

# State-of-the-Art ECHOCARDIOGRAPHY™

# 33rd ANNUAL



## FINAL PROGRAM

**February 22–24, 2020**

*Optional Preconference Learning Lab*

February 21–22, 2020

**The Westin Kierland Resort & Spa  
6902 E. Greenway Parkway  
Scottsdale, AZ 85254**

### Course and Learning Lab Director

Bijoy K. Khandheria, MD, FASE  
Past President, ASE  
Aurora Health Care  
Milwaukee, WI

### Course Co-Director

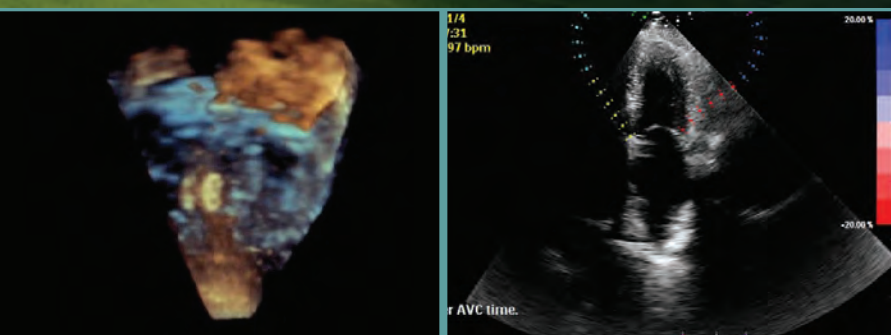
William A. Zoghbi, MD, FASE  
Past President, ASE  
Houston Methodist Hospital  
Houston, TX

### Learning Lab Director

Roberto M. Lang, MD, FASE  
Past President, ASE  
University of Chicago Medical Center  
Chicago, IL

### Learning Lab Co-Director

Matt M. Umland, ACS, RDCS, FASE  
Aurora Health Care  
Milwaukee, WI



Welcome to the 33<sup>rd</sup> Annual State-of-the-Art Echocardiography™ conference, a premier program organized by the American Society of Echocardiography. Past attendee feedback is invaluable, and we modified the program to reflect their suggestions. Workshops, cases, new technologies, and sonographer sessions have been added. We also recognize that the program took too many days away from work, so it was condensed. In keeping with past tradition, we continue to have first-rate cardiologists and sonographers presenting a broad range of echo-related topics to enhance your clinical practice. Upon completion of this course, you should have a “state-of-the-art” knowledge of clinical echocardiography including 3D and myocardial strain imaging and their practical applications.

Scottsdale, Arizona, with blue skies and first class education, awaits you.

Welcome to Scottsdale and the 33<sup>rd</sup> Annual State-of-the-Art Echocardiography conference.



## **Bijoy K. Khandheria, MD, FASE**

*Course and Learning Lab Director  
Past President, ASE  
Aurora Health Care  
Milwaukee, WI*

## **SAVE THE DATE**

34<sup>th</sup> Annual State-of-the-Art Echocardiography  
February 26–March 1, 2021  
Scottsdale, AZ



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Aurora Health Care  
Milwaukee, WI

### **Faculty**

#### **Theodore P. Abraham, MD, FASE**

University of California  
San Francisco, CA

#### **Cara Bergeron, RDCS, RVT**

Houston Methodist Hospital  
Houston, TX

#### **Marissa Christensen, RDCS**

Houston Methodist Hospital  
Houston, TX

#### **Hillary S. Huisheere, RDCS, RVT, FASE**

Aurora Health Care  
Milwaukee, WI

#### **Judy W. Hung, MD, FASE**

President Elect, ASE  
Massachusetts General Hospital  
Boston, MA

#### **Renuka Jain, MD, FASE**

Aurora Health Care  
Milwaukee, WI

#### **Chris J. Kramer, ACS, RDCS, FASE**

Aurora Health Care  
Milwaukee, WI

#### **Eric Kruse, BS, ACS, RDCS, RVT, FASE**

University of Chicago Medical Center  
Chicago, IL

#### **Steven J. Lester, MD, FASE**

Mayo Clinic  
Phoenix, AZ

#### **Stephen H. Little, MD, FASE**

Houston Methodist Hospital  
Houston, TX

#### **Sarah M. Roemer, BS, RDCS, FASE**

Aurora Health Care  
Milwaukee, WI

#### **Muhamed Saric, MD, PhD, FASE**

New York University  
New York, NY

#### **McKenzie Schweitzer, RDCS, FASE**

Aurora Health Care  
Milwaukee, WI

#### **Partho P. Sengupta, MBBS, MD, DM, FASE**

West Virginia University Healthcare  
Morgantown, WV

#### **James B. Seward, MD, FASE**

Mayo Clinic  
Rochester, MN

#### **Madhav Swaminathan, MD, FASE**

President, ASE  
Duke University Medical Center  
Durham, NC

#### **Megan Yamat, RDCS, RCS, FASE**

University of Chicago Medical Center  
Chicago, IL

# Program Information

## Overview of State-of-the-Art Echocardiography

This year's program follows the themes of structural heart disease, myocardial and pericardial disease, coronary artery disease, and interventional echocardiography. During the course, over 100 cases will be presented by the expert faculty to highlight what echo brings to each theme, help clinicians recognize and avoid common errors and pitfalls, and learn how to apply the guidelines in a practical manner. Small group, hands-on workshops to learn acquisition techniques of 3D and Myocardial Strain will be the highlight for the sonographer.

