STS President Robert S.D. Higgins, MD, MSHA. “Vivien Thomas helped get our field off the ground in the 1940s, and his contributions went unrecognized for many years. We now have an opportunity to do so at a national forum.”

History was made in November

1944 when Dr. Blalock and other legendary surgeons, William Longmire, Denton Cooley, and Helen Taussig, performed the first “blue baby” operation on a frail 18-month-old with tetralogy of Fallot. The pulmonary-to-subclavian anastomosis procedure had been designed and steadfastly tested by Thomas, and he stood behind Dr. Blalock on a stepstool guiding him through the procedure.

Despite his efforts, Thomas initially was not given credit for the Blalock-Taussig shunt when the procedure was first described in *The Journal of the American Medical Association*. His contributions were much more widely recognized years later with a 1989 article, “Something the Lord Made,” and subsequent movie of the same name.

In honor of Thomas and all



Vivien Thomas played a key role in developing the Blalock-Taussig shunt to treat tetralogy of Fallot in the 1940s, but he was not publicly acknowledged for his efforts at the time.

of his contributions to medicine, including the many years he spent teaching residents in the training laboratories at Johns Hopkins, a Vivien T. Thomas Symposium will be held this morning to explore the importance of a diverse workforce, describe pipeline programs to support workforce diversity, and discuss available resources for promoting diversity and inclusion.

This afternoon, a Vivien T. Thomas Lecture will be given by Clyde W. Yancy, MD, vice dean for

diversity and inclusion and chief of the Division of Cardiology at Northwestern University’s Feinberg School of Medicine in Chicago. He also is a past president of the American Heart Association.

Dr. Yancy’s talk, “The Saga of Vivien Thomas: Discrimination, Segregation, and Bias: It Could Happen Again,” will detail the destructive influence of implicit and explicit bias, identify solutions to overcome bias, and outline a path forward for improved health equity. ●

**Vivien T. Thomas Symposium: STS and ACC Diversity and Inclusion Efforts**

Sunday  
12:45 p.m. – 1:45 p.m.  
Room 217

**Opening Session: Vivien T. Thomas Lecture**

Sunday  
3:30 p.m. – 4:30 p.m.  
Great Hall A

## Train for the Worst to Make the Best of Risky Situations During Surgery

In the complex discipline of general thoracic surgery, the opportunity for catastrophic events has always been part of the job. But some believe “nightmare situations” are becoming even more common throughout the world.

“It doesn’t matter what country you’re operating in. During routine surgery, something unexpected will happen approximately 5% of the time,” said Shanda H. Blackmon, MD, MPH, from Mayo Clinic in Rochester, Minnesota. “During advanced surgery, complications are even more frequent.”

Several risk factors contribute to problems, according to Enrico Ruffini, MD, from the University of Torino in Italy. The proliferation of new techniques is one concern, as are the broad surgical indications for elderly patients who suffer from major comorbidities.

“These situations require experience, wisdom, technical skills, and, of course, a little bit of good luck,” he said.

At Monday’s joint session organized by STS and the European Society of Thoracic Surgeons, which Drs. Blackmon and Ruffini will co-moderate, world-renowned experts from the United States, Europe, and Asia will discuss when and how to perform complex salvage techniques, including:

- Extracorporeal membrane oxygenation and other novel oxygenation strategies
- An alternative conduit for complex esophageal reconstruction
- A novel tissue scaffold for repairing tracheoesophageal fistulas
- Integrated treatment for post-pneumonectomy complications
- Anatomic dissection after immunotherapy

Except for advanced oxygenation strategies, the procedures that will be described can be performed by any thoracic surgeon at a typical community hospital. Attendees will discover how to optimize nutrition, manage pain, minimize aspiration, prevent inadvertent injury of adjacent



“Knowing how to get out of trouble in the operating room is very important. Knowing how to prevent trouble is even more important.”

Shanda H. Blackmon, MD, MPH

structures, and control blood loss.

Dr. Blackmon, known for videotaping all of her cases, believes simulation and practice are essential for success. She uses her in-depth videos to give transparent talks about managing intraoperative events.

“Knowing how to get out of trouble in the operating room is very important,” she said. “Knowing how to prevent trouble is even more important.”

The practical, comprehensive information that will be presented at the STS/ESTS session should make attendees feel less intimidated about performing complex and aggressive surgeries at their home facilities.

