



Science, Medicine and Industry  
Innovating ..... for the Future.



# PROGRAM

**ASAIO 65th Annual Conference – San Francisco**

“Dare To Innovate – Shape The Future”

**June 26 – 29, 2019**

# ASAIO 66<sup>TH</sup> ANNUAL CONFERENCE

# CHICAGO

June 10 - 13, 2020



[www.ASAIO.com](http://www.ASAIO.com)

- Committees
- Calendar
- Exhibits
- Abstracts
- Accreditation
- Dates and Deadlines
- Sponsorship Opportunities
- Previous Conference Programs
- Membership in ASAIO
- ASAIO Journal
- Manuscript Submission
- Online Journal Access for Members



**ASAIO Headquarters**

561.999.8969

[info@asaio.com](mailto:info@asaio.com)

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## Registration

Yosemite Foyer Ballroom - Ballroom Level - T1

### ASAIO Headquarters

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### ASAIO Journal

Mark S. Slaughter, MD, Editor  
Michelle Gaffney, Managing Editor

### Editorial Office

Tel 443.685.5413  
editor@asaiojournal.net

# ACCREDITATION

## CERTIFICATION

All those who complete a course evaluation will receive a certificate of credit from the University of Massachusetts Medical School Office of Continuing Education. Each person should claim only those hours of credit that he/she actually spent in the educational activity. The link to the online course evaluation is available at [www.asaio.com](http://www.asaio.com) under "Annual Conference". For all CME certificate inquiries, please contact the UMMS-OCME via email at [coned@umassmed.edu](mailto:coned@umassmed.edu).

## CME ACCREDITATION STATEMENT

This activity has been planned and implemented in accordance with the Essential Areas and policies of the Accreditation Council for Continuing Medical Education through the Joint Providership of the The University of Massachusetts Medical School and ASAIO. The University of Massachusetts Medical School is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

## ASAIO

### DESIGNATION STATEMENT

The University of Massachusetts Medical School designates this educational activity for a maximum of 12.25 *AMA PRA Category 1 Credits™*. Physicians should claim only credit commensurate with the extent of their participation in the activity.

### Nursing

This activity meets the requirements for 14.7 contact hours for nurses as specified by the Massachusetts Board of Registration in Nursing (244-CMR 5.04). Each nurse should claim only those hours of credit that he/she actually spent in the educational activity.

## Pediatric Medical Device Day

### DESIGNATION STATEMENT

The University of Massachusetts Medical School designates this educational activity for a maximum of 5 *AMA PRA Category 1 Credits™*. Physicians should claim only credit commensurate with the extent of their participation in the activity.

### Nursing

This activity meets the requirements for 6 contact hours for nurses as specified by the Massachusetts Board of Registration in Nursing (244-CMR 5.04). Each nurse should claim only those hours of credit that he/she actually spent in the educational activity.

## MCS/VAD University

### DESIGNATION STATEMENT

The University of Massachusetts Medical School designates this educational activity for a maximum of 9.5 *AMA PRA Category 1 Credits™*. Physicians should claim only credit commensurate with the extent of their participation in the activity.

### Nursing

This activity meets the requirements for 11.7 contact hours for nurses as specified by the Massachusetts Board of Registration in Nursing (244-CMR 5.04). Each nurse should claim only those hours of credit that he/she actually spent in the educational activity.

## ICCAC MCS Proficiency Verification

### DESIGNATION STATEMENT

The University of Massachusetts Medical School designates this educational activity for a maximum of 5.5 *AMA PRA Category 1 Credits™*. Physicians should claim only credit commensurate with the extent of their participation in the activity.

### Nursing

This activity meets the requirements for 6.6 contact hours for nurses as specified by the Massachusetts Board of Registration in Nursing (244-CMR 5.04). Each nurse should claim only those hours of credit that he/she actually spent in the educational activity.

## ACCREDITATION FOR PERFUSIONISTS

The American Board of Cardiovascular Perfusion will allot Category 1 CEUs to those Perfusionists who attend the Conference with a **Total Possible of 33**.

Participants must sign in once daily to verify attendance. A photo ID is required for participants to obtain registration materials. On the first day, pick up a Session Evaluation Worksheet. Keep this Evaluation Worksheet for the duration of the Conference and fill it in for every session you attend. Return your completed Session Evaluation Worksheet to the ASAIO Registration Desk on the last day of your attendance.

# ASAIO EDUCATIONAL GRANT SPONSORSHIP

# ASAIO FELLOWSHIPS & AWARDS



▪ *Medtronic*



▪ *Abbott*



▪ *SynCardia  
Systems LLC*



▪ *Abiomed*  
▪ *Evaheart Inc*

## Additional Educational Grants

*Fresenius Medical Care*

*Kurt A. Dasse, PhD*

*MC3*

*Pramod Bonde, MD*

## ASAIO Y Nosé International Fellowship

*Sponsored by the Y Nosé Fellowship Fund*

**Keum Hee Ko**  
**The University of Sydney,**  
**Sydney, Australia**

What Really Matters? A Qualitative Understanding  
of Ventricular Assist Device Stakeholders' Needs  
Through Digital Channels

.....

## ASAIOfyi – for young innovators Fellowships

*Sponsored by the Paul S Malchesky  
Fellowship Fund*

**Jacqueline Kading, BS**  
**University of Michigan, Ann Arbor, MI**

Evolution of Vascular Access for the Artificial  
Placenta: From Two-Vessel Single-Lumen  
Venovenous Cannulation to Single-Vessel  
Cannulation with Tidal Flow

**Landon Tompkins, MEng**  
**University of Louisville, Louisville, KY**

Development of a Sutureless LVAD Outflow  
Graft Anastomotic Quick-connect System

.....

## ASAIO VAD Coordinator Leadership Award

**Colleen LaBuhn, APN**  
**University of Chicago Medical Center,**  
**Chicago, IL**

# ASAIO BOARD OF TRUSTEES

June 17, 2018 - June 29, 2019



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## The Above Individuals Represent the ASAIO Executive Board



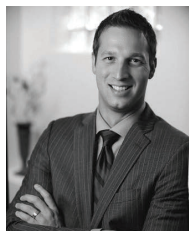
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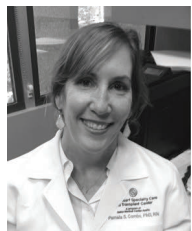
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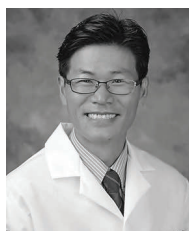
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June 17, 2018 - June 29, 2019



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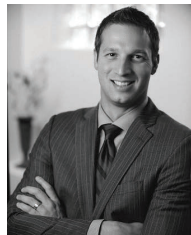
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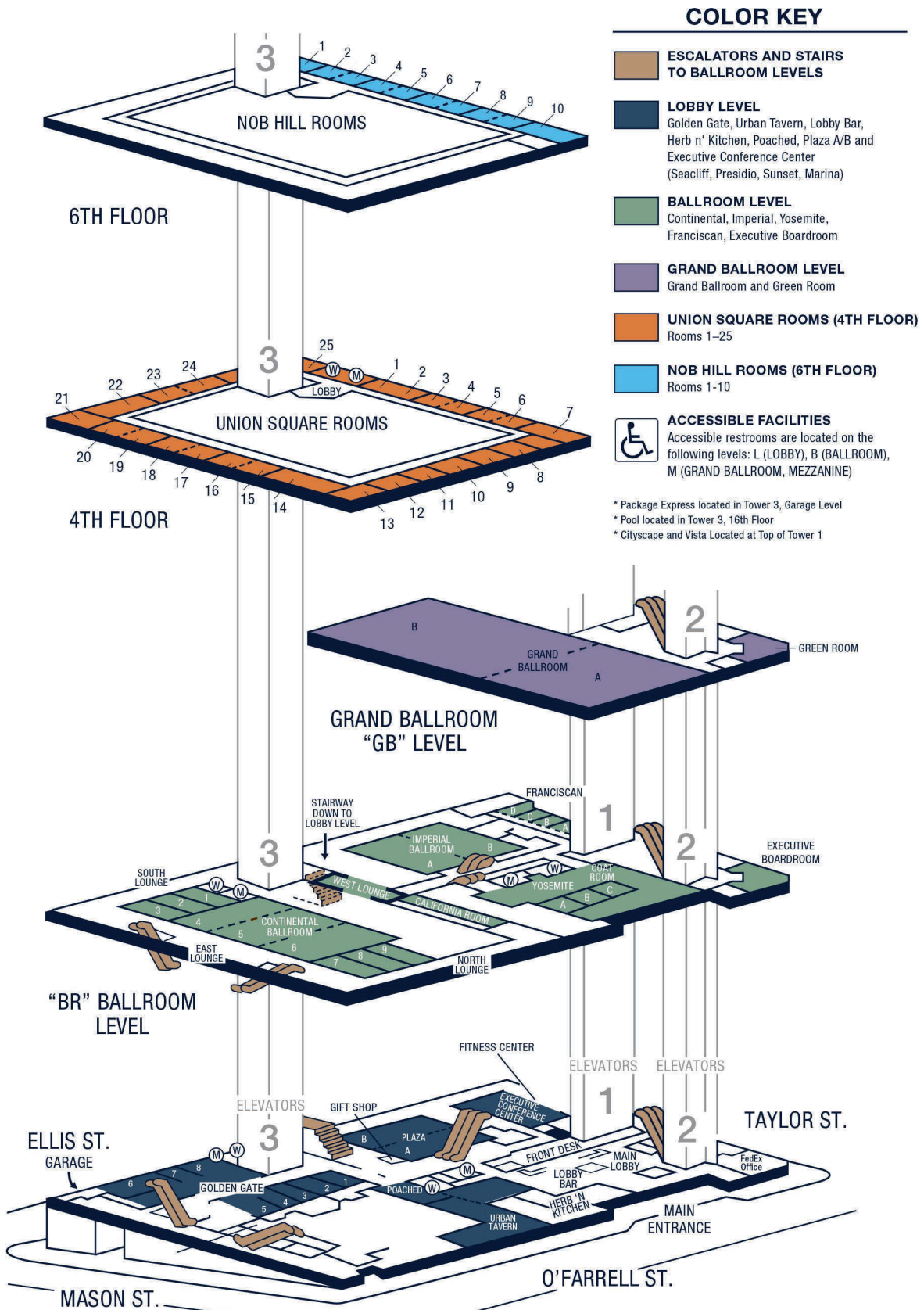
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# ASAIO 65TH ANNUAL CONFERENCE

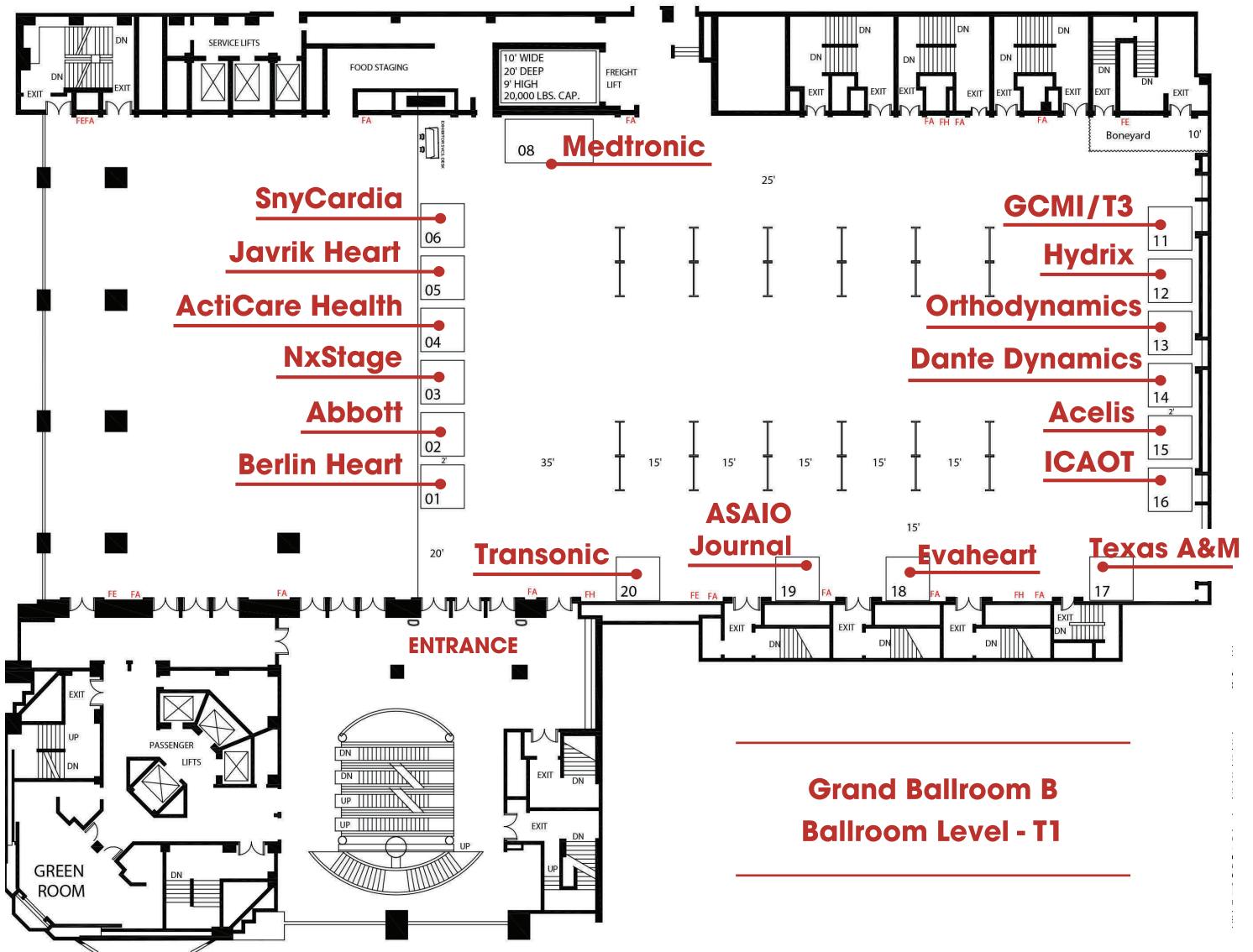
## Hilton San Francisco Union Square - Floor Plan



# ASAIO 65TH ANNUAL CONFERENCE

Hilton San Francisco Union Square

**Exhibits | Posters | Refreshment Breaks | Welcome Reception**



**Grand Ballroom B  
Ballroom Level - T1**

## Thursday

- Refreshment Break 9:45 am - 10:30 am
- Refreshment Break 3:00 pm - 3:45 pm
- Welcome Reception 6:00 pm - 7:00 pm

## Friday

- Refreshment Break 10:00 am - 10:45 am
- Refreshment Break 3:00 pm - 3:45 pm



**Abbott**  
*Austin, Texas*  
**Booth 2**

At Abbott, we're committed to helping you live your best possible life through the power of health. For more than 125 years, we've brought new products and technologies to the world – in nutrition, diagnostics, medical devices and branded generic pharmaceuticals – that create more possibilities for more people at all stages of life. Today, 94,000 of us are working to help people live not just longer, but better, in the more than 150 countries we serve.

Connect with us at [www.abbott.com](http://www.abbott.com), on Facebook at [www.facebook.com/Abbott](http://www.facebook.com/Abbott) and on Twitter @AbbottNews and @AbbottGlobal

**Acelis Connected Health**  
*Austin, Texas*  
**Booth 15**

At Acelis Connected Health we help individuals manage their health.

Our ecosystem of products and services supports the management of people's health away from hospitals and labs with remote monitoring and connected data solutions.

With a focus on engaging the individual in their own care, our services center around real-time biometric data management, certified training, and clinical support - creating a comprehensive and effortless digital health experience focused on the individual.