The faculty consists of recognized leaders in the field of echocardiography acclaimed for their teaching abilities. Participants will have the opportunity to interact with the faculty one-on-one in the preconference, computer-based Learning Lab or the sonographers' acquisition workshops.

New features include:

- Image Acquisition Workshop: Learn techniques for 3D and myocardial speckle tracking (will include live scanning and didactic lecture).
- Expanded Learning Lab: New topics include advanced hemodynamics, myocardial strain, and structural heart disease. Participants will perform 3D cropping, measurements such as LV and RV Strain, LA strain, critical measurements for TAVR, TMVR, MitraClip, and LAA occluder.
- Case-based Learning: The course will include a special focus on hemodynamics, structural heart disease, interventional echocardiography, and advanced diastolic function.
- Glimpse of the Future: Learn about the impact of Artificial Intelligence, Machine Learning, and Virtual Reality on the field of echocardiography.

## Target Audience

State-of-the-Art Echocardiography's program is designed for adult and pediatric cardiologists, cardiovascular surgeons, anesthesiologists, radiologists, physician assistants, nurses, sonographers, and fellows in training. Participants should have a practical knowledge of echocardiography.

## Learning Objectives

Upon completion of this course, participants will be better able to:

- Incorporate state-of-the-art clinical applications of echocardiography and Doppler ultrasound into clinical decision-making
- Utilize echocardiography in valvular heart disease
- Evaluate patients prior to, during, and following various structural heart disease procedures such as TAVR, mitral clip, and left atrial appendage closure
- Perform a 3D acquisition and measurement of biventricular size and function; and have a better understanding of the "knobology"
- Explain the new diastolic function guidelines
- Assess left ventricular function with state-of-the-art echocardiographic technology including strain imaging

## Acquisition Workshops

*(Please visit ASE registration desk to check availability. No additional fee required.)*

The 3D/4D Acquisition and Advanced Myocardial Strain Mechanics workshop sessions are designed and conducted by sonographers. Each workshop will emphasize knobology, how to optimize images, and imaging planes. To maximize this educational opportunity, each session is limited to 20 individuals and is offered twice on Sunday and twice on Monday.

## Learning Lab Session

*(Additional Fee Required. Please visit the ASE registration desk to check availability.)*

A learning lab will be offered for a full day on Friday, February 21, and a half day on Saturday, February 22, 2020. Separate registration is required, and this session is included in the total hours of educational content offered at the course.

Limited to 100 registrants, this intimate workshop allows easy access to faculty members. Computer workstations are provided to teach each participant how to quantitate fundamental aspects of clinical echocardiography. Expert faculty will demonstrate advanced hemodynamics, 3D, and myocardial strain imaging. Each participant will have plenty of case studies to practice demonstrated techniques. The small group environment allows the opportunity for nearly private instruction from top practitioners in the field.

## Disclaimer

The information provided during this CME activity is for continuing education purposes only and is not meant to substitute for the independent medical judgment of a healthcare provider relative to diagnostic and treatment options of a specific patient's condition.

## Accreditation and Designation

This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of the American Society of Echocardiography and the American Society of Echocardiography Education and Research Foundation.

The American Society of Echocardiography is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

ASE designates this live activity (the learning lab and the main session) for a maximum of **35 AMA PRA Category 1 Credits™**. The main session has been designated for a maximum of **18.75 AMA PRA Category 1 Credits™**.

Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Successful completion of this CME activity enables the participant to earn up to **35 MOC points in the American Board of Internal Medicine's (ABIM) Maintenance of Certification (MOC) program and/or The American Board of Anesthesiology® (ABA) Maintenance of Certification in Anesthesiology Program® or MOCA®**. Participants will earn MOC points equivalent to the amount of CME credits claimed for the activity. It is ASE's responsibility to submit participant completion information to ACCME for the purpose of granting ABA MOCA and/or ABIM MOC points.



ACCREDITED WITH  
COMMENDATION

Maintenance of Certification in Anesthesiology Program® and MOCA® are registered certification marks of the American Board of Anesthesiology®. MOCA 2.0® is a trademark of the American Board of Anesthesiology®.





# Program Information

## Daily Breakdown of CME Credits

### Learning Lab

Friday, February 21, 2020 = 9.50 hours

Saturday, February 22, 2020 = 6.75 hours

### Main Conference

Saturday, February 22, 2020 = 2.25 hours

Sunday, February 23, 2020 = 8.50 hours

Monday, February 24, 2020 = 8.00 hours

The ACCME and the European Board of Accreditation in Cardiology (EBAC) recognize each other's accreditation systems as substantially equivalent. To obtain EBAC credit for participation in this activity, submit evidence of participation directly to EBAC ([www.ebac-cme.org](http://www.ebac-cme.org)).

The European Union of Medical Specialists (UEMS)-European Accreditation Council for Continuing Medical Education (EACCME) has an agreement of mutual recognition of continuing medical education (CME) credit with the American Medical Association (AMA). European physicians interested in converting *AMA PRA Category 1 Credit™* into European CME credit (ECMEC) should contact the UEMS ([www.uems.eu](http://www.uems.eu)).

ARDMS, CCI, and Sonography Canada recognize ASE's certificates and have agreed to honor the credit hours toward their registry requirements for sonographers.