“In the current climate of increased

transparency, where everyone knows your outcomes, it’s tempting for some surgeons to avoid risky situations,” said Dr. Blackmon. “But I would challenge surgeons to recognize the potential for success. Salvage surgeries can go well if you train for the worst-case scenario and then work to prevent that from ever happening.” ●

**STS/ESTS: Getting Out of Trouble—Rescue Surgery after Common Nightmare Situations**

Monday  
7:00 a.m. – 9:00 a.m.  
Room 208



### Thank You

The Society of Thoracic Surgeons gratefully acknowledges the following companies for providing educational grants for the STS 56th Annual Meeting.

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This list is accurate as of  
Jan. 25, 2020.



## SHARK TANK

continued from page 1

can identify a false air leak,” said Dr. Eckardt.

The leakage detector provides an easy read-out, and the degree of air leak is defined by color. “The quantification of the air leak can help the clinician decide the right time for removal of the chest tube,” said Dr. Eckardt. The cost of the unit is low, adding about \$10 to the price of a traditional unit.

Dr. Bolling questioned the potential for a good return on investment because of the minimal increase in the cost compared with traditional chest drainage units and the overall low cost of these units.

Techniques for protectively cooling the brain while the heart is stopped during cardiac surgery were established decades ago, but these techniques have stayed in the operating room. Robert Schultz, MD, from the University of Calgary in Alberta, Canada, described a central venous catheter equipped with a balloon that can be used during cardiac arrest to provide deep and rapid cooling of the brain while maintaining

normothermia in the body.

The device allows significantly faster brain cooling than can be accomplished by any existing technique and would help reduce the incidence of brain damage, said Dr. Shultz. The ultimate goal is to have the device available on ambulances, and he noted that there are plans to expand the market for the device to patients with ischemic stroke.

Dr. Marshall asked if the device could be used for patients with hemorrhagic stroke, and Dr. Schultz said that the device has not been tested in that patient population.

A mixed-reality application for improving visualization in thoracic surgery, known as ThoraLens, closed out the Shark Tank presentations. Mark F. Berry, MD, and Brooke Krajancich from Stanford University Medical Center in California, pitched the technology. Dr. Berry said that the number of small lung nodules is increasing with the advent of lung cancer screening, and additional invasive localization techniques are sometimes necessary, adding costs and risks for patients.



Krajancich, a PhD student in electrical engineering at Stanford School of Engineering, described the mixed-reality headset, based on Microsoft's HoloLens, that allows physicians to see digital data such as patient information and computed tomography images displayed over a patient. The device allows the user to manipulate holograms by hand gestures and voice command, eliminating the need for interruptions

in a surgical procedure to review patient data.

Dr. Marshall questioned the demand for the device, as she infrequently needs additional techniques for localizing small nodules. Dr. Berry countered that many physicians do not have the same level of expertise, and an audience member added that the device would offer outstanding education for residents and medical students. ●



### Leader Insight Tom C. Nguyen, MD

For complicated patients or even for straightforward patients, it's important to really talk to as many people as possible, using a multidisciplinary approach to address complex problems. I think most of the time when bad things happen, it's often because we haven't consulted widely enough to try to address these issues.

Register now!

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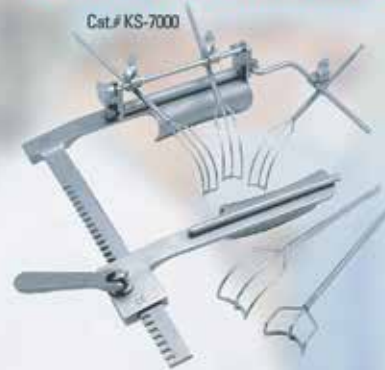


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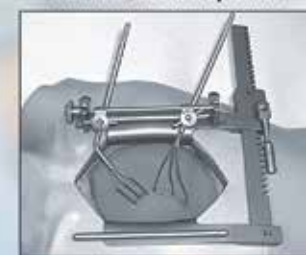
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# Lymphatic Failure Often Masquerades as Cardiac Failure in Children and Adults

**A** growing body of evidence shows that many conditions being treated as sequelae of congenital cardiac problems such as protein-losing enteropathy (PLE) and plastic bronchitis may in fact be the result of altered lymphatic circulation that leads to these conditions formerly referred to as “mucosal derangements.”

“We have been treating a lot of these disorders completely wrong,” said Jonathan M. Chen, MD, from the Cardiac Center at Children’s Hospital of Philadelphia, who will moderate today’s session on Lymphatic Intervention after Congenital Heart Surgery.