Currently, our offerings enable individuals to monitor their warfarin therapy or ventricular assist device implant from their home or wherever they want to be.



**ActiCare Health Inc**  
*Livermore, California*  
**Booth 4**

ActiCare Health offers the first and only VAD, heart transplant and lung transplant telehealth and advanced monitoring platform with 24x7 support, empowering both patients and clinicians to achieve remarkable outcomes with reduced stress. In response to the immense administrative and operational challenges faced by VAD and transplant departments, we've designed a program to provide enhanced visibility into patients' health status, modernize patient safety and communication, optimize discharge plan adherence, and minimize adverse clinical and financial events. Our program is designed to positively affect health outcomes and quality of life, enhance care coordination and staff efficiency, and reduce costs.



**ASAIO Journal**  
**Published by Wolters Kluwer**  
*Philadelphia, Pennsylvania*  
**Booth 19**

Wolters Kluwer Health is a leading global provider of information and point of care solutions for the healthcare industry. Our solutions are designed to help professionals build clinical competency and improve practice so they can make important decisions on patient care. Our leading product brands include Audio-Digest, Lippincott, Ovid®, UpToDate®, and others.



**Berlin Heart Inc**  
*The Woodlands, Texas*  
**Booth 1**

Berlin Heart, the only company worldwide, that develops, manufactures and distributes VADs for patients of every age and body size. EXCOR® Pediatric provides medium to long-term circulatory support specifically for infants and children awaiting heart transplants. EXCOR Pediatric is approved for use in the USA under PMA regulations by FDA.



**Dantec Dynamics Inc**  
*Holtsville, New York*  
**Booth 14**

Dantec Dynamics specializes in the development, manufacture and application support of measurement systems that acquire and analyze data of physical properties in fluids (velocity, temperature, concentration, species) and in solid structures (strain, vibration, defects), as well as spray diagnostics (particles sizing and velocity). We delivery turnkey and customized solutions built on laser optics, imaging, and sensor technologies.

Our measurement technologies for fluid and spray dynamics include Particle Image Velocimetry (PIV), Hotwire/Constant Temperature Anemometry (CTA), Laser Doppler Velocimetry (LDV), Phase Doppler Particle Sizing (PDA) and Laser Induced Fluorescence (LIF). For solid dynamics, we offer Digital Image Correlation (DIC) and Laser Shearography.



**Evaheart, Inc.**  
*Houston, Texas*  
**Booth 18**

The EVAHEART Left Ventricular Assist System (LVAS)™ is a continuous-flow, hydraulically levitated centrifugal pump designed to support patients with end-stage heart failure as bridge-to-transplant therapy. The EVAHEART LVAS has been commercially available in Japan since 2010.

Evaheart, Inc. (EVI) is a medical device company based in the Texas Medical Center of Houston. EVI was established to gain regulatory approval and commercialize the EVAHEART LVAS in North America and to start distribution in Europe. Under an FDA-approved IDE, a bridge-to-transplant (BTT) clinical trial of the EVAHEART LVAS featuring a new, double-cuff tipless inflow cannula is ongoing in the US.



**GCM I / T3 Labs**  
*Atlanta, Georgia*  
**Booth 11**

GCM I, and its wholly owned subsidiary T3 Labs is a fee-for-service provider for the following services:

- GLP compliant, AAALAC accredited preclinical contract research organization providing feasibility, safety and usability testing services to voice-of-customer and proof of concept events and physician/bioskills training in animate and cadaveric models.
- Full life-cycle assessments for innovative medical products.
- GMP compliant designing and prototyping services for medical products

Utilizing in-house resources, local core-lab resources and third-party service providers, GCM I works every day to bring innovative medical products to patients. Connect with us at [gcmiatl.com](http://gcmiatl.com) or tweet us @medtechinnovate



**Hydrix**

*Mulgrave, Australia*

**Booth 12**

At Hydrix, we are committed to helping you create innovative cardiac products. We have an 18-year track record in medical device development, including VAD, TAH, wearable and monitoring Class II and Class III devices. We offer the complete product development journey including requirements solicitation, regulatory strategy and submission, user experience and insights, design, engineering and prototyping, verification, transfer to manufacture and sustaining engineering services. And our combination of our regulatory and engineering teams delivers a unique and powerful development service that streamlines your path to market.

Please visit us at our booth during the show to learn more about our capabilities, or connect with us at [www.hydrix.com](http://www.hydrix.com)



**Medtronic**

*Framingham, Massachusetts*

**Booth 8**

Patients are at the center of everything we do – and we believe medical technology can play an even greater role in improving people's lives. Medtronic MCS is committed to continuous learning and innovation, to further advance the treatment of end-stage heart failure. We strive to improve patient outcomes and the clinical experience of your practice. Stop by the Medtronic booth to learn more and to see the latest HeartWare™ HVAD™ System enhancements. Join us in our commitment to take healthcare Further, Together. Be inspired at [Medtronic.com](http://Medtronic.com)



**Jarvik Heart, Inc**

*New York, New York*

**Booth 5**

Jarvik Heart, Inc. is a privately held, New York City based company that develops, manufactures and sells unique cardiac assist devices for the treatment of severe heart failure. The Jarvik 2000 is a battery-powered axial-flow left ventricular assist device (LVAD). It is the smallest implantable blood pump available\* for the long-term treatment of Heart Failure. The new Jarvik 15mm VAD has been designed for pediatric and small patients and enrollment in the PumpKIN pediatric clinical trial started in the USA in late 2018. The EU pediatric clinical trial will start in 2019.

\*Jarvik 2000 available, in US, only in FDA clinical trial.



**NxStage Medical Inc**

*Lawrence, Massachusetts*

**Booth 3**

Caring for patients in the ICU is extremely complex; managing your equipment shouldn't be. For that reason, the NxStage System One is designed to provide simplicity and versatility that allows the delivery of renal replacement therapy throughout the continuum of patient care, including: Hemodynamically unstable patients (CRRT) Patients ready to mobilization (6-12 hour RRT) Patients ready to transition off CRRT (PIRRT) Patients that cannot tolerate 3-4 hour IHD (PIRRT) Fluid overloaded patients (Ultrafiltration)



### **Orthodynamics Company, Inc.**

*Noblesville, Indiana*

**Booth 13**

ODI is an industry leader in outsourcing of Mechanical Circulatory Support (MCS) outpatient equipment and supplies. We represent all three FDA approved VAD/MCS devices as well as all major wound care suppliers. This offering, accompanied with our VADTrac<sup>®</sup> Solution (proprietary equipment management software), has allowed ODI, to develop a national network built on strategic alliances with insurance carriers, hospitals, and clinicians, providing VAD/MCS Coordinators and hospitals a solution so they can focus on what they do best! Providing patients with a high level of care and service, while getting them the equipment and supplies they need, when they need it, is our strength and what we do best! For more information, visit <http://www.od-inc.com>



### **Texas A & M Institute for Preclinical Studies**

*College Station, Texas*

**Booth 17**

The Texas A&M Institute for Preclinical Studies fosters multi-disciplinary service, research, and education. The primary focus of TIPS is to develop research activities and provide core services in the areas of device development, preclinical studies under Good Laboratory Practices (GLP), and biomedical imaging. In addition, the educational mission of TIPS centers around the advanced training of graduate and professional students within relevant scientific and engineering disciplines, as well as support the needs of degree programs that train students and industry personnel on regulatory issues within biotechnology.



### **SynCardia Systems, LLC**

*Tucson, Arizona*

**Booth 6**

The SynCardia temporary Total Artificial Heart (TAH-t) is the world's only FDA, Health Canada and CE approved Total Artificial Heart. The TAH-t is currently approved as a bridge to transplant for patients dying from end-stage biventricular failure. The 13.5 lb Freedom<sup>®</sup> portable driver has received CE approval in Europe and FDA approval in the U.S. The Freedom driver is designed to provide mobility for stable TAH-t patients both inside and outside the hospital. Visit the booth for updates on our growing clinical experience, and the Destination Therapy and 50cc Adult/Pediatric TAH-t clinical studies.



### **Transonic Systems Inc**

*Ithaca, New York*

**Booth 20**

#### **Transonic**

#### **The Measure of Better Results from Bench to Bedside**

#### **Cutting Edge Clinical Systems for:**

- Recirculation and Oxygenator Clotting Measurements during ECMO
- Cardiac Output and Blood Volumes in Infants
- Gold Standard Vascular Access Surveillance Tools for Hemodialysis
- Direct Flow Measurement for Anastomotic Patency

#### **Gold Standard Life Science Research Solutions for:**

- Perivascular & Tubing Flow Measurements for Every Application
- Pressure Volume Measurements with Admittance Technology
- Implantable Telemetry for Flow, Pressure & ECG

#### **Transonic Inside OEM Products for:**

- Custom flow solutions integrated into medical devices
- VAD's
- Organ Perfusion and Preservation
- Artificial Organs
- Much more



### **ICAOT**

*Painesville, Ohio*

**Booth 16**

The International Center for Artificial Organs & Transplantation is organized to maintain and operate an educational center. It supports the International Center for Medical Technologies Museum, manages the publication of Artificial Organs and Therapeutic Apheresis & Dialysis. It disseminates information on the historical development, current state of the art and future development of artificial organs.

# ASAIO PROGRAM OUTLINE

## WEDNESDAY, JUNE 26, 2019

**8:30AM – 4:30PM** ASAIO 8<sup>th</sup> ANNUAL PEDIATRIC MEDICAL DEVICE DAY - Plaza Room B - Lobby Level T1

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**8:00AM – 5:30PM** MCS / VAD UNIVERSITY - Plaza Room A - Lobby Level T1

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**8:00AM – 1:30PM** ASAIO/ICCAC MCS PROFICIENCY VERIFICATION (MPV) COURSE -  
Nob Hill Rooms 1 through 10 - Sixth Floor T3

## THURSDAY, JUNE 27, 2019

**GENERAL SESSION 1** - Grand Ballroom A - Ballroom Level T1

**Top Abstracts**

**8:00AM – 12:00PM** **President's Address**

**Keynote Address - Dr. Carrie L. Byington**

**Medical Device Entrepreneur's Forum**

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**9:45AM – 10:30AM** **VISIT EXHIBITS & POSTERS - ENJOY REFRESHMENTS** - Grand Ballroom B - Ballroom Level T1

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**12:00PM – 1:30PM** **LUNCH BREAK**

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**1:30PM – 3:00PM** **CARDIAC 1: The Future of MCS** - Grand Ballroom A - Ballroom Level T1

**BIOENGINEERING 1: Device Innovation** - Imperial A - Ballroom Level T1

**PULMONARY 1: Bioengineering Conundrums In Artificial Lung...** - Plaza Room B - Lobby Level T1

**RENAL 1: Vascular Access: Innovative Devices** - Plaza Room A - Lobby Level T1

**PEDIATRIC 1: The Pros and Cons to Achieving Pediatric Labeling...** - Imperial B - Ballroom Level T1

**NURSING - Allied Health - Circulatory Support Abstracts** - Franciscan C - Ballroom Level T1

**CAP 1: Pathology of Cardiovascular Devices and the Clinical Translation** - Nob Hill 2 - Sixth Floor T3

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**3:00PM – 3:45PM** **VISIT EXHIBITS & POSTERS - ENJOY REFRESHMENTS** - Grand Ballroom B - Ballroom Level T1

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**3:45PM – 5:00PM** **CARDIAC 2: Reducing Neurologic Complications in MCS** - Grand Ballroom A - Ballroom Level T1

**BIOENGINEERING 2: Modeling Innovation** - Imperial A - Ballroom Level T1

**VAD 1: Ideas to Evolve an MCS Program** - Franciscan A&B - Ballroom Level T1

**PULMONARY 2: VA ECMO for Resuscitation ...** - Plaza Room B - Lobby Level T1

**RENAL 2: Cannulas and Cardiac Assist Devices ...** - Plaza Room A - Lobby Level T1

**PEDIATRIC 2: ACTION Learning Collaborative for Pediatrics** - Imperial B - Ballroom Level T1

**CAP 2: Pathology of Cardiovascular Devices and the Clinical Translation** - Nob Hill 2 - Sixth Floor

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**6:00PM – 7:00PM** **ASAIO Welcome Reception** - Grand Ballroom B - Ballroom Level T1

## FRIDAY, JUNE 28, 2019

**8:30AM – 12:00PM** **GENERAL SESSION 2** - Grand Ballroom A - Ballroom Level T1

**ASAIOfyi Student Design Competition**

**Keynote Addresses - Dr. Charles Fraser**

**ASAIO Hastings Lecture - Dr. William Holman**

**ASAIO History Committee Tributes - Dr. Don Olsen and Mr. Ken Butler**

**Fellowships and Award Announcements**

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**10:00am – 10:45am** **VISIT EXHIBITS & POSTERS - ENJOY REFRESHMENTS** - Grand Ballroom B - Ballroom Level T1

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**12:00PM – 1:30PM** **LUNCH BREAK**

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# ASAIO PROGRAM OUTLINE (cont.)

## FRIDAY, JUNE 28, 2019 (cont.)

- 1:30PM – 3:00PM**    **CARDIAC 3: Acute Heart Failure and Cardiogenic Shock** - Grand Ballroom A - Ballroom Level T1  
**BIOENGINEERING 3: Technical Controversy: Pulse or Not** - Imperial A - Ballroom Level T1  
**VAD 2: "Pros" versus "Cons" in Challenging Situations** - Franciscan A&B - Ballroom Level T1  
**PULMONARY 3: Extracorporeal Lung Support/Ambulatory Artificial Lung...** - Plaza Room B - Lobby Level T1  
**RENAL 3: Sensing Technologies Relevant to RRT And Clinical Use** - Plaza Room A - Lobby Level T1  
**PEDIATRIC 3: Pediatric Perspective on Hemostasis, Thrombogenicity ...** - Imperial B - Ballroom Level T1  
**CAP 3: Topics in Critical Care and Anesthesiology** - Nob Hill 3 - Sixth Floor T3
- 
- 1:30PM – 2:30PM**    **IFAO SESSION: Frontiers of Bio-Materials...** - Franciscan C - Ballroom Level T1
- 
- 3:00PM – 3:45PM**    **Visit Exhibits & Posters – Enjoy Refreshments** - Grand Ballroom B - Ballroom Level T1
- 
- 3:45PM – 5:00PM**    **CARDIAC 4: The Future of Advanced Heart Failure ...** - Grand Ballroom A - Ballroom Level T1  
**BIOENGINEERING 4: Artificial Organs and Tissue Engineering** - Imperial A - Ballroom Level T1  
**PULMONARY 4: Innovative Technology for Respiratory Support** - Plaza Room B - Lobby Level T1  
**RENAL 4: Innovative Approaches to Extracorporeal Renal Support ...** - Plaza Room A - Lobby Level T1  
**PEDIATRIC 4: Pediatric Abstracts** - Plaza Room A - Lobby Level T1
- 
- 5:15PM – 5:45PM**    **ASAIO MEMBER BUSINESS MEETING** - Franciscan D - Ballroom Level T2

## SATURDAY, JUNE 29, 2019

- 8:30AM – 10:00AM**    **CARDIAC 5: Optimizing MCS Outcomes and Reducing Complications ...** - Yosemite A-B Ballroom Level T1  
**BIOENGINEERING 5: Innovation InSight** - Imperial A Ballroom Level T1  
**PULMONARY 5: Controversies in Artificial Lung Support** - Plaza Room B – Lobby Level T1  
**RENAL 5: KHI: Enabling Technologies for Wearable Dialysis...** - Plaza Room A - Lobby Level T1
- 
- 10:30AM – 10:45AM**    **VISIT EXHIBITS & POSTERS - ENJOY REFRESHMENTS** - Yosemite Foyer – Ballroom Level T1
- 
- 10:45AM – 12:00PM**    **CARDIAC 6: RV Failure and BiV Failure in the Era of Centrifugal Flow...** - Yosemite A-B Ballroom Level T1  
**BIOENGINEERING 6: Ex-Vivo Perfusion Models** - Imperial A - Ballroom Level T1  
**RENAL 6: Emerging Strategies in Acute Kidney Injury ...** - Plaza Room A - Lobby Level T1