All or a portion of this educational activity may meet the CME requirement for IAC Echocardiography accreditation.

This activity is eligible for Section 1 credits in the Royal College of Physicians and Surgeons of Canada's Maintenance of Certification (MOC) Program. Participants must log into MAINPORT to claim this activity.

Physician Assistants may claim credit for completing this activity. NCCPA accepts *AMA PRA Category 1 Credit™* from organizations accredited by ACCME or a recognized state medical society.

## Disclosure

ASE is committed to ensuring that its educational mission and all educational programs are not influenced by the special interests of any corporation or individual, and its mandate is to retain only those speakers whose financial interests can be effectively resolved to maintain the goals and educational integrity of the program. While a monetary or professional affiliation with a corporation does not necessarily influence a speaker's presentation, the Essential Areas and Policies of the ACCME require that any relationships that could possibly conflict with the educational value of the program be resolved prior to the educational session and disclosed to the audience. In accordance with these policies, ASE implemented mechanisms prior to the planning and implementation of this CME activity to identify and resolve conflicts of interest for all individuals in a position to control content. Disclosure information is referenced and can be found beginning on page 11 of this program.

## Commercial Support Disclosure Statement

**Educational Grants:** This activity is supported in part by unrestricted educational grants from Abbott, Boston Scientific, Edwards Lifesciences, Lantheus Medical Imaging, Inc., Medtronic, and Pfizer.

**In-Kind Donations:** This activity is supported in part by in-kind donations from Canon Medical Systems USA, FUJIFILM Medical Systems USA, Inc., GE Healthcare, Hitachi Healthcare, Philips, and Siemens Healthineers.

## How to Obtain CME

To claim your CME for State-of-the-Art Echocardiography, please follow the steps below using your Mozilla Firefox, Google Chrome, or Safari browser. Internet Explorer will not work. The deadline to claim credit is **March 20, 2020**.

### ASE Members:

1. Go to ASEcho.org and log in to the Member Portal with your username (email) and password.
2. Click on Education then ASEUniversity (This will take you directly to your ASEUniversity member profile).
3. Proceed to the instructions below under "To Claim Credit."

### Nonmembers:

1. Go to ASEUniversity.org.
2. Log into your existing account using the red "Log In" button on the top right or create account.
3. Click on "My Account" on the top right.
4. Proceed to the instructions below under "To Claim Credit."

### To Claim Credit:

1. Click "Add Access Code" on the left sidebar and select "Click here to redeem it."
2. Enter the code "SOTA2020" and click the "Redeem Code" button.
3. Once verified, click "CE Information" tab and "Take Exam" button to claim your CME credit. CME credits are not earned until the entire evaluation has been completed.
4. Remember to enter your ABIM, ABA, ARDMS, or CCI number and birthdate if you choose to have credits for this meeting submitted to your associated board. There is a space for this information on the first page of the evaluation.
5. Once you have completed the evaluation, your certificate will be available for immediate download and can also be found under "My Account" in the "My Transcripts" section.

# Attendee Information & Regulations

## Registration Location and Hours

Attendee registration is located outside of the Herberger Ballroom.

Friday, February 21, 2020..... 7:00 AM – 6:45 PM

Saturday, February 22, 2020 ..... 7:00 AM – 8:00 PM

Sunday, February 23, 2020 and Monday, February 24, 2020 the registration desk will be open during all session hours.

## Food Functions

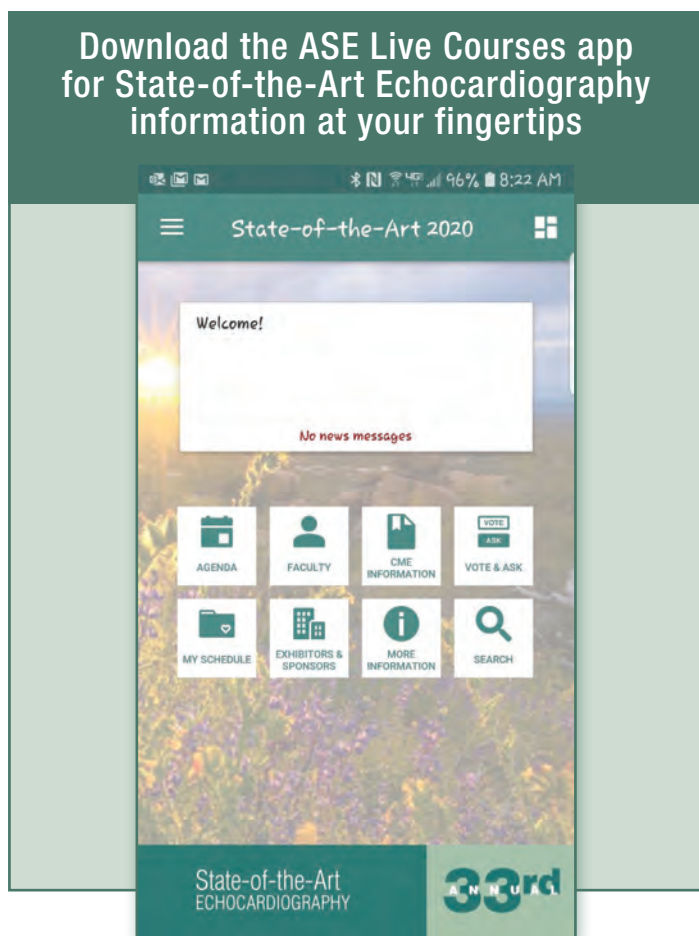
ASE will provide breakfast and coffee breaks for registered attendees in Herberger Ballroom 2.