Lymphatic failure also may be a key dysfunction leading to fluid retention in adult heart failure and is implicated in complications

associated with some cancers and cancer treatments. Catheter-based and surgical approaches to repair damaged lymph vessels can effectively treat such conditions.

“We’ve been largely focused on managing the symptoms—ascites, airway casts, fluid retention—without focusing on the root cause: lymphatic failure,” Dr. Chen said. “The basis of these disorders is primarily lymphatic dysfunction, not cardiac dysfunction. It is increasingly appearing that the lymphatic circulation is foundational to congenital heart disease and a surprising number of adult conditions we traditionally associate with cardiac morbidity.”

Pediatric cardiologists often see children with single ventricle circulation who live their entire

lives with heart failure, added Yoav Dori, MD, PhD, from the Jill and Mark Fishman Center for Lymphatic Disorders at Children’s Hospital of Philadelphia, who will present at today’s session.

“Their heart function doesn’t necessarily change much over time, but the lymphatic circulation undergoes changes that lead to accumulation of fluid,” he said. “Adults with heart failure experience similar changes.”

Research from the 1970s found that draining lymphatic fluid could improve the symptoms of heart failure, Dr. Chen said, but the technology of the era could not adequately image the central lymphatic system or reliably measure lymphatic flows. Lymphatic circulation largely was



“We have been treating a lot of these disorders completely wrong.”

Jonathan M. Chen, MD

ignored until the 2010s.

“My entry point was having pediatric and adult patients with severe fluid leaks and seeing a few older papers about lymph fluid playing a role in these patients, but there was nothing current to help,” Dr. Dori said. “We developed lymphatic imaging techniques and an understanding that lymphatic circulation is an entire organ system that we had not appreciated. We already are addressing lymphatic

failure in the pediatric world and are moving in the same direction in the adult world, where the number of patients is so much greater.” ●

**Meet the Experts: Lymphatic Intervention after Congenital Heart Surgery**

Sunday  
12:45 p.m. – 1:45 p.m.  
Room 225

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## Need a Professional Headshot?

Have a professional headshot taken for business or personal use, compliments of the Society, in the Exhibit Hall Booth #1001:

Sunday • 4:30 p.m. – 6:30 p.m.  
Monday • 9:00 a.m. – 4:30 p.m.  
Tuesday • 9:00 a.m. – 1:30 p.m.

Photographs will be taken on a first-come, first-served basis. You will be emailed a link to download your high-resolution photograph following the Annual Meeting.



# STS 2020 at a Glance





## Stay Connected Today's Top Tweets



Great to teach #TAVR patient selection, planning, implantation & #technology at STS University #STS2020 in New Orleans this morning! Wonderful faculty colleagues and a diverse, engaged group of participants.

@IbrahimSultanMD @DrIribarne  
@KendraGrubb @STS\_CTsurgery

**Moritz C. Wyler von Ballmoos, MD, PhD**  
@DrMoritzWvB

So excited to head off to New Orleans today for my very first @STS\_CTsurgery Annual Meeting! #STS2020 Looking forward to learning lots, presenting my research, and meeting leaders within the field!

**Chi Chi Do-Nguyen**  
@ChiChiDoNguyen



The STS welcoming committee at the airport! Ready for a great convention about the latest and greatest about Cardiothoracic Surgery! #STS2020 @roberthiggins32 @STS\_CTsurgery

**Hari B. Keshava**  
@hari\_keshava

# #STS2020

### STS UNIVERSITY

continued from page 3

A simulator helped participants learn more about these potential errors.

In addition to the robotic systems for lobectomy, two different robotic bronchoscopy systems also were included in the course. Robotic bronchoscopy systems were approved by the US Food and Drug Administration within the past year, said course director Edward Y. Chan, MD, from Houston Methodist in Texas. "The two systems are from competing companies, so participants were able to learn about the features of each."

At the always-popular Mitral Valve Repair course, participants practiced different repair strategies for both anterior and posterior leaflet pathologies. "I came to improve my techniques and broaden my experience," said Rebecca Dignan, MD, from Liverpool Hospital in Sydney, Australia. "I was able to talk with other surgeons about their methods and learn about newer cords and rings."

Other courses focused on VATS lobectomy, complex chest wall issues, transcatheter aortic valve replacement, valve-sparing aortic root replacement-reimplantation, minimally invasive aortic and mitral surgery, and transseptal puncture for surgeons. ●



## QUESTION of the day

What is the most innovative thing you have learned today?