## ASAIO 8th Annual Pediatric Medical Device Day

8:30am - 4:30pm *Plaza B - Lobby Level T1*



Dr. Christina VanderPluym



Dr. Angela Lorts



Nicole Gillette

### Pediatric Day Chairs:

Christina VanderPluym, MD, Boston Children's Hospital, Boston, MA  
Angela Lorts, MD, Cincinnati Children's Hospital Med. Ctr., Cincinnati, OH  
Nicole Gillette, BS, FDA, Silver Spring, MD

8:30 - 10:00am

### **Pediatric Day Session 1: Finding the Ideas to Fuel Pediatric Innovation**

#### Co-Chairs

David Morales, MD, Cincinnati Children's Hospital Medical Center, Cincinnati, OH  
Trevor Snyder, PhD, Corwave, Clichy, France

8:30 - 8:50am

Lessons Learned from a Lifetime of Innovation  
Roland Hetzer, MD, PhD, Immanuel Cardio Centrum Berlin, Berlin, Germany

8:50 - 9:10am

The Use of New Devices: Jarvik 2015 and Heartmate 3  
David Sutcliffe, MD, University of Texas Southwestern, Dallas, TX

9:10 - 9:30am

The Use of New Data and Collaboration in Children: ACTION  
David Peng, MD, University of Michigan, Ann Arbor, MI

9:30 - 9:50am

The Use of Devices in Underserved Population: Adult Congenital Heart Disease  
Ari Cedars, MD, UT Southwestern Medical Center, Dallas, TX

9:50 - 10:00am

Discussion

10:00 - 10:30am *PEDIATRIC REFRESHMENT BREAK*

10:30 - 11:45pm

### **Pediatric Day Session 2: Finding the Money to Fund Pediatric Innovation**

#### Co-chairs

Christina VanderPluym, MD, Boston Children's Hospital, Boston, MA  
Mr. Robert Kroschwitz, Berlin Heart Inc., The Woodlands, TX

10:30 - 10:50am

FDA's Pediatric Device Consortia (PDC) Grants Program  
Katharine Chowdhury, BSE, MS, FDA, Silver Spring, MD

10:50 - 11:10am

Economics of Pediatric Device Development  
Joseph Rossano, MD, Children's Hospital of Philadelphia, Philadelphia, PA

11:10 - 11:30am

Funding Devices for the Future: Why Current Strategies Will Not Work  
Peter Wearden, MD, PhD, Nemours Children's Hospital, Orlando, FL

11:30 - 11:45am

Discussion

12:00 - 1:15pm **LUNCH BREAK**

1:30 - 2:15pm

### **Pediatric Day Session 3: Finding the Way to Evaluate Pediatric Innovations**

#### Co-Chairs:

David Rosenthal, MD, Stanford University, Palo Alto, CA  
Nicole Gillette, BS, FDA, Silver Spring, MD

1:30 - 1:45pm

International Collaborations in Regulatory Bodies: Why and What Can We Do With It?  
Frank Ing, MD, UC Davis Health System, Sacramento, CA

1:45 - 2:00pm

Pediatric Medical Device Life Cycle - What are the Steps?  
Nicole Gillette, BS, FDA, Silver Spring, MD

2:00 - 2:15pm

Alternative Strategies to Pediatric Evaluation  
Christopher Almond, MD, MPH, Stanford University, Palo Alto, CA

2:15 - 2:45pm *PEDIATRIC REFRESHMENT BREAK 2*

2:45 - 4:30pm

### **Pediatric Day Session 4: Bringing Innovations to Our Pediatric Patients**

#### Co-Chairs

Hari Tunuguntla, MD, Baylor College of Medicine, Houston, TX  
David Sutcliffe, MD, University of Texas Southwestern, Dallas, TX

2:45 - 3:10pm

How to Bring a Device to Market?  
Robert Kroschwitz, Berlin Heart Inc, The Woodlands, TX

3:10 - 3:35pm

Centers for Devices and Radiologic Health Advancing Pediatric Mission  
Speaker to be Determined

3:35 - 4:00pm

The Ongoing Proliferation of Off Label Devices: Implications for Us and Our Patients  
Angela Lorts, MD, Cincinnati Children's Hospital Med Ctr, Cincinnati, OH

4:00 - 4:25pm

Ethical Challenges of Using Novel Technologies in Children: How to Start and When to Stop  
Seth Hollander, MD, Stanford University, Palo Alto, CA

4:25 - 4:30pm

Discussion

MCS/VAD UNIVERSITY

8:30am - 5:30pm Plaza A - Lobby Level T1



Dr. Simon Maltais



Dr. Daniel Timms

Co-Chairs:

Simon Maltais, MD, PhD, Centre Hospitalier de l'Université de Montréal (CHUM), Montreal, Quebec, Canada  
Daniel Timms, PhD, BiVACOR, Houston, TX

8:00 - 9:30am

**Session 1: History, Fundamentals and Indication for Durable MCS Therapy**

8:00 - 8:45am

Richard Wampler, MD, Oregon Health Sciences University, Loomis, OR

8:45 - 9:30am

James Antaki, PhD, Cornell University, Ithaca, NY

9:30 - 10:30am

**Session 2: Acute and Durable Support for INTERMACS I Patients**

9:30 - 9:45am

Acute Management of Shock in "Crashing and Burning" Patients  
Yoan Lamarche, MD, Montreal Heart Institute, Montreal, Canada

9:45 - 10:00am

Technology for the Care of Right Ventricular Failure: Indications and Options  
Mark Slaughter, MD, University of Louisville, Louisville, KY

10:00 - 10:15am

Recovery, Heart Transplantation, Timing and Strategies for Transition to Durable Support  
Sonna Patel-Raman, PhD, NuPulseCV Inc, Raleigh, NC

10:15 - 10:30am

Durable Left Ventricular Support and TAH  
Francisco Arabia, MD, Cedars-Sinai Medical Center, Los Angeles, CA

10:30 - 11:30am

**Session 3: The GOOD, the BAD, and the UGLY in Durable Device Therapy**

10:30 - 11:00am

Perioperative Management and Getting Through the First 30 Days  
Jeffrey Teuteberg, MD, Stanford University, Stanford, CA

11:00 - 11:30am

Hemocompatibility: The Human-Machine Interface  
Carlo Bartoli, MD, PhD, University of Pennsylvania, Philadelphia, PA

11:30am - 1:30pm

**Session 4: Technology, Entertainment, Design (TED) Style MCS**

11:30am-12:00pm

Dealing With a Thromboembolic Complication  
Speaker to be Determined

12:00 - 12:30pm

Recognition and Treatment of Aortic Insufficiency of Durable Device Placement  
Jane Wilcox, MD, MSC, Northwestern University, Chicago, IL

12:30 - 1:00pm

Evaluation, Implications and Management of Concomitant Coronary Disease  
Simon Maltais, MD, PhD, Centre Hospitalier de l'Université de Montréal (CHUM) Montreal, Quebec, Canada

1:00 - 1:30pm

"Bridge to Heart Failure": Evaluation and Treatment After Durable Device Placement  
Mary Keebler, MD, Vanderbilt University Med Center, Nashville, TN

1:30 - 2:30pm

**Session 5: Fundamental Principles and Engineering Advances to Enhance Technology Hemocompatibility and Outcomes**

1:30 - 1:40pm

Engineering Design to Reduce Adverse Events  
Daniel Timms, PhD, BiVACOR, Houston, TX

1:40 - 1:50pm

Device Operation Strategies to Mitigate Adverse Events  
Christopher Cotter, MSME, Abbott, Burlington, MA

1:50 - 2:00pm

Evaluation of the Impact of Designs and Operation Strategies on Adverse Events  
Tadashi Motomura, MD, PhD, Evaheart Inc, Houston, TX

2:00 - 2:10pm

Advancements in the Field of MCS Aimed at Improving the Adverse Event Profile  
Jeff Gohean, PhD, Windmill Cardiovascular Systems Inc, Austin, TX

2:10 - 2:30pm

Discussion

2:30 - 3:30pm

**Session 6: Heart Transplantation and Challenges in Bridged Patients**

2:30 - 3:00pm

Organ Selection in Patients Bridged With An LVAD: Implications of New UNOS Allocation System  
Robert Kormos, MD, University of Pittsburgh Med Center, Pittsburgh, PA

3:00 - 3:30pm

Destination Therapy vs High-Risk Heart Transplantation In Older Patients / Patients With Device Complications  
Michel Carrier, MD, Montreal Heart Institute, Montreal, Canada

3:30 - 4:30pm

**Session 7: When Device Therapy Goes Wrong...**

3:30 - 3:50pm

Management of Non-Compliant Patients: Implications and Importance of Social Environment  
Sarah Schroeder, ACNP-BC, MSN, Bryan Heart, Lincoln, NE

3:50 - 4:10pm

**Dealing With Devastating Complications On Support**  
Sarah Schettle, PA-C, Mayo Clinic, Rochester, MN

4:10 - 4:30pm

**Palliative Care Role and End-of Life Discussions**  
Jacob Strand, MD, Mayo Clinic, Rochester, MN

4:30 - 5:30pm

## **Session 8: Man or Machine: Managing Interaction and Interface Between MCS and Patients**

4:30 - 4:45pm

**MCS Performance Diagnostics and Matching Physiologic Demand**  
Chris Hayward, MD, St Vincent's Hospital, Sydney, Australia

4:45 - 5:00pm

**Usability/Human factors of MCS - The Man-Machine-Interface Can Be Crucial**  
Heinrich Schima, PhD, Medical University Vienna, Vienna, Austria

5:00 - 5:15pm

**What's Going Wrong With Our Field? Review of FDA MAUDE Database**  
Kelly Bauer, RN, BSN, FDA, Silver Spring, MD

5:15 - 5:30pm

**Reminding Ourselves Why We are Applying MCS - Putting the Needs of the Patient First**  
Cara Wrigley, PhD, Univ of Sydney, Sydney, Australia

## **ASAIO/ICCAC MCS PROFICIENCY VERIFICATION COURSE (MPV)**

8:00am - 1:30pm



Ms. Amanda Thomas



Ms. Heather Moody

Co-Chairs:

**Amanda Thomas, RN, BSN, Oregon Health & Science University, Portland, OR**  
**Heather Moody, MSN, APRN, University of Louisville, Louisville, KY**

This Course features problem based scenarios covering management and troubleshooting of common issues surrounding MCS devices. Small group exercises are led by experienced MCS coordinators, Heart Failure Cardiologists, and Cardiac Surgeons who specialize in MCS support. There will be a minimum of eight small groups with a maximum of twelve participants each.

<b>Nob Hill 1</b>	<b>Medtronic – HVAD</b>
<b>Nob Hill 2 &amp; 3</b>	<b>Abbott – HeartMate II and HeartMate 3</b>
<b>Nob Hill 4 &amp; 5</b>	<b>Abbott - Centrimag</b>
<b>Nob Hill 6 &amp; 7</b>	<b>Abiomed - Impella</b>
<b>Nob Hill 8 &amp; 9</b>	<b>Berlin Heart - EXCOR</b>
<b>Nob Hill 10</b>	<b>SynCardia – TAH</b>

## GENERAL SESSION 1

8:00am - 12:00pm *Grand Ballroom A - Ballroom Level T1*



Dr. Steven Koenig



Dr. Egemen Tuzun

Co-Chairs:

**Steven Koenig, PhD, University of Louisville, Louisville, KY**  
**Egemen Tuzun, MD, PhD, Texas A&M University, College Station, TX**

8:00 - 8:15am

### **Introduction and Welcome:**

**ASAIO Program Chairman,**  
**Egemen Tuzun, MD, PhD, Texas A&M University, College Station, TX**

8:15 - 9:15am

### **Top Abstract Presentations**

8:15 - 8:25am

**Comparison of Neurological Event Rates Among HeartMate II, HeartMate 3, and HVAD**  
**Song Li, MD, University of Washington, Seattle, WA**

8:25 - 8:35am

**A Perfusion Device to Preserve Liver Function in an Ex Vivo Environment for Multiple Days**  
**Dustin Becker, ETH Zurich, Zurich, Switzerland**

8:35 - 8:45am

**First North American Clinical Experience with the Jarvik 2015: A Case Series**  
**Joseph Spinner, MD, Baylor College of Medicine, Houston, TX**

8:45 - 8:55am

**How a CFD Model Can Help to Predict Gas Transfer in Artificial Lungs Early During Development**  
**Andreas Kaesler, Institute for Applied Medical Engineering, Aachen, Germany**

8:55 - 9:05am

**What Really Matters? A Qualitative Understanding of Ventricular Assist Device Stakeholders' Needs Through Digital Channels**  
**Keum Hee Ko, The University of Sydney, Australia - ASAIO Y Nosé International Fellowship**

9:15 - 9:45am

### **ASAIO President's Address**

**Extraordinary Opportunities to Be the Change, Innovate, and Shape ASAIO's Future**  
**Steven Koenig, PhD, University of Louisville**  
*Introduced by Mark Slaughter, MD, University of Louisville, Louisville, KY*

VISIT EXHIBITS & POSTERS  
ENJOY REFRESHMENTS

9:45 - 10:30am Grand Ballroom B - Ballroom Level T1

10:30 - 11:00am



Dr. Carrie L. Byington

**Keynote Address**

“Engineering Medicine: Developing Physicianeers to Shape the Future of Healthcare Through Innovation”

Carrie L. Byington, MD, Texas A&M Univ Health Science Center, Houston, TX

Introduced by Egemen Tuzun, MD, PhD, Texas A&M University, College Station, TX

11:00 - 12:00pm



Dr. H. David Humes

**Medical Device Entrepreneur’s Forum - MDEF**

Chairman: H. David Humes, MD, University of Michigan, Ann Arbor, MI

**Panelist:**

Katharine Chowdhury, BSE, MS, FDA, Silver Spring, MD

11:00 - 11:20am

The “MICELI” (MICrofluidic, ELectrical, Impedance) – Point-of-Care Platelet Aggregometry System

John Jackson, MBS, University of Arizona, Tucson, AZ

11:20 - 11:40am

Etracorporeal CO Removal – ECCOR

Niklas Steuer M. Sc, RWTH Aachen University, Aachen, Germany

11:40am-12:00pm

BioTexere

Natalia Suarez MSc, Universidad de los Andes, Bogota, Columbia

12:00 - 1:30pm LUNCH BREAK

**CARDIAC 1: The Future of MCS**

1:30 - 3:00pm Grand Ballroom A - Ballroom Level T1

**Co-Chairs:**

Mark Slaughter, MD, University of Louisville School of Medicine, Louisville, KY

Jennifer Beckman, MSN, ARNP, University of Washington Medical Center, Seattle, WA

**ABSTRACT PRESENTATIONS**

1:30 - 1:40pm

Clinical Experience With Pressure Sensor Based Autoregulation of Blood Flow in an Artificial Heart

Ivan Netuka, MD, PhD, Institute for Clinical and Experimental Medicine, Prague, Czech Republic

1:40 - 1:50pm

Hemocompatibility Adverse Event Results From the NuPulseCV iVAS Feasibility Study

Joshua Woolley, PhD, NuPulseCV, Raleigh, NC

1:50 - 2:00pm

Temporal Adverse Event Profile Following LVAD Implantation via a Thoracotomy Approach: 2 Year Follow-up of the LATERAL Trial

Georg Wieselthaler, MD, University of California San Francisco, CA

2:00 - 2:10pm

HVAD Intelligent Control for Dynamic Ventricular Unloading

Richard Wampler, MD, Oregon Health Sciences University, Loomis, CA

2:10 - 2:20pm

Characteristics and Outcomes of Gastrointestinal Bleeding in Patients with Continuous-flow Left Ventricular Assist Devices: A Systematic Review

Laura Carlson, Thomas Jefferson University, Philadelphia, PA

2:20 - 2:30pm

Inflow Cannula Depth of Insertion Influences LVAD Thrombogenic Risk

Alberto Aliseda, PhD, University of Washington, Seattle, WA

2:30 - 3:00pm

**Panel Discussion - The Future of MCS**

**Panelists:**

Jonathan Haft, MD, University of Michigan, Ann Arbor, MI

Marvin Slepian, MD, University of Arizona, Tucson, AZ

Robert Kormos, MD, University of Pittsburgh Med Center, Pittsburgh, PA

O. Howard Frazier, MD, Texas Heart Institute, Houston, TX

**BIOENGINEERING 1: Device Innovation**

1:30 - 3:00pm Imperial A - Ballroom Level T1

**Co-Chairs:**

John Criscione, MD, PhD, Texas A&M University, College Station, TX

Daniel Timms, PhD, BiVACOR, Houston, TX

1:30 - 2:00pm

Device Innovation

William Cohn, MD, Johnson & Johnson, Houston, TX

2:00 - 2:10pm

Discussion

**ABSTRACT PRESENTATIONS**

2:10 - 2:20pm

A Long-term Cavopulmonary Assist Device to Reverse the Fontan: In-silico and In-vitro Studies

Guruprasad Giridharan, PhD, University of Louisville, Louisville, KY

 BiVACOR®



DEVELOPING A ROTARY TAH  
FOR THE FUTURE.