Lunch will be provided for registered attendees of the main conference on Sunday, February 23 – Monday, February 24. Lunch times vary. Please refer to the program schedule for times.

Refer to the program schedule for the times of the daily coffee breaks. The Westin Kierland Resort & Spa offers their guests a variety of dining options. Please see Location Information (page 6) for more details.

## Mobile Device Use

We encourage you to use your mobile device to download the ASE Courses app. After you have downloaded the app, you will have access to the entire meeting program at your fingertips. You can also use the app to ask questions during the sessions you attend. Search “ASE Courses” in the Google Play and Apple Stores to download. **Please remember to turn your mobile device to silent or vibrate mode.**



## Internet Access

Any attendee staying at the Westin Kierland Resort & Spa receives property-wide complimentary internet access as part of the resort fee. Log in using your guest room number and last name to access. If you are a local attendee or not staying at the Westin Kierland Resort & Spa, please visit the Registration desk to receive login details for internet access.

## FedEx Office

The FedEx Office Print & Ship Center, located inside the Westin Kierland Resort & Spa, offers many services such as packing and shipping, office supplies, copying, and printing services. The FedEx office is conveniently open seven days a week.

## Safety

Audience seating is on a first come, first served basis. According to fire code, a session must be closed if the room fills to capacity. Inappropriate behavior or undesirable conduct, including, but not limited to, verbal or physical abuse, whether threatened or performed, will not be permitted or tolerated. You must wear your name badge at all times when attending the session or events.

## Photography/AV Policy

No person may record any portion of the 33<sup>rd</sup> Annual State-of-the-Art Echocardiography, either by video, still or digital photography, audio or any other recording or reproduction mechanism. This includes recording of presentations and supporting audio visual materials and of poster presentations and supporting poster materials.

Taking photos of, or recording the content of, presentation slides is also prohibited and is considered intellectual piracy. Attendees who ignore this policy will be asked to leave the educational session and are at risk of losing their name badge and attendance privileges. Photographs taken for the purpose of sharing on social media is allowed, but should avoid showing presentation slides. Please use #EchoSOTA when posting on social media.

ASE reserves the rights to all recordings or reproductions at ASE meetings. Please be aware that during the 33<sup>rd</sup> Annual State-of-the-Art Echocardiography, attendees, vendors, guests, and exhibitors may be photographed or videotaped by ASE staff capturing the event. Some of these photographs or videos may be displayed by ASE in future publication or other materials. By virtue of your attendance, you agree to allow ASE to use photographs of you in its promotional materials.

## Child Care

The Westin Family Seasonal Kids Club, led by the Resort’s award-winning FUN Team, offers children ages 4–12 years old hours of fun with activities that include swimming, scavenger hunts, tours of the hotel, movies, video games, arts and crafts, and much more. They also offer Parents Get the Night Off and Play Date Night.

For more information and fees, visit: [ASEcho.org/SOTA/ChildCare](http://ASEcho.org/SOTA/ChildCare). To make a reservation, please contact Kierland Mining Company at 480-624-1268 or email [FUN@KierlandResort.com](mailto:FUN@KierlandResort.com). **Reservations are required in advance of conference start date, prior to February 22.**

# Location Information

## Scottsdale, Arizona

Make time to stretch your legs on a wildflower hike and possibly catch a spring training baseball game. The nearby McDowell Sonoran Preserve is an other-worldly landscape of rugged mountains, towering saguaros, and whimsically shaped cacti. By day, this lush landscape is ideal for sunrise hikes, hot air ballooning, and other desert adventures. After dark, the desert continues to delight with stargazing excursions and technicolor sunsets.

Old Town Scottsdale is full of public art installations, galleries, boutiques, spas, and restaurants. It also boasts award-winning craft breweries and wine-tasting rooms, as well as two of the city's most popular museums, the Western Spirit: Scottsdale's Museum of the West and the Scottsdale Museum of Contemporary Art.

Other sights you won't want to miss are Taliesin West, architect Frank Lloyd Wright's former home and studio, and a stroll among thousands of colorful species at Butterfly Wonderland. You will not go hungry in Scottsdale as it is home to more than 800 restaurants citywide.



## The Westin Kierland Resort & Spa

Just steps from upscale shopping, dining, and entertainment in Kierland Commons, the resort features three golf courses at Kierland Golf Club. Enjoy a relaxing massage at Agave, The Arizona Spa that offers treatments inspired by traditional practices handed down through many of Arizona's native cultures as well as therapies infused with healing traditions from the best practices all over the world. Reenergize in the WestinWORKOUT® Fitness Studio, open 24 hours with room card access which includes a hot tub, steam room, and sauna. One of the resort's biggest attractions is the Adventure Water Park, which offers the iconic Kierland FlowRider flow-board simulator for surfing in the desert, a lazy river, a 110-foot-long waterslide, and more! Rent a family-friendly poolside cabana to relax in shaded luxury or enjoy your very own Tommy Bahama Relaxation Reef private island. The Agumiel pool is the heated adult pool and is a quiet retreat that features lap lanes for fitness swimming, a hot tub, and private cabanas.