Mathew Thomas, MBBS, MD  
Jacksonville, Florida

"A surgeon is working on an app that will be able to distinguish tracheobronchomalacia (TBM) from other diseases and conditions based on the sound of the cough. This is an important innovation because TBM requires a surgical fix, while other reasons for coughing do not."



Claire Watkins, MD  
Stanford, California

"The aortic uncovered arch stent offers a way to improve aortic arch remodeling following dissection. We don't have any other tool for this."



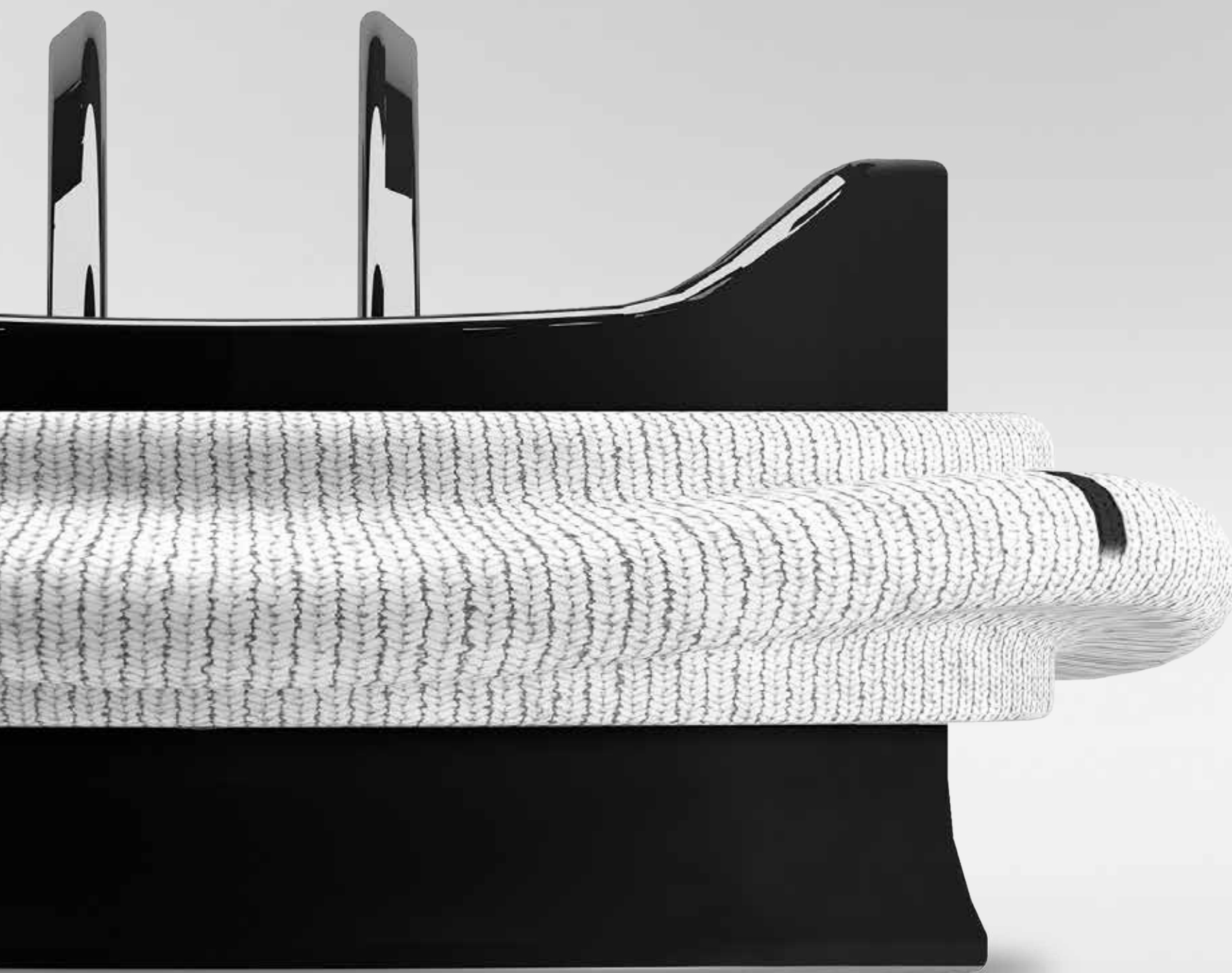
Mark Suzuki, MD, MBA  
Augusta, Georgia

"The future of artificial intelligence (AI) just keeps advancing medically and surgically. Soon, someone will develop an AI program for smartphones that will be able to help accurately make diagnoses."

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