Not cleared or approved for clinical use.

2:20 - 2:30pm

Red Blood Cell Damage in a Magnetically Levitated Shearing Device

James Krisher, Rochester Institute of Technology, Rochester, NY

2:30 - 2:40pm

Development of a Sutureless LVAD Outflow Graft Anastomotic Quick-connect System

Landon Tompkins, Meng, University of Louisville, Louisville, KY - ASAIOfyi Fellowship

2:40 - 2:50pm

Endovascular Cavo-Pulmonary Right Ventricular Assist Device

Jiheum Park, PhD, Yale University, New Haven, CT

2:50 - 3:00pm

Trans Catheter, Durable, Bio-Mimetic, Wireless-less Left Ventricular Assist Device for End Stage Heart Failure

Jiheum Park, PhD, Yale University, New Haven, CT

## **PULMONARY 1: Bioengineering Conundrums In Artificial Lung Development**

1:30 - 3:00pm *Plaza Room B - Lobby Level T1*

Co-Chairs:

Zhongjun Wu, PhD, University of Maryland School of Medicine, Baltimore, MD

Jeffrey Javidfar, MD, Emory University School of Medicine, Decatur, GA

1:30 - 1:50pm

Shear Stress and Blood Trauma, Stagnancy and Thrombosis

Zhongjun Wu, PhD, Univ of Maryland School of Medicine, Baltimore, MD

1:50 - 2:10pm

Surface-Focused Anticoagulation for Long-Term Artificial Lungs

Keith Cook, PhD, Carnegie Mellon University, Pittsburgh, PA

2:10 - 2:30pm

Pittsburgh Paracorporeal Ambulatory Assist Lung

William Federspiel, PhD, University of Pittsburgh, Pittsburgh, PA

2:30 - 2:50pm

The Osaka Ultra Compact Durable ECMO System

Tomonori Tsukiya, PhD, National Cerebral & CV Center Research Inst, Osaka, Japan

### **ABSTRACT PRESENTATIONS**

2:50 - 3:00pm

7-day In Vivo Performance of a Low-Flow Extracorporeal CO2 Removal Device

Alexandra May, BS, University of Pittsburgh, Pittsburgh, PA

## **RENAL 1: Vascular Access: Innovative Devices**

1:30 - 3:00pm *Plaza Room A - Lobby Level T1*

Co-Chairs:

Lenar Yessayan, MD, MS, University of Michigan, Troy, MI

Alexander Yevzlin, MD, University of Michigan, Ann Arbor, MI

1:30 - 1:50pm

Fundamentals of Ultrasound Speckle Tracking for Vascular Access

William Weitzel, MD, VA Ann Arbor Health System, Ann Arbor, MI

1:50 - 2:10pm

An Update On Intergraft Trial

Alexander Yevzlin, MD, University of Michigan, Ann Arbor, MI

2:10 - 2:30pm

Humacyte, A Founder's Experience

Laura Niklason, MD, PhD, Yale University, New Haven, CT

### **ABSTRACT PRESENTATIONS**

2:30 - 2:40pm

Large Animal Hemodialysis Model for the Benchtop: LAHMB

Dean Johnson, PhD, University of Rochester, Rochester, NY

2:40 - 2:50pm

In Vivo Evaluation of Novel PEGylated Small Intestinal Submucosa Vascular Grafts for Arteriovenous Connection:

Exploring Microscopic Structure-Function Relationships

Karen Valencia Rivero, MSc, PhD, Universidad de los Andes, Bogota, Colombia

## **PEDIATRIC 1: The Pros and Cons to Achieving Pediatric Labelling: Do We Need It?**

1:30 - 3:00pm *Imperial B - Ballroom Level T1*

Co-Chairs:

Nicole Gillette, BS, FDA, Silver Spring, MD

Robert Kroschwitz, President & CEO, Berlin Heart Inc., The Woodlands, TX

1:30 - 1:50pm

FDA Perspective

Nicole Ibrahim, PhD, FDA, Silver Spring, MD

1:50 - 2:30pm

Industry Perspective

Donald Middlebrook, Abbott, Pleasanton, CA

Vince Cannon, RN, BSN, MBA, Medtronic, Framingham, MA

2:30 - 2:50pm

Providers Perspective

David Morales, MD, Cincinnati Children's Hosp Med Ctr, Cincinnati, OH

2:50 - 3:00pm

Open Panel Discussion and Forum

## **Nursing - Allied Health - Circulatory Support Abstracts**

1:30 - 3:00pm *Franciscan C - Ballroom Level*

Co-Chairs:

Karen Meehan, MSN, Advocate Christ Medical Center, Oak Lawn, IL

Jesus Casida, PhD, RN, APN-C, Johns Hopkins School of Nursing, Baltimore, MD

### **ABSTRACT PRESENTATION**

1:30 - 1:40pm

Designing Digital Systems to Prevent Emotional Fatigue: Promoting Vocalisation and Reflective Practices within MCS Nursing

Ling yi (Yanyi) Feng, University of Sydney, Sydney, Australia

1:40 - 1:50pm

LVAD versus CABG Patients' Pre and Postoperative Sleep Patterns: An Exploratory Analysis

Jesus Casida, PhD, RN, APN-C, Johns Hopkins School of Nursing, Baltimore, MD

1:50 - 2:00pm

Understanding Emotional Demands: Digital Channel Design Opportunities for VAD Patients with Differing Treatment Pathways

Presentation Cancelled

2:00 - 2:10pm

Opioid Prescribing Trends in Left Ventricular Assist Device (LVAD) Patients

Sarah Schettle, PA-C, Mayo Clinic, Rochester, MN

2:10 - 2:20pm

Anticoagulation Quality and Frequency of INR Point-of-Care Testing in LVAD Patients: A Correlation to Hemocompatibility Related Adverse Events and Outcomes  
Thomas Schloeglhofer, MSc, Medical University of Vienna, Vienna, Austria

2:20 - 2:30pm

Effect of Smoking on Surgical Outcomes after Left Ventricular Assist Device Implantation and the Relation to Nicotine Cessation Treatments: A Pilot Retrospective Study  
Colleen LaBuhn, APN, University of Chicago Medical Center, Chicago, IL

2:30 - 2:40pm

A Conceptual Definition of Quality of Life for LVAD-DT Recipients: Preliminary Results  
David Dwyer, MSN, University of Wisconsin, Milwaukee, WI

2:40 - 2:50pm

VAD Coordinators' Nursing Care Time for Patient-Caregiver Care  
Jesus Casida, PhD, RN, APN-C, Johns Hopkins School of Nursing, Baltimore, MD

2:50 - 3:00pm

TelecareVAD - Ideas and Expectations of VAD Patients  
Thomas Berg, MA, University Hospital RWTH Aachen, Aachen, Germany

## Critical Care / Anesthesiology / Pathology Session 1 - Pathology of Cardiovascular Devices and the Clinical Translation

1:30 - 3:00pm *Nob Hill 2 - Sixth Floor*

Co-Chairs:

Staci Jessen, PhD, CV Pathology Lab Texas A&M Univ, College Station, TX  
Nicole Mehta, MS, BS, Texas A&M University, College Station, TX

1:35 - 2:00pm

Cardiovascular Pathology for Biomedical Engineers  
Fred Clubb, DVM, PhD, Texas A&M University Cardio Path Lab, College Station, TX

2:00 - 2:20pm

A Review of Thrombosis in a Device Context  
Staci Jessen, PhD, CV Pathology Lab Texas A&M Univ, College Station, TX

2:20 - 2:40pm

An Overview of Histopathology Strategies for Medical Devices  
Nicolette Jackson, DVM, MS, DACVP, StageBio, Mason, OH

2:40 - 3:00pm

What Did My Company Do Wrong? The FDA Is Questioning My Pathology Report  
Annabelle Crusan, DVM, MS, FDA, Silver Spring, MD

VISIT EXHIBITS & POSTERS  
ENJOY REFRESHMENTS

3:00 - 3:45pm *Grand Ballroom B - Ballroom Level T1*

## CARDIAC 2: Reducing Neurologic Complications in MCS

3:45pm - 5:00pm *Grand Ballroom A - Ballroom Level T1*

Co-Chairs:

Claudius Mahr, DO, University of Washington, Seattle, WA  
Antonio Loforte, MD, PhD, S. Orsola Malpighi, Bologna, Italy

## ABSTRACT PRESENTATIONS

3:45 - 3:55pm

Mean Arterial Pressure Significantly Impacts Stroke-Related Mortality in Destination Therapy Patients  
Claudius Mahr, DO, FACC, FESC, University of Washington, Seattle, WA

3:55 - 4:05pm

Safety of Early Anticoagulation After Stroke in LVAD Patients  
Chinwe Ibeh, MD, University of Washington, Seattle, WA

4:05 - 4:15pm

Ingested versus De Novo Thrombus Formation of HVADs  
Staci Jessen, PhD, CV Pathology Lab Texas A&M Univ, College Station, TX

4:15 - 4:25pm

Risk of Pump Thrombosis and Cerebrovascular Events in Continuous Flow Left Ventricular Assist Device Patients Experiencing Gastrointestinal Bleeding  
Phillip Weeks, Pharm D, Memorial Hermann - Texas Medical Center, Houston, TX

4:25 - 4:35pm

Impact of Intensive Blood Pressure Control in Patients with Centrifugal Left Ventricular Assist Devices on Reducing Neurologic Events  
Song Li, MD, University of Washington, Seattle, WA

4:35 - 5:00pm

Panel Discussion - Reducing Neurologic Complications in MCS

Panelists:

David Tirschwell, MD, MSc, University of Washington, Seattle, WA  
Nir Uriel, MD, MSc, University of Chicago, Chicago, IL  
Claudius Mahr, DO, FACC, FESC, University of Washington, Seattle, WA  
Mark Slaughter, MD, University of Louisville, Louisville, KY  
William Holman, MD, University of Alabama at Birmingham, AL

## BIOENGINEERING 2: Modeling Innovation

3:45 - 5:00pm *Imperial A - Ballroom Level T1*

Co-Chairs:

Max Armour, BSBME, MSBME, University of Pittsburgh Medical Center, Pittsburgh, PA  
Guruprasad Giridharan, PhD, University of Louisville, Louisville, KY

3:45 - 4:00pm

Road Map for Commercialization - The Essentials of Quality and Design Controls  
Priscilla Petit, Inspired Therapeutics LLC, Cocoa, FL

4:00 - 4:15pm

The Progression of Modeling in Medical Device Development  
James Antaki, PhD, Cornell University, Ithaca, NY

4:15 - 4:30pm

Emerging Regulatory Frameworks for Modeling  
Brent Craven, PhD, FDA, Silver Spring, MD

4:30 - 4:45pm

CFD and VAD Design  
Greg Burgreen, PhD, Mississippi State University, Starkville, MS

## ABSTRACT PRESENTATIONS

4:50 - 5:00pm

LVAD Redesign: Pump Variation for Minimizing Thrombus Susceptibility Potential  
Christopher Scheib, BSE, Penn State College of Medicine, Hershey, PA

## VAD 1: Ideas to Evolve an MCS Program

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3:45 - 5:00pm *Franciscan A&B - Ballroom Level T1*

### Panelists:

James Churgai, BSN, RN, CCRN, University of Washington Medical Center, Seattle, WA  
Karl Nelson, RN, MBA, ALKOS Consulting LLC, Salt Lake City, UT

3:45 - 4:00pm

Change Is Good, Yet Why Do We Stay?  
Karl Nelson, RN, MBA, ALKOS Consulting LLC, Salt Lake City, UT

4:00 - 4:15pm

Initiations, Transitions and Incorporations – Orientation of VAD Coordinator  
Tonya Elliott, MSN, RN, MedStar Washington Hosp Center, Washington DC

4:15 - 4:30pm

Effects of New UNOS Criteria on VAD Programs  
Brenda Smith, BSN, RN CCTC, Sentara Healthcare Systems, Norfolk, VA

4:30 - 4:45pm

FDA Decision Tree for MCS Therapy  
Sonna Patel-Raman, PhD, NuPulseCV Inc, Raleigh, NC

4:45 - 5:00pm

Discussion

## PULMONARY 2: VA ECMO for Resuscitation of Massive Pulmonary Embolism (PE)

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3:45 - 5:00pm *Plaza Room B - Lobby Level T1*

### Co-Chairs:

Kurt Dasse, PhD, Vadovations, Oklahoma City, OK  
Jacqueline Kading, BS, University of Michigan, Ann Arbor, MI

3:45 - 4:05pm

The Evolution of VA-ECMO Use In Massive Pulmonary Embolism Patients.  
Zachary Kon, MD, University of Maryland, Baltimore, MD

4:05 - 4:25pm

The Role of V-A ECMO After Pulmonary Endarterectomy: Indication and Outcome  
Xiaotong Hou, MD, PhD, Beijing Anzhen Hospital, Beijing, China

4:25 - 4:45pm

Right Heart Assist: RVAD vs VA ECMO  
I-wen Wang, MD, PhD, Memorial Healthcare System, Hollywood, FL

### ABSTRACT PRESENTATION

4:45 - 4:55pm

Long-Term ECMO-Connection - Numerical Investigation of the Connection to the Common Iliac Veins  
Niklas Steuer, MSc, RWTH Aachen University, Aachen, Germany

## RENAL 2: Cannulas and Cardiac Assist Devices, What the Nephrologist Needs to Know

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3:45 - 5:00pm *Plaza Room A - Lobby Level T1*

### Co-Chairs:

Lenar Yessayan, MD, MS, University of Michigan, Ann Arbor, MI  
Balazs Szamosfalvi, MD, University of Michigan, Ann Arbor, MI

3:45 - 4:00pm

Ventricle Assist Devices  
Jonathan Haft, MD, University of Michigan, Ann Arbor, MI

4:00 - 4:15pm

Total Artificial Heart  
Francisco Arabia, MD, Cedars-Sinai Medical Center, Los Angeles, CA

4:15 - 4:30pm

ECMO and ECCO-R: Integration With CRRT and Early Clinical Use  
Joseph Zwischenberger, MD, University of Kentucky, Lexington, KY