## Westin Kierland Resort & Spa Dining and Beverage Options

**Brittlebush Bar & Grill:** After a round of golf, visit Brittlebush Bar & Grill, the resort's gastropub restaurant. Sip on local craft beer, microbrews, and signature label, "Piper's Pale Ale." Relax in a lodge-like setting with copper accents and wood beams. Serving lunch; casual dress.

**Coffee Flats:** Stop by Coffee Flats before you explore sunny Scottsdale. Offering Starbucks® coffees, pastries, and hot breakfast sandwiches. At lunch, grab a salad, wrap, or snack from a selection of to-go items. Serving breakfast and lunch; casual dress.

**deseo:** Pair Latin American cuisine with a South American wine list at deseo. This lively, upbeat restaurant and lounge offers tasty ceviche, anticuchos, tapas, and an exceptional fine dining setting. Serving dinner; casual dress.

**J. Swilling's Poolside Bar & Grill:** Eat well with a casual menu after drifting in the lazy river or boarding the Kierland FlowRider. Reenergize with salads, sandwiches, and snacks. Relax in the sunshine with a frosty cocktail or beverage. Serving lunch and dinner; casual dress.

**Nellie Cashman's Monday Club Café:** Savor Arizona-inspired dining with a modern menu that reinvents traditional recipes that date back to the late 1800's. Sip on a cocktail or spirit crafted from locally sourced ingredients. Serving breakfast, lunch, and dinner; casual dress.

**The Rim:** Take in serene views of Dreamweavers Canyon at The Rim. This lobby lounge includes premium tequilas and an award-winning selection of wines and vintage cigars. Unwind with live, local music. Serving lunch; casual dress.

**The Scotch Library:** Let the Scotch Library Ambassadors guide you through more than 300 whiskey labels. Aficionados and first-timers find something to love with invigorating single malts and blended selections.

**Waltz & Weiser Whiskey Bar and Cantina:** Immerse yourself in a re-imagined Old West at Waltz & Weiser Saloon. Offering balanced menu items and a selection of fine tequilas and whiskeys, it's the perfect place to watch the game or relax in the cool, evening air. Serving lunch and dinner; casual dress.

## Westin Kierland Resort & Spa Address

**6902 E. Greenway Parkway, Scottsdale, AZ 85254**  
**Phone: (480)-624-1000**

## FRIDAY, FEBRUARY 21, 2020

7:00 AM	<b>Registration</b> Herberger Foyer
7:00 – 7:45 AM	<b>Breakfast for Learning Lab Attendees</b> Herberger Ballroom 2
<b>LEARNING LAB</b> (additional fee required) Herberger Ballroom 3 Chairs: <i>B. Khandheria, R. Lang, M. Umland</i>	
7:45 AM	<b>Welcome, Objectives, and Introductions</b> <i>B. Khandheria, R. Lang</i>
8:00 AM	<b>Introduction to Computers/Software</b> <i>M. Umland</i>
8:15 AM	<b>Basic and Advanced Hemodynamics</b> <i>H. Huisheere, B. Khandheria, S. Roemer</i>
9:15 AM	<b>Basic 3D</b> <i>E. Kruse, R. Lang, M. Yamat</i>
10:15 AM	<b>Basic Strain Imaging</b> <i>C. Bergeron, M. Christensen, C. Kramer, P. Sengupta</i>
11:15 – 11:30 AM	<b>Refreshment Break for Learning Lab Attendees</b> Herberger Foyer
11:30 AM	<b>Basic Diastolic Function</b> <i>B. Khandheria, S. Roemer, M. Schweitzer</i>
12:30 PM	<b>Unknown Cases, Question and Answer</b> Panel
1:00 – 2:00 PM	<b>Lunch for Learning Lab Attendees</b> Herberger Ballroom 2
2:00 PM	<b>Measurements for TAVR, Transcatheter Mitral Valve Repair, MitraClip, Left Atrial Appendage Occluder</b> <i>H. Huisheere, B. Khandheria, E. Kruse, R. Lang, S. Roemer</i>
4:00 – 4:15 PM	<b>Refreshment Break for Learning Lab Attendees</b> Herberger Foyer
4:15 PM	<b>3D Crop and Measure</b> <i>C. Kramer, R. Lang, M. Umland, M. Yamat</i>
5:45 PM	<b>Case Studies</b> Panel
6:45 PM	<b>Adjourn</b>

## SATURDAY, FEBRUARY 22, 2020

7:00 AM	<b>Registration</b> Herberger Foyer
7:00 – 7:30 AM	<b>Breakfast for Learning Lab Attendees</b> Herberger Ballroom 2
<b>LEARNING LAB</b> (additional fee required) Herberger Ballroom 3 Chairs: <i>B. Khandheria, R. Lang, M. Umland</i>	
7:30 AM	<b>Aortic Stenosis, Measurements for Native and Prosthetic Valves</b> <i>H. Huisheere, B. Khandheria, M. Roemer</i>
8:30 AM	<b>Aortic Regurgitation: Practical Measurements</b> <i>C. Bergeron, E. Kruse, R. Lang</i>
9:30 AM	<b>Mitral Regurgitation, Clip, Transcatheter Mitral Valve Repair, Quantification</b> <i>B. Khandheria, C. Kramer, M. Umland</i>

10:30 – 10:45 AM	<b>Refreshment Break for Learning Lab Attendees</b> Herberger Foyer
10:45 AM	<b>Dysfunction of Left Ventricle, Left Ventricular Assist Device</b> <i>M. Christensen, R. Lang, M. Yamat</i>
11:45 AM	<b>Hypertrophic Cardiomyopathy, Left Ventricular Noncompaction, Amyloid</b> <i>B. Khandheria, S. Roemer, M. Schweitzer</i>
12:30 – 1:30 PM	<b>Lunch for Learning Lab Attendees</b> Herberger Ballroom 2
1:30 PM	<b>Diastology, Constriction, Restriction</b> <i>B. Khandheria, C. Kramer, M. Umland</i>
2:30 PM	<b>Right Ventricle</b> <i>E. Kruse, R. Lang, M. Yamat</i>
3:30 PM	<b>Adjourn and Refreshment Break for Learning Lab Attendees</b> Herberger Foyer

## MAIN CONFERENCE

Herberger Ballroom 3

4:30 PM	<b>Welcome and Course Introduction</b> <i>B. Khandheria, W. Zoghbi</i>
4:45 PM	<b>President's Address: State of ASE</b> <i>M. Swaminathan</i>

## CORONARY ARTERY DISEASE: STILL THE MAINSTAY

Herberger Ballroom 3

Moderator: *R. Jain*

5:00 PM	<b>Right Ventricle, Papillary Muscle Rupture, and Myocardial Rupture</b> <i>S. Lester</i>
5:15 PM	<b>Complications of Myocardial Infarction, Right Ventricle, Myocardial Rupture, and Pap Muscle Rupture</b> <i>R. Jain</i>
5:30 PM	<b>Acute Myocardial Infarction Complication: Three Cases of Ventricular Septal Defect</b> <i>J. Hung</i>
5:45 PM	<b>Stress Echocardiography Is Still Alive</b> <i>W. Zoghbi</i>
6:00 – 7:00 PM	<b>Dinner on Your Own</b>

## CORONARY ARTERY DISEASE: STILL THE MAINSTAY

Herberger Ballroom 3

Moderator: *J. Seward*

7:00 PM	<b>Virtual Reality Meets Echocardiography</b> <i>R. Lang</i>
7:15 PM	<b>Artificial Intelligence and Echocardiography: Impact on Sonographers and Echocardiographers</b> <i>S. Lester</i>
7:30 PM	<b>3D Printing: Here Is the Clinical Value</b> <i>S. Little</i>
7:45 PM	<b>Robotic Echocardiography: Artificial Intelligence and Machine Learning</b> <i>P. Sengupta</i>
8:00 PM	<b>Adjourn</b>



# Schedule of Events

## SUNDAY, FEBRUARY 23, 2020

7:00 AM **Registration**  
Herberger Foyer

7:00 – 8:00 AM **Breakfast and Visit Exhibits**  
Herberger Ballroom 2

### STRUCTURAL HEART DISEASE: PART I

Herberger Ballroom 3  
Moderator: *S. Little*

8:00 AM **Cases to Illustrate Aortic Stenosis Gradient and Area Do Not Match: What Should I Do?**  
*M. Saric*

8:15 AM **What Should a Successful TAVR Look Like for Echocardiographers?**  
*R. Jain*

8:30 AM **Case Examples of Complications Seen by Echocardiographers**  
*S. Little*

8:45 AM **Degenerated Bio Prosthesis, Valve-in-Valve: What Echocardiographers Should Look For**  
*P. Sengupta*

9:00 AM **Question and Answer**  
Panel

### STRUCTURAL HEART DISEASE: PART II

Herberger Ballroom 3  
Moderator: *W. Zoghbi*

9:15 AM **Mitral Regurgitation, Etiology, and Quantification**  
*W. Zoghbi*

9:30 AM **MitraClip Measurements: It Worked and It Did Not Work**  
*S. Little*

9:30 AM – 12:00 PM **3D/4D ACQUISITION WORKSHOP**  
Merriam A  
*H. Huisheere, S. Roemer, M. Schweitzer*

9:30 AM – 12:00 PM **ADVANCED MYOCARDIAL STRAIN MECHANICS**  
Merriam B  
*C. Bergeron, E. Kruse, M. Yamat*

9:45 AM **Measurements for Transcatheter Mitral Valve Repair, SAPIEN in Degenerated Mitral Valve**  
*M. Saric*

10:00 AM **Pathologies of Mitral Valve (Rheumatic, Eosinophilia, Degenerative)**  
*S. Lester*

10:15 AM **Endocarditis and Complications of Mitral Valve**  
*R. Jain*

10:30 AM **Question and Answer**  
Panel

10:45 – 11:15 AM **Refreshment Break and Visit Exhibits**  
Herberger Ballroom 2

### STRUCTURAL HEART DISEASE: PART III

Herberger Ballroom 3  
Moderator: *J. Seward*

11:15 AM **Pathologies of Tricuspid Valve (Carcinoid, Flail, Vegetation)**  
*R. Jain*