4:30 - 4:45pm

CVC for Dialysis  
Stephen Ash, MD, HemoCleanse Technologies LLC, Lafayette, IN

4:50 - 5:00pm

Discussion

## PEDIATRIC 2: ACTION Learning Collaborative for Pediatrics

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3:45 - 5:00pm *Imperial B - Ballroom Level T1*

### Co-Chairs:

David Rosenthal, MD, Stanford University, Palo Alto, CA  
Angela Lorts, MD, Cincinnati Children's Hospital Med Ctr, Cincinnati, OH

### ABSTRACT PRESENTATION

4:50 - 5:00pm

Reduction in Incidence of Pump Exchanges for Suspected Thrombosis: Impact of Collaborative Learning  
Farhan Zafar, MD, Cincinnati Children's Hosp Medical Center, Cincinnati, OH

### Open Discussion

### Moderators:

David Rosenthal, MD, Stanford Univ, School of Medicine, Palo Alto, CA  
Angela Lorts, MD, Cincinnati Children's Hospital Medical Center, Cincinnati, OH

Improving VAD Related Stroke Outcomes: Learning Network

## Critical Care / Anesthesiology / Pathology Session 2 - Pathology of Cardiovascular Devices and the Clinical Translation

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3:45 - 5:00pm *Nob Hill 2 - Sixth Floor*

### Co-Chairs:

Nicolette Jackson, DVM, MS, DACVP, StageBio, Mason, OH  
Christian Bermudez, MD, Hospital of the Univ of Pennsylvania, Philadelphia, PA

3:45 - 4:05pm

LVAD Pathology - Perspective From A Clinician's Experience  
Pramod Bonde, MD, Yale University, New Haven, CT

4:05 - 4:20pm

Pathology of an Implantable Cardiac Valve With A Bioresorbable Stent Scaffold  
Maureen O'Brien, DVM, MS, DACVP, Charles River Laboratories Inc, Frederick, MD

4:20 - 4:40pm

A Review of Hydrogels and Strategies for Evaluation  
Nicole Mehta, MS, BS, Texas A&M University, College Station, TX

4:40 - 5:00pm

## Panel Discussion

Translational Medicine and the Importance of Multidisciplinary Scientific Collaboration in Medical Technology Development

### Panelists:

Gerard McCloskey, MBBch, BAO, Yale School of Medicine, New Haven, CT  
 Maureen O'Brien, DVM, MS, DACVP, Charles River Laboratories Inc, Frederick, MD  
 Staci Jessen, PhD, CV Pathology Lab Texas A&M Univ, College Station, TX  
 Fred Clubb, DVM, PhD, Texas A&M Univ Cardio Path Lab, College Station, TX

## ASAIO WELCOME RECEPTION

6:00 - 7:00pm *Grand Ballroom B - Ballroom Level T1*

9:30am - 4:00pm

Poster Presentations *Grand Ballroom B - Ballroom Level T1*

### Cardiac Posters

Poster Numbers

- |   |  |
|---|--|
| <p><b>101</b> Biliary Pathology and Cholecystectomy in Mechanical Circulatory Support Patients<br/>Akbarshakh Akhmerov, MD, Cedars-Sinai Medical Center, Los Angeles, CA</p> <p><b>102</b> Self Management of Anticoagulant Therapy in Continuous Flow Left Ventricular Assist Device Patients<br/>Masatoshi Akiyama, MD, Tohoku University Hospital, Sendai, Japan</p> <p><b>103</b> A Retrospective Look at Mechanical Heart Valves in Left Ventricular Assist Device Patients<br/>Tareq Al Saadi, MD, Advocate Christ Medical Center, Oak Lawn, IL</p> <p><b>104</b> Testing the Obesity Paradox in Patients on Long-term Milrinone Infusion for End Stage Heart Failure<br/>Mina Benjamin, MD, Medical College of Wisconsin, Milwaukee, WI</p> <p><b>105</b> Evaluation of the Effect of Heart Rate on Real-Time Output of HeartMate3 Using a Mock Circulation<br/>Edward Betterton, BS, Banner University Medical Center, Tucson, AZ</p> <p><b>106</b> The HeartMate 6<br/>Muath Bishawi, MD, Duke University, Durham, NC</p> <p><b>107</b> Reversal of Heart Failure with Continuous-flow LVAD is Associated with Deactivation of Inflammatory Pathways in Long-Term Survivors<br/>Birati Edo, MD, University of Pennsylvania, Philadelphia, PA</p> <p><b>108</b> Very Long Term Outcomes of LVAD Support<br/>Nicolas Brozzi, MD, University of Miami, Miami, FL</p> <p><b>109</b> ECMO as a Bridge to Heart-Lung Transplantation and Post-Operative Recovery in a Patient with Dextrocardia, Atrial Septal Defect, and Pulmonary Hypertension<br/>Antonio Coppolino, MD, Brigham and Women's Hospital, Boston, MA</p> <p><b>110</b> Generating Different Heart Failure Conditions on the Bench to Predict VAD Performance<br/>Gavin D'Souza, PhD, U.S. Food and Drug Administration, Silver Spring, MD</p> | <p><b>111</b> Should it Stay or Should it Go? A Review of LVAD Explants<br/>Lauren Eyadiel, PA-C, University of Wisconsin, Milwaukee, WI</p> <p><b>112</b> Ultrasound Strain Imaging of LVAD-Supported <i>Ex vivo</i> Beating Hearts<br/>Louis Fixsen, Eindhoven University of Technology, Eindhoven, Netherlands</p> <p><b>113</b> Evaluation of Cytokine Expression in Regional Principal Organ During Cardiopulmonary Bypass<br/>Yutaka Fujii, PhD, Niigata University of Health and Welfare, Niigata, Japan</p> <p><b>114</b> Application of the Utah Bleeding Risk Score to LVAD Supported Patients at Advocate Christ Medical Center: A Retrospective Study<br/>George Gavrilos, Advocate Christ Medical Center, Oak Lawn, IL</p> <p><b>115</b> Ventricular Arrhythmias Following Continuous-flow Left Ventricular Assist Device Implantation: A Systematic Review<br/>Jonathan Gordon, Thomas Jefferson University, Philadelphia, PA</p> <p><b>116</b> Complete Sternal-Sparing HeartMate 3 Implantation Produces Excellent 3 Month Outcomes<br/><b>Presentation Cancelled</b></p> <p><b>117</b> Preoperative Assessment of Left Ventricular Thrombi in Patients Undergoing Left Ventricular Assist Device Implantation and Short-term Outcomes of Patients with Left Ventricular Thrombi<br/>Igor Gregoric, MD, University of Texas Health Sci Center, Houston, TX</p> <p><b>118</b> Short-to-shield in Patients with a Heartmate II LVAD<br/>Igor Gregoric, MD, University of Texas Health Sci Center, Houston, TX</p> <p><b>119</b> ASIC-based Miniature Ultrasound Transit Time Flowmeter<br/>John Haberstock, MBA, Transonic, Ithaca, NY</p> <p><b>120</b> Design Parameters for a Light-weight, Low-power Flowprobe to be ntricular Assist Device Integrated within a Ve<br/>John Haberstock, MBA, Transonic, Ithaca, NY</p> <p><b>121</b> Antiplatelet Therapy Monitoring for Durable Mechanical Circulatory Support Utilizing TEG-Platelet Mapping<br/>Brooke Stanton, Pharm D, Allegheny General Hospital, Pittsburgh, PA</p> <p><b>122</b> Epicardial Pressure Analysis for Soft Robotic Direct Cardiac Compression Sleeve<br/>Jooli Han, Carnegie Mellon University, Pittsburgh, PA</p> <p><b>123</b> Menorrhagia and Menstrual Bleeding in Patients Supported with Ventricular Assist Devices<br/>Catherine Heith, MD, Boston Children's Hospital, Boston, MA</p> <p><b>124</b> Shear Stress-Induced Exosome Production: A Potential Biomarker of VAD Complications?<br/>Rebecca James, PhD, Calon Cardio-Technology Ltd., Swansea, United Kingdom</p> <p><b>125</b> Use of Nitric Oxide After Lvad Implantation Leads to Worse Outcomes<br/>Mateja Jezovnik, MD, PhD, The Univ of Texas Health Sci Center, Houston, TX</p> <p><b>126</b> Use of Intraoperative Extracorporeal Membrane Oxygenation (ECMO) Bypass During Open-Thoracoabdominal Aortic Aneurysm Repair (TAAA)<br/>Matthew Jorgensen, BS, Mayo Clinic, Jacksonville, FL</p> |
|---|--|

- 127 **New Technique for Effective Cardiac Deairing in Minimally Invasive Cardiac Surgery: Early *In Vivo* Testing**  
Jamshid Karimov, MD, PhD, The Cleveland Clinic, Cleveland, OH
- 128 **Novel Aortic and Arterial Encircling Technique for Immediate Hemostatic Control**  
Jamshid Karimov, MD, PhD, The Cleveland Clinic, Cleveland, OH
- 129 **Surgical Unroofing of an Anomalous Left Coronary Artery on VA-ECMO**  
Muhammad Khan, MD, Advocate Christ Medical Center, Oak Lawn, IL
- 130 **Percutaneous Coronary Intervention in Patients with Durable LVAD**  
Alex Farr, MD, Baylor College of Medicine, Houston, TX
- 131 **A Hybrid Experimental-Computational Modeling Framework for Cardiovascular Device Testing**  
Ethan Kung, PhD, Clemson University, Clemson, SC
- 132 **Management Strategies of Invasive Mechanical Unloading in High Risk Redo-open Heart Surgeries with Heart Failure**  
Samy Lashin, MD, Air Force Specialized Hospital, New Cairo, Egypt
- 133 **Left Ventricular Assist Device Therapy for Systolic Heart Failure Secondary to Peripartum Cardiomyopathy**  
Gregory Long, BS, Baylor College of Medicine, Houston, TX
- 134 **Left Ventricular Assist Devices as Destination Therapy**  
Assel Medressova, MD, PhD, National Research Center for Cardiac Surgery, Astana, Kazakhstan
- 135 **Impact of VAD Speed and MAP on Intraventricular Hemodynamics: Influence on Flow Patterns, Platelet Activation and Thrombogenicity**  
Marissa Miramontes, BS, University of Washington, Seattle, WA
- Bioengineering Posters**
- 136 **Functional Aminosilane Based Coatings for Improved Gas Exchange in PDMS Oxygenators**  
Emily Abada, BS, University of California, San Francisco, CA
- 137 **Left Atrial Assist Device Function at Variable Beat Rates Using a Mock Circulatory Loop Platform**  
Joseph Adams, Cleveland Clinic, Cleveland, OH
- 138 **CFD Analysis of Segmented MicroCT Data of Ventricular Assist Devices: A Comparative Study**  
Emmanouil Agrafiotis, Medical University of Graz, Graz, Austria
- 139 **Hemocompatibility of Biodegradable Polymers for Endovascular Devices**  
Marvin Slepian, MD, University of Arizona, Tucson, AZ
- 140 **A Growing Database for Viscosity Profiles of Bovine Blood with Varying Hematocrits Across Shear Rates**  
Sophia Boucher, BS, Medtronic, Miami Lakes, FL
- 141 **Concept of Safety Embedded Systems Control applied to a 4.0 Ventricular Assist Device**  
Andre Cavalheiro, PhD, Fundacao Santo Andre, Santo Andre, Brazil
- 142 **Experimental Investigation of the Flow Inside the Rotor Passage of an Axial Ventricular Assist Device**  
Huang Chen, PhD, The Johns Hopkins University, Baltimore, MD
- 143 **Design and Experimental Evaluation of a Right Ventricular Assist Device**  
**PRESENTATION CANCELLATION**
- 144 **Scripting an Anatomical Study Protocol**  
Christian Doose, RWTH Aachen University, Aachen, Germany
- 145 **Designing a Visual Analogue Scale Questionnaire to Determine the Emotional Impact of Wearable Components of Ventricular Assist Devices (VADs)**  
Jessica Lea Dunn, University of Sydney, Sydney, Australia
- 146 **Centrifugal Blood Pump as Ventricular Assist Device evaluation in the Hybrid Cardiovascular Simulator**  
Jeison Fonseca, Institute Dante Pazzanese of Cardiology, Sao Paulo, Brazil
- 147 **Flow Distribution Analysis in Peripheral VA ECMO By Interposition Graft**  
Gionata Fragomeni, PhD, Magna Graecia University, Catanzaro, Italy
- 148 **Optimization of Artificial Vascular Tissue Bioreactor for Use with Peristaltic LVAD**  
Zachary Frankman, BS, Medical University of Gdansk, Gdansk, Poland
- 149 **Parametric Studies of a Centrifugal Heart Pump for Total Artificial Heart (TAH) Using Genetic Algorithms**  
Ganesh Gampa, PhD, Kakatiya Inst of Technology and Science, Warangal, India
- 150 **Design Domain Identification of a Beating Left Ventricular Simulator with Finite Element Modelling**  
Utku Gulbulak, BS, Texas Tech University, Lubbock, TX
- 151 **Non-Homogeneous Haematocrit Distribution into VAD Modelling Practice to Improve Blood Damage Prediction**  
Sajal Gurung, Calon Cardio-Technology, Swansea, United Kingdom
- 152 **Development of a Pediatric Paracorporeal Centrifugal Blood Pump**  
Mariana Hernandes, MD, Carol Coracoes Artificiais, Arujá, Brazil
- 153 **Development of Novel Artificial Pericardium with Biodegradable Poly-lactide Sheet**  
Kazuyuki Ishibashi, MD, Yonemori Hospital, Kagoshima, Japan
- 154 **Cardiac Assist Device Design Guided by Computational Modeling**  
Douglas Ivers, NuPulseCV, Raleigh, NC
- 155 **Development of the 2nd Generation DermaPort Ported Vascular Access System (PVAS)<sup>™</sup>**  
Abram Janis, DermaPort, Inc, Grayslake, IL
- 156 **The Effect of Preserving Mitral Valve Function by Left Atrial Assist Device: *In Vitro* Mock Circulation Loop Model**  
Yuichiro Kado, MD, PhD, Cleveland Clinic, Cleveland, OH
- 157 **CFD Study on the Effect of Central versus Peripheral VA ECMO Support**  
Steven Keller, MD, PhD, Brigham and Women's Hospital, Boston, MA
- 158 **Design of a Magnetic Bearing Couette Flow Shearing Device for Testing Blood Fragility**  
James Krisher, Rochester Institute of Tehcnology, Rochester, NY
- 159 **Advanced Graphical User Interface for Control and Testing of Mechanical Circulatory Support Devices**  
Barry Kuban, BS, Cleveland Clinic, Cleveland, OH