11:30 AM **Left Atrial Appendage Occluder Device, Measurement**  
*M. Saric*

11:45 AM **Measuring Normal Function of Prosthetic Valve**  
*W. Zoghbi*

12:00 PM **Prosthetic Valve Endocarditis**  
*B. Khandheria*

12:15 PM **Question and Answer**  
Panel

12:30 – 1:30 PM **Lunch and Visit Exhibits**  
Herberger Ballroom 2

### AORTIC REGURGITATION

Herberger Ballroom 3  
Moderator: *R. Lang*

1:30 PM **Aortic Regurgitation Illustrative Cases: What Is the Mechanism?**  
*R. Lang*

1:45 PM **Echo: Pathologic Correlation in Aortic Valve Disease, View from Anesthesia**  
*M. Swaminathan*

2:00 PM **Case Examples of Quadricuspid, Bicuspid, Unicuspid Aortic Valve**  
*S. Roemer*

2:15 PM **Endocarditis and Complications of Aortic Valve: Illustrative Cases**  
*J. Hung*

2:30 PM **Question and Answer**  
Panel

2:45 – 5:15 PM **3D/4D ACQUISITION WORKSHOP**  
Merriam A  
*M. Christensen, H. Huisheere, M. Yamat*

2:45 – 5:15 PM **ADVANCED MYOCARDIAL STRAIN MECHANICS**  
Merriam B  
*C. Kramer, E. Kruse, S. Roemer*

### DIASTOLOGY

Herberger Ballroom 3  
Moderator: *S. Lester*

2:45 PM **Learn Clinical Diastology With Cases**  
*W. Zoghbi*

3:00 PM **When It Does Not Fit: Examples in Clinical Practice**  
*S. Lester*

3:15 PM **Amyloid and Constriction**  
*J. Hung*

3:30 PM **Question and Answer**  
Panel

3:45 – 4:15 PM **Refreshment Break and Visit Exhibits**  
Herberger Ballroom 2

### CARDIOMYOPATHY

Herberger Ballroom 3  
Moderator: *T. Abraham*

4:15 PM **Cases: Variants of Hypertrophic Cardiomyopathy**  
*T. Abraham*

4:30 PM **Fabry and Lamp: Case Studies**  
*R. Jain*

4:45 PM **Stress Cardiomyopathy: Variants As Seen on Echo**  
*P. Sengupta*

5:00 PM **Systemic Illness and the Heart (Eosinophilia, Hemochromatosis, Hyperoxalosis)**  
*S. Lester*

5:15 PM **Question and Answer**  
Panel

5:30 – 7:30 PM **Dinner on Your Own**



7:30 PM	<b>Rapid Fire Cases: Pickelhaube, Duchenne, Cardio Oncology, Pericardial Fat, Pericardial Effusion, Contrast Enhanced Imaging</b> <i>B. Khandheria, C. Kramer, S. Roemer, M. Saric, M. Umland</i>
8:30 PM	<b>Adjourn</b>

## MONDAY, FEBRUARY 24, 2020

7:00 AM	<b>Registration</b> Herberger Foyer
7:00 – 8:00 AM	<b>Breakfast and Visit Exhibits</b> Herberger Ballroom 2

### RIGHT HEART, PULMONARY HYPERTENSION

Herberger Ballroom 3  
Moderator: *J. Hung*

8:00 AM	<b>Evaluation of Right Ventricle: Learn by Cases</b> <i>R. Lang</i>
8:15 AM	<b>Pulmonary Hypertension: Optimal Evaluation</b> <i>J. Hung</i>
8:30 AM	<b>Right Ventricular Strain: Cases to Illustrate How</b> <i>P. Sengupta</i>
8:45 AM	<b>Question and Answer</b> <i>Panel</i>

### MYOCARDIAL MECHANICS

Herberger Ballroom 3  
Moderator: *P. Sengupta*

9:00 AM	<b>Basic Myocardial Strain Imaging</b> <i>P. Sengupta</i>
9:15 AM	<b>Clinical Examples of Utility of Global Longitudinal Strain</b> <i>T. Abraham</i>
9:30 AM	<b>Where Strain Falls Apart</b> <i>S. Lester</i>
9:30 AM – 12:00 PM	<b>3D/4D ACQUISITION WORKSHOP</b> Merriam A <i>H. Huisheere, S. Roemer, M. Schweitzer</i>
9:30 AM – 12:00 PM	<b>ADVANCED MYOCARDIAL STRAIN MECHANICS</b> Merriam B <i>C. Bergeron, E. Kruse, M. Yamat</i>
9:45 AM	<b>Myocardial Work Index: How Do I Acquire This?</b> <i>S. Roemer</i>
10:00 AM	<b>Clinical Examples of Myocardial Work Index</b> <i>T. Abraham</i>
10:15 AM	<b>Question and Answer</b> <i>Panel</i>
10:30 – 11:00 AM	<b>Refreshment Break and Visit Exhibits</b> Herberger Ballroom 2

### LEFT ATRIAL STRAIN

Herberger Ballroom 3  
Moderator: *W. Zoghbi*

11:00 AM	<b>Left Atrial Strain: How to Obtain This</b> <i>M. Schweitzer</i>
11:15 AM	<b>Utility of Left Atrial Strain: Case Examples</b> <i>S. Roemer</i>
11:30 AM	<b>Left Atrial Volume Should Replace Left Atrial Size: Examples of Why</b> <i>R. Lang</i>
11:45 AM	<b>Question and Answer</b> <i>Panel</i>