## Nursing / Allied Health / Circulatory Support Posters

- 160** **Closing the Gap: Introducing the VAD Specialist**  
Peggy Blood, MSN, RN, Univ of Alabama at Birmingham Med Ctr, Birmingham, AL
- 161** **Utility of Bedside Valsalva Maneuver to Enhance Detection of Suction Events in HVAD Patients**  
James Churgai, RN, University of Washington, Seattle, WA
- 162** **Tethered to Life...for Life**  
Jill Giordano, MA, MSW, Newark Beth Israel Medical Center, Newark, NJ
- 163** **Must I Always Be Burdened by This Gift**  
Jill Giordano, MA, MSW, Newark Beth Israel Medical Center, Newark, NJ
- 164** **Emergency Line: Bridging the Communication Gap**  
Stacy Haverstick, RN, Michigan Medicine, Ann Arbor, MI
- 165** **SIM: Increasing Nurse Confidence in the Care of Ventricular Assist Device Patients**  
Stacy Haverstick, RN, Michigan Medicine, Ann Arbor, MI
- 166** **Including an Advance Practice Nurse in the SHOCK Team**  
Viktoriya Kagan, MSN, Northwestern Memorial Hospital, Chicago, IL
- 167** **Reduced Quality of Life in LVAD Patients with Aortic Insufficiency**  
Colleen LaBuhn, APN, University of Chicago Medical Center, Chicago, IL
- 168** **Left Ventricular Assist Device Peripheral Equipment Utilization Following LVAD Implantation**  
Matthew Lawrence, BS, Tufts Medical Center, Boston, MA
- 169** **Ventricular Assist Device Program Models: An International Study**  
Karen Meehan, MSN, ACNS, University of Chicago, Chicago, IL
- 170** **Patient Health Monitoring & Life Cycle Management of LVAD Through IOT Enabling**  
Alapati Rao, PhD, Sreenidhi Institute of Sci & Technology, Hyderabad, India
- 171** **Left Ventricular Assist Device (LVAD) Metropolitan Emergency Medical Service (EMS) Provider Education Pilot**  
Brittany Rhoades, RN, Baylor St. Luke's Medical Center, Houston, TX
- 172** **Preparing for an Emergency: Training Staff to Recognize and Respond to ECMO Complications**  
Rebecca Rose, University of Chicago Medicine, Chicago, IL
- 173** **A New Approach to Driveline Exit Site Care**  
Newman Huie, BSN, Cedars-Sinai Medical Center, Los Angeles, CA
- 174** **Differences in Mechanical Circulatory Support Programmatic Make-Ups: Defining Delineation of Duties**  
Sarah Schroeder, ACNP-BC, MSN, Bryan Heart, Lincoln, NE

## Critical Care / Anesthesiology / Pathology (CAP) Posters

- 175** **Impact of Plasma-free Hemoglobin (PHb) on Endothelialization of Coronary Artery Stents**  
Jan Simoni, DVM, PhD, Texas HemoBioTherapeutics & BioInnovation Center, Lubbock, TX
- 176** **ECMO in Post Cardiac Arrest Myocardial Dysfunction, Single Centre Experience**  
Maged Abdalla, MD, Cairo University, Cairo, Egypt

- 177** **Efficacy of a Bundle Approach for Safety in Adult Patients on ECMO**  
Monika Tukacs, BSN, RN, CCRN, Columbia Univ Irving Med Center, New York, NY

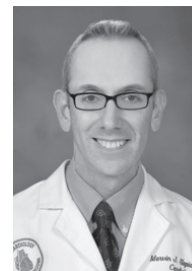
# Friday, JUNE 28

## GENERAL SESSION 2

8:30am - 12:00pm *Grand Ballroom A - Ballroom Level T1*



Dr. Pramod Bonde



Dr. Marvin Slepian

### Co-Chairs:

Pramod Bonde, MD, Yale University, New Haven, CT  
Marvin Slepian, MD, University of Arizona, Tucson, AZ

### ASAIOfyi-for young innovators - Student Design Competition

#### ASAIOfyi SDC Chairs:

Alice Sweedo, University of Arizona, Tucson, AZ  
Tarik Afnoukh, MD, Brigham and Women's Hospital, Boston, MA  
Staci Jessen, PhD, CV Pathology Lab Texas A&M University, College Station, TX

8:30 - 8:40am

**Dynamic Flow Biomimetic Vascularized Fat-on-a-Chip Model to Study Early Stages of Obesity**  
Darshi Shah, Boston University, Boston, MA

8:40 - 8:50am

**Rice StimPill**  
Isaac Chang, Rice University, Houston, TX

8:50 - 9:00am

**FlowMate**  
Yunonne Bai, Johns Hopkins University, Baltimore, MD

9:00 - 9:10am

**Cardi-Action**  
Tori Sager, University of Louisville, Louisville, KY

9:10 - 9:20am

**SymMEDtry**  
Katie McCarren, Johns Hopkins University, Baltimore, MD

9:20 - 9:30am

**A Virtual Reality Feedback System for High Quality CPR Training**  
Gisselle Gonzalez, The University of Arizona, Tucson, AZ

9:30 - 10:00am Keynote Address



Dr. Charles Fraser

**Mechanical Circulatory Support in Children: Still A Long Way To Go**

**Charles Fraser, MD, Univ of Texas at Austin, Austin, TX**

*Introduction by Egemen Tuzun, MD, PhD, Texas A&M University, College Station, TX*

**VISIT EXHIBITS & POSTERS  
ENJOY REFRESHMENTS**

10:00 - 10:45am *Grand Ballroom B - Ballroom Level T1*

10:45 - 11:15am ASAIO Hastings Lecture



Dr. William Holman

**Innovation in Medical Devices: Lessons from the Past for Planning Our Future**

**William Holman, MD, Univ of Alabama, Birmingham, AL**

*Introduction by Mark Slaughter, MD, University of Louisville, Louisville, KY*

11:15 - 11:45am ASAIO History Committee

**Co-Chairs:**

**George Pantalos, PhD, University of Louisville, Louisville, KY**  
**Mark Kurusz, BA, CCP, Windmill Cardiovascular Systems Inc, Austin, TX**

**Tribute to Dr. Don Olsen by Lyle Joyce, MD, PhD, Medical College of Wisconsin, Milwaukee, WI**



Dr. Don Olsen

**TrIBUTE to Mr. Ken Butler by Richard Wampler, MD, Oregon Health Sciences University, Loomis, CA**



Mr. Ken Butler

11:45 - 12:00pm

**ASAIO Fellowship Award Announcements**

**Steven Koenig, PhD - President ASAIO**

12:00 - 1:30pm **LUNCH BREAK**

**CARDIAC 3: Acute Heart Failure and Cardiogenic Shock**

1:30 - 3:00pm *Grand Ballroom A - Ballroom Level T1*

**Co-Chairs:**

**Simon Maltais, MD, PhD, Centre Hospitalier de l'Université de Montréal (CHUM), Montreal, Quebec, Canada**  
**Michelle Ploutz, MD, MPH, Phoenix Children's Hospital, Scottsdale, AZ**

**ABSTRACT PRESENTATIONS**

1:30 - 1:40pm

**Acute Decompensated Heart Failure Therapy: Impella 5.0 versus VenoArterial ECMO**

**Mario Aguillon, RN, Smidt Heart Institute at Cedars-Sinai, Los Angeles, CA**

1:40 - 1:50pm

**Pre-operative Serum Lactate Predicts Mortality in Patients Implanted with Veno-Arterial Extracorporeal Membrane Oxygenation (VA-ECMO)**

**Nour Tashtish, MD, University Hospital Cleveland Medical Center, Cleveland, OH**

1:50 - 2:00pm

**Predictors of Poor Outcome in Acute Cardiogenic Shock Supported By Percutaneous Ventricular Assist Device (Impella)**  
**Tomohiro Nakajima, MD, PhD, Washington Univ in St. Louis, St. Louis, MO**

2:00 - 2:10pm

**Which Type of Impella Should We Select in Cardiogenic Shock Patients Supported with Extracorporeal Membrane Oxygenation?**

**Tomohiro Nakajima, MD, PhD, Washington Univ in St. Louis, St. Louis, MO**

2:10 - 2:20pm

**Retrospective Review of Left Ventricular Unloading Strategies During Veno-Arterial Extracorporeal Membrane Oxygenation**  
**Laura Piechura, MD, Brigham and Women's Hospital, Boston, MA**

2:20 - 2:30pm

**Outcomes of Non-Ischemic Patients in Cardiogenic Shock**  
**Anh Do, DO, Pharm. D, Henry Ford Hospital, Detroit, MI**

2:30 - 3:00pm

## Panel Discussion

Acute Heart Failure and Cardiogenic Shock

### Panelists:

Koji Takeda, MD, PhD, Columbia Univ Irving Med Ctr, New York, NY  
Joseph Zwischenberger, MD, University of Kentucky, Lexington, KY  
Biswajit Kar, MD, Memorial-Hermann Heart & Vascular Instit, Houston, TX

## **BIOENGINEERING 3: Technical Controversy: Pulse or Not**

1:30 - 3:00pm *Imperial A - Ballroom Level T1*

### Co-Chairs:

James Krisher, MSME, Rochester Institute of Technology, Camillus, NY  
Egemen Tuzun, MD, PhD, Texas A&M University, College Station, TX

1:30 - 1:50pm

### Physiologic Perspective

Kiyotaka Fukamachi, MD, PhD, Cleveland Clinic, Cleveland, OH

1:50 - 2:10pm

### Engineering Perspective

Doug Vincent, BSME, VentriFlo® True Pulse Pump, Pelham, NH

2:10 - 2:20pm

### Discussion

## **ABSTRACT PRESENTATIONS**

2:20 - 2:30pm

### Underlying Mechanism of Right Heart Failure Induced by LVAD: A Simulation Study

Hao Lin, BS, Artificial Organ Technology Lab, Suzhou, China

2:30 - 2:40pm

### In Vivo Performance of an Advanced Ventricular Assist Device with Pulse Augmentation and Regurgitant Flow Shutoff

Takuma Miyamoto, MD, PhD, Cleveland Clinic, Cleveland, OH

2:40 - 2:50pm

### Shear-Mediated Activation of Platelets is Associated with Global and Regional Changes in Biomechanical Properties: Implications for Mechanism and Therapy

Alice Sweedo, University of Arizona, Tucson, AZ

2:50 - 3:00pm

### Portable Driver Optimization for NuPulseCV iVAS Chronic Counterpulsation Cardiac Support

Sonna Patel-Raman, PhD, NuPulseCV, Raleigh, NC

## **VAD 2: Debates: "Pros" versus "Cons" in Challenging Situations**

1:30 - 3:00pm *Franciscan A&B - Ballroom Level T1*

### Panelists:

Bill Shay, MS, RN, Christiana Care Health System, Newark, DE  
Kenyon Larsen, RN, BSN, Intermountain Medical Center, Murray, UT

1:30 - 2:00pm

### Emergent VAD Evaluations: A Reality or Should They Be Offered?

**Pro:** Anthony Dan Paul Salimbangon, RN, BSN, CCRN, UCLA Med Ctr, Los Angeles, CA

**Con:** Jill Giordano, MA, MSW, LCSW, Newark Beth Israel Med Ctr., Newark, NJ

2:00 - 2:30pm

### Ethics: Just Because We Can, Should We?

**Pro:** Karen Meehan, MSN, ACNS, University of Chicago, Chicago, IL

**Con:** Lori Anderson, MS, RN, Tampa General Hospital, Tampa, FL

2:30 - 3:00pm

## **Controversy or Not: Legalized Marijuana and It's Effects On A VAD Program**

**Pro:** Jami Bennett, RN, BSN, University of Colorado Hospital, Aurora, CO

**Con:** Erin August, RN, BSN, Memorial Regional Hospital, Hollywood, FL

## **PULMONARY 3: Extracorporeal Lung Support/ Ambulatory Artificial Lung for End Stage Lung Diseases**

1:30 - 3:00pm *Plaza Room B - Lobby Level T1*

### Co-Chairs:

I Wen Wang, MD, PhD, Memorial Healthcare System, Hollywood, FL  
Cherry Croft, PhD, University of Kentucky, Lexington, KY

1:30 - 1:50pm

### Overview of Outcomes Data on ECMO Bridging to Lung Transplantation

Mani Daneshmand, MD, Emory University, Atlanta, GA

1:50 - 2:10pm

### Cannulation Strategies for ECMO Bridging in the Lung Transplant Context

Keshava Rajagopal, MD, PhD, University of Texas Houston, TX

2:10 - 2:30pm

### How to Approach Individual Scenarios in ECMO Bridging to Lung Transplantation

Charles Hoopes, MD, MPH, Univ of Alabama at Birmingham, Birmingham, AL

2:30 - 2:50pm

### Development of Durable ECMO and "ICMO" Systems

Jose Garcia, MD, IU Health - Methodist Hospital, Indianapolis, IN

## **ABSTRACT PRESENTATION**

2:50 - 3:00pm

### A Quantitative Approach to Detection of Increased Circuit Resistance During ECMO

Vishaal Dhamotharan, University of Pittsburgh, Pittsburgh, PA

## **RENAL 3: Sensing Technologies Relevant to RRT And Clinical Use**

1:30 - 3:00pm *Plaza Room A - Lobby Level T1*

### Co-Chairs:

Lenar Yessayan, MD, MS, University of Michigan, Troy, MI  
Balazs Szamosfalvi, MD, University of Michigan, Ann Arbor, MI

1:30 - 1:45pm

### Ion Selective Sensing

Fokko Pieter Wieringa, PhD, IMEC/Holst Centre, Eindhoven, Netherlands

1:45 - 2:00pm

### The MediBeacon Transdermal GFR Measurement System

Richard Dorshow, PhD, MediBeacon Inc., St. Louis, MO

2:00 - 2:15pm

### Detecting Hemodynamic Instability (AHI and Drive)

Rodney Daniels, MD, University of Michigan, Ann Arbor, MI

2:15 - 2:30pm

### Wearable Bio-impedance Spectroscopy

Seulki Lee, PhD, IMEC/Holst Centre, Eindhoven, The Netherlands

## **ABSTRACT PRESENTATIONS**

2:30 - 2:40pm

### Miniature Libs Sensor for Real-time and In-line Multicomponent Analysis of Dialysis Fluids

Michiel Oderwald, The Netherlands Organisation for Applied Scientific Research TNO, Delft, Netherlands

2:40 - 2:50pm  
Feasibility of Wearable Fluid Status Monitoring of End Stage Renal Disease Patients  
Seulki Lee, PhD, IMEC/Holst Centre, Eindhoven, The Netherlands

2:50 - 3:00pm  
Gradual Escalation of Blood Flow and Dialysate/Replacement Fluid Bicarbonate Concentration Improved Clinical Tolerability of Hemodiafiltration in Maintenance Hemodialysis Patients  
Tibor Fülöp, MD, PhD, Medical University of South Carolina, Charleston, SC

## **PEDIATRIC 3: Pediatric Perspective on Hemostasis, Thrombogenicity and Hemocompatibility**

1:30 - 3:00pm *Imperial B - Ballroom Level T1*

Co-Chairs:

Jennifer Conway, MD, Stollery Children's Hospital, Edmonton, Alberta, Canada  
Lindsay May, MD, University of Utah, Salt Lake City, UT

1:30 - 1:50pm  
Unique Aspects of Developmental Hemostasis  
Patricia Massicotte, MD, MSc, MHSc, University of Alberta, Alberta, Canada

1:50 - 2:10pm  
FDA Considerations for Pre-clinical Hemocompatibility Evaluation of Devices  
Qijin Lu, PhD, FDA, Silver Spring, MD

2:10 - 2:30pm  
Hemocompatibility and Renal replacement Therapy  
David Kwiatkowski, MD, MS, Stanford University, Palo Alto, CA

2:30 - 2:40pm  
Discussion

### **ABSTRACT PRESENTATIONS**

2:40 - 2:50pm  
Computational Fluid Dynamics of a Novel Blood Turbine-Venous Assist Device  
Kerem Pekkan, PhD, Koc University, Istanbul, Turkey

2:50 - 3:00pm  
*In Vitro* and *In Vivo* Performance of a Portable Pediatric Artificial Pump-Lung Device  
Munsur Rahman, PhD, Univ of Maryland School of Medicine, Baltimore, MD

## **Critical Care / Anesthesiology / Pathology Session 3 - Topics in Critical Care And Anesthesiology**

1:30 - 3:00pm *Nob Hill 3 - Sixth Floor*

Co-Chairs:

Robert Kormos, MD, University of Pittsburgh Medical Center, Pittsburgh, PA  
Catherine Heith, MD, Boston Children's Hospital, Boston, MA

1:30 - 1:55pm  
Transeophageal Echocardiography for the Intra-Operative Management of the LVAD Patient  
Gerard McCloskey, MBBch, BAO, Yale School of Medicine, New Haven, CT