### MISCELLANEOUS TOPICS: PART I

Herberger Ballroom 3  
Moderator: *R. Jain*

12:00 PM	<b>Cardio Oncology: Case Examples</b> <i>J. Hung</i>
12:15 PM	<b>Diabetes and the Heart</b> <i>R. Jain</i>
12:30 PM	<b>Cases: Hypertension and Echocardiography</b> <i>T. Abraham</i>
12:45 PM	<b>Question and Answer</b> <i>Panel</i>
1:00 – 2:00 PM	<b>Lunch and Visit Exhibits</b> Herberger Ballroom 2

### MISCELLANEOUS TOPICS: PART II

Herberger Ballroom 3  
Moderator: *M. Saric*

2:00 PM	<b>Embolic Events and the Heart</b> <i>M. Saric</i>
2:15 PM	<b>Masses in the Left Heart</b> <i>M. Umland</i>
2:30 PM	<b>Masses in the Right Heart</b> <i>C. Kramer</i>
2:30 – 5:00 PM	<b>3D/4D ACQUISITION WORKSHOP</b> Merriam A <i>M. Christensen, H. Huisheere, M. Yamat</i>
2:30 – 5:00 PM	<b>ADVANCED MYOCARDIAL STRAIN MECHANICS</b> Merriam B <i>C. Kramer, E. Kruse, S. Roemer</i>
2:45 PM	<b>Normal Left Ventricular Assist Device Cases</b> <i>M. Christensen</i>
3:00 PM	<b>Abnormal Left Ventricular Assist Device Cases</b> <i>H. Huisheere</i>
3:15 PM	<b>Question and Answer</b> <i>Panel</i>
3:30 – 3:45 PM	<b>Refreshment Break and Visit Exhibits</b> Herberger Ballroom 2
3:45 PM	<b>Atrial Septal Defect: Secundum, Sinus Venosus, Anomalous Pulmonary Veins</b> <i>M. Saric</i>
4:00 PM	<b>Abnormal Prosthetic Valve in Mitral Position</b> <i>M. Umland</i>
4:15 PM	<b>Abnormal Prosthetic Valve in Aortic Position</b> <i>S. Lester</i>
4:30 PM	<b>Fusion Imaging</b> <i>R. Jain</i>
4:45 PM	<b>Pulmonary Embolism</b> <i>P. Sengupta</i>
5:00 PM	<b>Percutaneous Closure</b> <i>M. Saric</i>
5:15 PM	<b>Question and Answer</b> <i>Panel</i>
5:30 PM	<b>Closing Remarks</b> <i>B. Khandheria, W. Zoghbi</i>
5:45 PM	<b>Adjourn</b>

# Exhibitor Information

## Exhibit Location and Hours

Exhibits are located in Herberger Ballroom 2 during the dates and hours listed below.

Sunday, February 23 ..... 7:00 AM – 4:15 PM  
Monday, February 24 ..... 7:00 AM – 3:45 PM

## Exhibitor Descriptions



**Akcea Therapeutics**  
22 Boston Wharf Road, 9th Floor  
Boston, MA 02210  
United States  
Phone: 408-656-6831  
akceatx.com

Akcea Therapeutics is a development and commercialization biotech company focused on helping patients living with serious and rare diseases. Akcea has a robust portfolio of development- and registration-stage drugs covering multiple targets and diseases using advanced RNA-targeted antisense therapeutics, which includes TEGSEDI (inotersen) for the treatment of polyneuropathy caused by hereditary transthyretin-mediated amyloidosis (hATTR) for adults.



**Canon Medical Systems, USA**  
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Tustin, CA 92780  
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Phone: 310-619-7012  
us.medical.canon



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Phone: 888-615-1888 ext. 308  
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United States  
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United States  
Phone: 800-362-2668  
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**Scottsdale Echocardiography Simulation Training Lab**  
7137 East Rancho Vista Drive, Suite B-31  
Scottsdale, AZ 85251  
United States  
Phone: 480-652-6000  
echosim.com

The Scottsdale Echocardiography Simulation Training Laboratory is a unique privately funded educational project. For the past 6 years the laboratory has allowed private practice and academic participants access to high fidelity echocardiography simulation not readily available outside of more sophisticated academic settings. Private physician to physician or physician to sonographer instruction is based on a one-on-one model. Teaching goals are tailored to the specific needs of the attendee and are based on the current ASE Guidelines. Physician attendees are strongly encouraged to become ASE members and complete one of the four current National Board of Echocardiography examinations.

## SIEMENS Healthineers

Siemens Healthineers  
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Cara Burgeron, RDCS, RVT  
Marissa Christensen, RDCS  
Hillary S. Huisheere, RDCS, RVT  
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### The following faculty members do have financial relationships with industry/commercial supporters to disclose:

Judy W. Hung, MD – Harpoon Medical Inc. – Core Lab (Consultant, Advisor)  
Eric Kruse, BS, ACS, RDCS, RVT, FASE – Lantheus Medical Imaging (Consultant, Advisor)  
Roberto M. Lang, MD, FASE – Philips Imaging (Speaker/Speakers' Bureau, Consultant, Advisor)  
Stephen H. Little, MD, FASE – Medtronic (Research Grant (including PI); Abbott Vascular (Research Grant (including PI))  
Muhammed Saric, MD, PhD, FASE – Philips (Speaker/Speakers' Bureau); Medtronic (Speaker/Speakers' Bureau); Siemens (Consultant, Advisor)  
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