1:55 - 2:20pm  
Acute on Chronic RV Failure Following Assist Device Implantation: Diagnosis and Management in the ICU  
Manuel Fontes, MD, Yale University, New Haven, CT

2:20 - 2:40pm  
Management of Pulmonary Vascular-Right Ventricular Axis Following Mechanical Circulatory Support  
Mihai Podgoreanu, MD, Duke University, Durham, NC

### **ABSTRACT PRESENTATIONS**

2:40 - 2:50pm  
A Standardized Approach to ECMO Cannulation and Training  
Yuliya Tipograf, MD, Vanderbilt University Medical Center, Nashville, TN

2:50 - 3:00pm  
Water Infused Surface Protection (WISP) as an Active Method to Prevent and Treat Thrombotic Complications in Central Venous Catheters  
David Sutherland, BS, Boston University College of Engineering, Boston, MA

## **IFAO Session - Frontiers of Bio-Material With Surface Treatment and Biological Tissues**

1:30 - 2:30pm *Franciscan C - Ballroom Level*

Co-Chairs:

Toru Masuzawa, PhD, Ibaraki University, Ibaraki University, Japan  
Steven Koenig, PhD, University of Louisville, Louisville, KY

1:30 - 1:50pm  
Frontiers of Biomaterials: Immunomodulation and Biological Tissues  
Tsuayoshi Kimura, Tokyo Medical and Dental University, Tokyo, Japan

1:50 - 2:10pm  
Use of Polysaccharides to Make Biomimetic Surface Coatings and Hydrogels to Guide Cell Differentiation for Tissue Engineering Applications  
Thomas Groth, PhD, Martin Luther University Halle-Wittenberg, Germany

2:10 - 2:30pm  
Innovations in Materials: Flexible, Stretchable and Transient Electronics: Opportunities for Incorporation in Next Generation Medical Device and Organ Systems  
Marvin Slepian, MD, University of Arizona, Tucson, AZ

## **VISIT EXHIBITS & POSTERS ENJOY REFRESHMENTS**

3:00 - 3:45pm *Grand Ballroom B - Ballroom Level T1*

## **CARDIAC 4: Debate - The Future of Advanced Heart Failure: VAD vs Transplant**

3:45 - 5:00pm *Grand Ballroom A - Ballroom Level T1*

Co-Chairs:

Veli Topkara, MD, MSc, Columbia University Medical Center, New York, NY  
Charles Hoopes, MD, MPH, University of Alabama, Birmingham, AL

### **ABSTRACT PRESENTATIONS**

3:45 - 3:55pm  
Outcomes in Patients Supported on Left Ventricular Assist Devices Awaiting Heart and Heart-Kidney Transplant: A UNOS Database Analysis  
Matthew Weber, MS, Thomas Jefferson University, Philadelphia, PA

3:55 - 4:05pm

Left Ventricle Assist Device and Gastric Sleeve as a Combination Therapy for Morbidly Obese Transplant Patients

Mateja Jezovnik, MD, PhD, University of Texas Health Sci Center, Houston, TX

4:05 - 4:15pm

Implanting Durable MCS in Non-Compliant Patients: Do the Outcomes Outweigh the Risks?

Heather Barone, RC-BC, MSN, Cedars-Sinai Medical Center, Los Angeles, CA

4:15 - 4:25pm

Development of Malignancies and Their Outcomes in Patients Supported on Continuous-flow Left Ventricular Assist Devices

Jonathan Gordon, BA, Thomas Jefferson University, Philadelphia, PA

4:25 - 4:35pm

Impact of LVAD Support on Outcomes after Combined Heart-Kidney Transplantation

Nicolas Brozzi, MD, University of Miami, Miami, FL

4:35 - 5:00pm

**DEBATE:**

The Future is Transplant

Simon Maltais, MD, PhD, Chirurgie, Montreal, Canada

The Future is VAD

Eduardo Rame, MD, University of Pennsylvania, Philadelphia, PA

## BIOENGINEERING 4: Artificial Organs and Tissue Engineering

3:45 - 5:00pm *Imperial A - Ballroom Level T1*

Co-Chairs:

John Criscione, MD, PhD, Texas A&M University, College Station, TX  
Kiyotaka Fukamachi, MD, PhD, Cleveland Clinic, Cleveland, OH

3:45 - 4:00pm

Tissue Engineered Vessels

Sharon Gerecht, PhD, John Hopkins University, Baltimore, MD

**ABSTRACT PRESENTATIONS**

4:00 - 4:10pm

A Bioreactor Containing Primary Human Renal Epithelial Cells Supported *In Vivo* without Immunosuppression

Rebecca Gologorsky, MD, University of California, San Francisco, CA

4:10 - 4:20pm

Assessing Hemocompatibility of a Small-Scale Microfluidic Artificial Lung

Alex Thompson, PhD, University of Michigan - ECMO Lab, Ann Arbor, MI

4:20 - 4:30pm

Computational Comparison of Ventricular Assist Device Implantation Sites Within Single Ventricle Hearts

Anne-Marie Ginn-Hedman, BS, Texas A&M University, College Station, TX

4:30 - 4:40pm

A Virtual Reality Feedback System for High Quality CPR Training

Gisselle Gonzalez, BS, The University of Arizona, Tucson, AZ

4:40 - 4:50pm

Alterations to Cardiac Decellularized Extracellular Matrix Hydrogel Processing Affects Material Strength and Cell Viability

Nicole Mehta, MS, BS, Texas A&M University, College Station, TX

4:50 - 5:00pm

Thoughts on FDA Benchmark Blood Pump - Insights from Physics-based Approach

Choon-Sik Jhun, PhD, Penn State College of Medicine, Hershey, PA

## PULMONARY 4: Innovative Technologies for Respiratory Support

3:45 - 5:00pm *Plaza Room B - Lobby Level T1*

Co-Chairs:

Zhongjun Wu, PhD, University of Maryland School of Medicine, Baltimore, MD

Staci Jessen, PhD, Texas A&M University, College Station, TX

3:45 - 4:05pm

Intravascular Oxygenation: Past and Potential for the Future

William Federspiel, PhD, University of Pittsburgh, Pittsburgh, PA

4:05 - 4:25pm

Use of Microbubbles As An Approach to Blood Oxygenation

Shingo Ichiba, MD, PhD, Nippon Medical School Hospital, Tokyo, Japan

4:25 - 4:45pm

Recent Progress on Microfluidic Artificial Lungs

Joseph Potkay, PhD, University of Michigan & VA Ann Arbor Healthcare System, Ann Arbor, MI

**ABSTRACT PRESENTATION**

4:45 - 4:55pm

Long-term Evaluation of an Ultra Compact ECMO System with Built-in Monitors in Chronic Animal Experiments for Up to 5 Weeks

Nobumasa Katagiri, PhD, National Cerebral & CV Ctr Research Institute, Osaka, Japan

## RENAL 4: Innovative Approaches to Extracorporeal Renal Support With Clinical Application

3:45 - 5:00pm *Plaza Room A - Lobby Level T1*

Co-Chairs:

Balazs Szamosfalvi, MD, University of Michigan, Ann Arbor, MI  
Lenar Yessayan, MD, MS, University of Michigan, Troy, MI

3:45 - 4:00pm

Ultrafiltration for Advanced Heart Failure Using Tablo

Sevag Demirjian, MD, Cleveland Clinic, Cleveland, OH

4:00 - 4:15pm

Outside-In Hemofiltration for Prolonged Operation Without Clogging – Hydrodynamics, Filter Designs and Challenges

Mohamed Labib, PhD, Novaflux Technologies, Princeton, NJ

4:15 - 4:30pm

Remote Data Collection Systems In Home Hemodialysis

Aditya Patel, NxStage Medical Inc, Lawrence, MA

4:30 - 4:45pm

Data Analytics for Continuous Renal Replacement Therapy

Ronald Usovsky, BA, BSN, RN, Baxter Healthcare Corporation, Deerfield, IL

**ABSTRACT PRESENTATION**

4:50 - 5:00pm

IMENGiTi: A Working Prototype of a Portable Tidal Peritoneal Dialysis System

Azrul Hamzah, PhD, University Kebangsaan Malaysia, Bangi, Selangor, Malaysia

**PEDIATRIC 4: Pediatric Abstracts**

3:45 - 5:00pm *Imperial B - Ballroom Level T1*

**Co-Chairs:**

David Sutcliffe, MD, University of Texas Southwestern, Dallas, TX  
 George Mychaliska, MD, C.S. Mott Children's Hospital, Ann Arbor, MI

**ABSTRACT PRESENTATIONS**

3:45 - 3:55pm

Evaluation of New DLC-based Cavopulmonary Assist in Failing Fontan Simulation Loop/Sheep Model  
 Li Li, MD, University of Kentucky, Lexington, KY

3:55 - 4:05pm

Mechanically Assisted Fontan Completion for Bridge to Heart Transplant: A Case Series  
 Joseph Spinner, MD, Baylor College of Medicine, Houston, TX

4:05 - 4:15pm

I Will Survive! A Single-center Outpatient Pediatric Ventricular Assist Device Experience  
 Hari Tunuguntla, MD, Baylor College of Medicine, Houston, TX

4:15 - 4:25pm

Evolution of Vascular Access for the Artificial Placenta: From Two-Vessel Single-Lumen Venovenous Cannulation to Single-Vessel Cannulation with Tidal Flow  
 Jacqueline Kading, BS, University of Michigan, Ann Arbor, MI - ASAIOfyi Fellowship

4:25 - 4:35pm

Measuring the Frequency of Stroke in Children on VAD Support: More Difficult Than it Appears?  
 Sarah Jane Wilkens, MD, MPH, Stanford Children's Hospital, Palo Alto, CA

4:35 - 4:45pm

Use of Protek Duo Cannula for Temporary Support in Pediatric VAD Patients  
 Michelle Ploutz, MD, Phoenix Children's Hospital, Phoenix, AZ

4:45 - 4:55pm

Survival and Neurologic Outcomes of Extracorporeal Membrane Oxygenation in Patients with Congenital Heart Disease  
 Hiroshi Taka, Okayama University Hospital, Okayama, Japan

**ASAIO Member Business Meeting**

5:15 - 5:45pm *Franciscan D - Ballroom Level T2*

9:30am - 4:00pm

Poster Presentations *Grand Ballroom B - Ballroom Level T1*

**Cardiac Posters**

Poster Numbers

- 178 Simulated Performance of the Cleveland Clinic Continuous-Flow Total Artificial Heart Using the Virtual Mock Loop: Comparison with an In Vivo Study  
 Takuma Miyamoto, MD, PhD, Cleveland Clinic, Cleveland, OH
- 179 First Acute *In Vivo* Study of the Advanced Ventricular Assist Device as a Left and Right Ventricular Assist Device  
 Takuma Miyamoto, MD, PhD, Cleveland Clinic, Cleveland, OH

- 180 A New Hemodynamic Index to Identify Different Profiles in Patients Implanted with Last Generation Centrifugal Pump  
 Andrea Montalto, MD, San Camillo Hospital, Rome, Italy
- 181 Streamlining and Audio Analysis Device for Doctor Patient Encounters  
 Sean Moore, University of Arizona, Tucson, AZ
- 182 Higher Vasoactive Inotropic Score is Associated with Incidence of Acute Kidney Injury in Adult Cardiogenic and Respiratory Shock  
 Tomohiro Nakajima, MD, PhD, Washington Univ in St. Louis, St. Louis, MO
- 183 Renal Replacement Therapy in Patients with Continuous Flow Left Ventricular Assist Devices  
 Umang Parikh, Baylor College of Medicine, Houston, TX
- 184 Impact of Less Invasive Extra-Pericardial Placement (LIEPP) of LVAD Devices on Right Ventricular Dysfunction  
 Jiheum Park, PhD, Yale University School of Medicine, New Haven, CT
- 185 Successful Kidney Transplant on Venous-arterial Support After Heart Transplant  
 Anthony Pham, MS, Mayo Clinic Florida, Jacksonville, FL
- 186 Device Differences in LVAD Pump Thrombosis: A Systematic Review  
 Giselle Raitz, MD, University of Miami, Miami, FL
- 187 HVAD Parameters Risk Score  
 Veronica Ramos, BS, Medtronic, Miami Lakes, FL
- 188 Characterization of Compliance Chamber Performance for Pre-Clinical VAD Testing  
 Britton Richardson, Centreville High School, Clifton, VA
- 189 Hemodilution Enhances the Mechanical Fragility of Blood During *In Vitro* Hemolysis Testing  
 Christian Robinson, PhD, Calon Cardio-Technology Ltd, Swansea, United Kingdom
- 190 High-Speed Visualization of Ingested and Ejected Red Thrombus from the HeartMate II Left Ventricular Assist Device  
 Grant Rowlands, Cornell University, Ithaca, NY
- 191 ECLS Studies in a Mock Circulatory System  
 Marcel Rutten, PhD, TU Eindhoven, Eindhoven, Netherlands
- 192 Efficacy of Therapeutic Modalities to Address Aortic Valve Insufficiency in the Setting of Left Ventricular Assist Device Support  
 Nadeen Sarsour, BS, University of Michigan Medical School, Ann Arbor, MI
- 193 Opioid Usage in Patients Undergoing Left Ventricular Assist Device Implantation: Correlation to Patient Characteristics and Outcomes?  
 Sarah Schettle, PA-C, Mayo Clinic, Rochester, MN
- 194 Flow Field Visualization in the Assisted Isolated Heart During Mechanical Circulatory Support  
 Heinrich Schima, PhD, Medical University of Vienna, Vienna, Austria
- 195 Effect of Atrial Inflow Conditions on Ventricular Blood Flow During LVAD Support Using Particle Tracking  
 Heinrich Schima, PhD, Medical University of Vienna, Vienna, Austria

- 196 **Oncostatin M (OSM): A Novel Biomarker to Predict Infection in (VAD) Recipients**  
James Long, MD, PhD, INTEGRIS Baptist Medical Center, Oklahoma City, OK
- 197 **Mechanical Circulatory Support in Coronary Revascularization and Severe Left Ventricular Dysfunction Permits Bridge to Recovery**  
Nathan Smith, MD, Medical College of Wisconsin, Milwaukee, WI
- 198 **Low Shear, High Flow, and Physiologic Pulsatility: The Corwave LVAD**  
Trevor Snyder, PhD, Corwave, Clichy, France
- 199 **Does a Tighter International Normalized Ratio (INR) Target Range Decrease Adverse Events (AEs) in Left Ventricular Assist Device (LVAD) Patients?**  
Elizabeth Stauder, BS, Intermountain Medical Center, Murray, UT
- 200 **The Influence of Hemodynamics on Cerebral Perfusion and Thromboembolic Risk of LVAD Therapy**  
Angelica Straccia, BS, University of Washington, Seattle, Wa
- 201 **Left Ventricular Assist Device Caregiver Health Outcomes: A Systematic Review of Qualitative and Quantitative Studies**  
Megan Streur, PhD, University of Washington, Seattle, WA
- 202 **Evaluation of tNIRS-1 Combined with Bis Monitor for Cardiac Surgery Patients**  
Atsushi Sugiura, MSEE, Showa University Northern Yokohama Hospital, Yokohama, Japan
- 203 **Stretchable Electronic Motion Capture in Heart Failure Affords Quantitation While Revealing Motion Signatures**  
Hailey Swanson, BS, University of Arizona, Tucson, AZ
- 204 **Successful Cardiac and Renal Transplant in a Highly Sensitized Patient Bridged from Left Ventricular Assist Device**  
**PRESENTATION CANCELLED**
- 205 **Development of an Extracorporeal Ventricular Assist Device with a Novel Centrifugal Pump with a Hydrodynamically Levitated Impeller**  
Tomonori Tsukiya, PhD, The National Cerebral and CVCenter, Osaka, Japan
- 206 **Impact of Delayed Systemic Heparinisation on Bleeding and Thromboembolism During Post-cardiotomy Extracorporeal Membrane Oxygenation in Neonates**  
Maria von Stumm, MD, University Heart Center Hamburg, Hamburg, Germany
- 207 **In Vivo Evaluation of the CH Biomedical Left Ventricular Assist System in Bovine Model for 60 Days**  
Yaxin Wang, PhD, Texas Heart Institute, Houston, TX
- 208 **Steroid Use in Ex-Vivo Normothermic Heart Perfusion**  
William Weir, MD, Michigan Medicine, Ann Arbor, MI
- 209 **Medication Regimens and Adherence in VAD Patients**  
Adrianna Damato, MD, Icahn School of Medicine at Mount Sinai, New York, NY
- 210 **Multi-Scale, Multi-Resolution Simulation of Thrombosis in the HVAD**  
Mansur Zhussupbekov, BS, Cornell University, Ithaca, NY
- 211 **Superior Vena Cava Syndrome from Percutaneous Right Ventricular Assist Device Use in the Management of Right Ventricular Failure**  
Bernice Badu, Medical College of Wisconsin, Milwaukee, WI

Bioengineering Posters

- 212 **Optimization of the Permanent Magnetic Bearings Construction Providing Force Balance in Religa Heart® ROT Centrifugal Blood Pump**  
Przemyslaw Kurtyka, BS, Foundation of Cardiac Surgery Development, Zabrze, Poland
- 213 **Fabrication and Evaluation of Chitosan-based Nanofibrous Membrane as an Effective Tissue Adhesion Barrier**  
Oh Hyeong Kwon, PhD, Kumoh National Institute of Technology, Gumi, Republic of Korea
- 214 **CFD Modeling of the FDA Benchmark Centrifugal Pump Using a Cut-Cell Method with Automatic Mesh Generation and Adaptive Mesh Refinement**  
Yanheng Li, PhD, Convergent Science Inc., Madison, WI
- 215 **Co-development of Regulatory-compliant and Commercializable Clinical Diagnostics and Medical Devices Solutions**  
Thomas Li, PhD, Agency for Science, Technology and Research (A\*STAR), Singapore
- 216 **Evaluation of Plasma Leakage in Extracorporeal Membrane Oxygenators Based on the Gas Inlet Pressure**  
Yuki Nakamura, BS, Osaka Electro-Communication University Graduate School, Osaka, Japan
- 217 **Development of Multiple Point Bowel-sound Analysis System (MPBAS) for the Optimization of the Bowel Sound Measurement Position**  
Junji Nishioka, BS, Tokushima University Graduate School, Tokushima City, Japan
- 218 **Tissue-Inducing Characteristics of Titanium Fiber Mesh with One Side Sealed with Non-Porous Material for Its Application to Artificial Heart**  
Eiji Okamoto, PhD, Tokai University, Sapporo, Japan
- 219 **Sensing Algorithm Code in Arduino Microcontroller for Autonomous Function of a Total Artificial Heart Model**  
Wilmo Orejola, MD, Hackensack University Medical Center, Pompton Plains, NJ
- 220 **Platelet Margination Affects Thrombogenicity in LVAD Therapy**  
Rodrigo Osuna-Orozco, BS, University of Washington, Seattle, WA
- 221 **On FHIR: Clinical Data Automation and the ELSO Registry**  
Matthew Paden, MD, Emory University, Atlanta, GA
- 222 **“Hey ELSO”: Natural Language Processing (NLP) for ELSO Registry Queries**  
Matthew Paden, MD, Emory University, Atlanta, GA
- 223 **Development of a Soft Robotic Organosynthetic Left Ventricle**  
Clara Park, Massachusetts Institute of Technology, Cambridge, MA
- 224 **Trans-catheter Septal Myectomy for Hypertrophic Cardiomyopathy: Results from an Innovative Design and Testing**  
Jiheum Park, PhD, Yale University School of Medicine, New Haven, CT
- 225 **In Vitro Antifouling Assessment of Diethylene Glycol Dimethyl Ether Coating on Silicon Substrates**  
Avinash Patil, PhD, University of California, San Francisco, CA

## FRIDAY, JUNE 28 (continued)

- 226** Effect of PEG Chain Length and Solvent Composition on Antifouling Capacity of Silane-PEG Coatings  
Avinash Patil, PhD, University of California, San Francisco, CA
- 227** Comparative Analysis of 3D Printed Mock Ventricular Assist Devices Using Computational Fluid Dynamics and In-Vitro Benchtop Testing  
Liana Polikaitis, BS, Texas A&M University, College Station, TX
- 228** Dissolution of Nitinol Wire within Tissue - Expanding the Use of Paraffin Histology for Medical Device Evaluation  
Cedric Robinson, BS, MS, Texas A&M University, College Station, TX
- 229** Humans and Pigs: Are We That Different? The Effect of Shear Stress and Biochemical Activation on Porcine Platelets  
Yana Roka Moia, PhD, University of Arizona, Tucson, AZ
- 230** Staying Connected in the Loop: Shear Stress Errors Induced by Connector Elements within Pre-Clinical Testing of Ventricular Assist Device Thrombogenicity  
Marvin Slepian, MD, University of Arizona, Tucson, AZ
- 231** Evaluation of Decellularized Porcine Artery as Vascular Grafts with Sustained Endothelial Formation  
Natalia Suárez, Universidad de los Andes, Bogotá, Colombia
- 232** Observation of Thrombus Formation around TAVI models including Leakage Flows by Optical Systems and the Evaluation by CFD Analysis  
**PRESENTATION CANCELLED**
- 233** Apico Aortic Blood Pump: Short Term *In Vivo* Experiments  
Bruno Utiyama, PhD, Instituto Dante Pazzanese de Cardiologia, São Paulo, Brazil
- 234** Rotary Blood Pump Control Strategy for Physiologic Perfusion, Suction Prevention, and Augmentation of Vascular Pulsatility  
Yu Wang, PhD, Dalian University of Technology, Dalian, China
- 235** Controlling the Variance of In Vitro Hemolysis Test per ASTM Standards: Experience and Recommendations  
Liudi Zhang, PhD, Soochow University, Suzhou, China

### Pediatric Posters

- 236** Human Factors Design of Pediatric Ventricular Assist System  
James Antaki, PhD, Cornell University, Ithaca, NY
- 237** Is the Serum Level of Salusin- $\alpha$  Associated with Hypertension and Atherosclerosis in the Pediatric Population?  
Anna Wasilewska, MD, PhD, Medical University of Bialystok, Bialystok, Poland

## SATURDAY, JUNE 29

### CARDIAC 5: Optimizing MCS Outcomes and Reducing Complications: Pulsatility, Blood pressure, Speed Optimization

8:30 - 10:00am Yosemite A-B Ballroom Level T1

#### Co-Chairs:

Egemen Tuzun, MD, PhD, Texas A&M University, College Station, TX  
Mandar Aras, MD, PhD, University of California, San Francisco, CA

### ABSTRACT PRESENTATIONS

- 8:30 - 8:40pm  
Atrial Fibrillation Triggers Chaotic Flow in the Left Ventricle and Increases LVAD Thrombogenicity  
Jennifer Beckman, MSN, ARNP, FNP, Univ of Washington Med Ctr, Seattle, WA
- 8:40 - 8:50am  
Mild Aortic Insufficiency at the Time of Left Ventricular Assist Device Implantation: Should It Be Repaired?  
Yuki Tanaka, MD, Washington University School of Medicine, St. Louis, MO
- 8:50 - 9:00am  
In Vitro Investigation of the Effect of the Hvad Lavare Cycle on Intraventricular Hemodynamics  
Fanette Chassagne, PhD, University of Washington, Seattle, WA
- 9:00 - 9:10am  
The Impact of LVAD Pulsatility Modes on Thrombogenicity  
Alberta Aliseda, PhD, University of Washington, Seattle, WA
- 9:10 - 9:20am  
Assessment of Left Ventricular Contractility During LVAD Support: Modeling and Validation  
Eric Chen, Eindhoven University of Technology, Eindhoven, Netherlands
- 9:20 - 9:30am  
Shorter Duration of Pulsatility During Left Ventricular Assist Device (LVAD) Therapy is Associated with Vasoplegia at the Time of Heart Transplantation  
Mandar Aras, MD, PhD, University of California, San Francisco, CA
- 9:30 - 10:00am  
Panel Discussion

#### Panelists

Antonio Loforte, MD, PhD, S. Orsola Malpighi, Bologna, Italy  
Pramod Bonde, MD, Yale University, New Haven, CT  
Liviu Klein, MD, MS, Univ of California San Francisco, San Francisco, CA  
Thomas Schloeglhofer, MSc, Medical Univ of Vienna, Vienna, Austria

### BIOENGINEERING 5: Innovation InSight

8:30 - 10:00am Imperial A - Ballroom Level T1

#### Co-Chairs:

Daniel Timms, PhD, BiVACOR, Houston, TX  
Steven Koenig, PhD, University of Louisville, Louisville, KY

8:30 - 8:50am

Artificial Eye Development  
Robert Greenberg, MD, PhD, Alfred Mann Foundation, Valencia, CA

8:50 - 9:10am

Innovations in Optical Pressure Sensors  
Thorsten Siess, PhD, Abiomed Europe GmbH, Aachen, Germany

### ABSTRACT PRESENTATIONS

9:10 - 9:20am

Clot Detection in Membrane Oxygenators using Micro-Computed-Tomography - A Feasibility Measurement  
Clemens Birkenmaier, Technical University of Applied Sciences, Regensburg, Germany

9:20 - 9:30am

The Effect of Shear Rate and Exposure Time on the Size of Platelet Aggregations  
Chris Hoi Houg Chan, PhD, Griffith University, Gold Coast, Australia

9:30 - 9:40am

Induced Spiral Flow and Helical Washout Mechanics  
J. Yasha Kresh, PhD, Drexel University College of Medicine, Philadelphia, PA

9:40 - 9:50am

Destruction of von Willebrand Factor Occurs Despite the Absence of Hemolysis: In-Vitro Study  
Choon-Sik Jhun, PhD, Penn State College of Medicine, Hershey, PA

9:50 - 10:00am

Patient Hacks and User-Designed Problem Solutions for the Wearable Components of Ventricular Assist Devices (VADs): A Content Analysis of Online Sources  
Jessica Lea Dunn, University of Sydney, Sydney, Australia

## **PULMONARY 5: Controversies in Artificial Lung Support**

8:30 - 10:00am *Plaza Room B - Lobby Level T1*

Co-Chairs:

Marie Cornell, BS, LATg, University of Michigan, Ann Arbor, MI  
Alvaro Rojas-Peña, MD, University of Michigan Medical School, Ann Arbor, MI

8:30 - 8:50am

Roles for ECMO in Traumatic Respiratory Failure  
Ismael Salas de Armas, MD, The Univ of Texas Health Sci Ctr-Houston, TX

8:50 - 9:10am

Etiology and Management of Hypoxemia on ECMO Support  
Michael Broome, MD, PhD, Karolinska University Hospital, Solna, Sweden

9:10 - 9:30am

Combined Respiratory Failure and Distributive Shock: Options and How to Choose Among Them  
Edward Cantu, MD, MSCE, Hosp of the Univ of Pennsylvania, Philadelphia, PA

9:30 - 9:50am

Respiratory Failure In the Obese: ECMO Outcomes?  
Bindu Akkanti, MD, McGovern Medical School, Houston, TX  
**ABSTRACT PRESENTATION**

9:50 - 10:00am

Simple New Method to Measure Cardiac Output in VV ECMO Patients  
Nikolai Krivitski, PhD, DSc, Transonic Systems Inc, Ithaca, NY

## **RENAL 5: KHI: Enabling Technologies for Wearable Dialysis and Implanted Artificial Kidney**

8:30 - 10:00am *Plaza Room A - Lobby Level T1*

Co-Chairs:

Balazs Szamosfalvi, MD, University of Michigan, Ann Arbor, MI  
Stephen Ash, MD, FACP, HemoCleanse Technologies LLC, Lafayette, IN

8:30 - 8:50am

Kidney Health Initiative - Defining the Purpose and Mission  
Murray Sheldon, MD, FDA, Silver Spring, MD

8:50 - 9:05am

Silicon Membranes for Implantable Dialysis  
Shuvo Roy, PhD, University of California San Francisco, San Francisco, CA

9:05 - 9:25am

Electro-oxidation As A Strategy for Urea Removal in the Dialysate Recycling Process  
Karin Gerritsen, MD, PhD, UMC Utrecht, Utrecht, Netherlands

9:25 - 9:40am

Sorbent Technology  
Stephen Ash, MD, HemoCleanse Technologies LLC, Lafayette, IN

9:40 - 9:50am

Wearable Artificial Kidney  
Victor Gura, MD, Geffen School of Med at UCLA, Beverly Hills, CA

**ABSTRACT PRESENTATION**

9:50 - 10:00am

Possible Resolution to Problem of Massive Disposal and Replacement of Artificial Kidney Filtrate  
Arnold Lande, MD, Northport Navigable Waters Institution, Northport, MI

**ENJOY REFRESHMENTS**

10:00 - 10:45am *Grand Ballroom B - Ballroom Level T1*

## **CARDIAC 6: RV Failure and BiV Failure in the Era of Centrifugal Flow**

10:45am - 12:00pm *Yosemite A-B Ballroom Level T1*

Co-Chairs:

William Cotts, MD, MS, Advocate Christ Medical Center, Oak Lawn, IL  
Ismael Salas de Armas, MD, The Univ of Texas Health Science Center, Houston, TX

**ABSTRACT PRESENTATIONS**

10:45 - 10:55am

Comparison of Total Artificial Heart and Heartware HVAD Biventricular Support for Management of Biventricular Heart Failure: A Systematic Review and Meta-analysis  
Matthew Weber, MS, Thomas Jefferson University, Philadelphia, PA

10:55 - 11:05am

Mechanical Circulatory Support Hemodynamics for Biventricular Heart Failure Using Continuous Flow Total Artificial Heart  
Matthew Weber, MS, Thomas Jefferson University, Philadelphia, PA

11:05 - 11:15am

Promising Parameters for Predicting Right Heart Failure After LVAD Therapy  
Faith Gumus, MD, Ankara University, Ankara, Turkey

11:15 - 11:25am

Outcomes of Percutaneous Temporary Biventricular Mechanical Support: A Systematic Review  
Matthew Weber, MS, Thomas Jefferson University, Philadelphia, PA

11:25 - 11:35am

Dual Antiplatelet Therapy is Not Associated with Increased Bleeding in Patients Implanted with Veno-arterial Extracorporeal Membrane Oxygenation  
Erica Zanath, MD, University Hospitals Cleveland Medical Center, Cleveland, OH

11:35 - 12:00pm

Panel Discussion  
RV Failure and BiV Failure in the Era of Centrifugal Flow

**Panelists**

Christian Bermudez, MD, Hosp of the Univ of Pennsylvania, Philadelphia, PA  
Jens Garbade, MD, PhD, University Leipzig Heart Center, Leipzig, Germany  
Antonio Loforte, MD, PhD, S. Orsola Malpighi, Bologna, Italy  
Jeffrey Teuteberg, MD, PhD, Stanford University, Stanford, CA

**BIOENGINEERING 6 - Ex-Vivo Perfusion Models**

10:45am - 12:00pm Imperial A - Ballroom Level T1

**Co-Chairs:**

Choon-Sik Jhun, PhD, Penn State College of Medicine, Hershey, PA  
Guruprasad Giridharan, PhD, University of Louisville, Louisville, KY

10:45 - 11:00am

Are We Ready to Replace in-vivo Models With ex-vivo Ones?  
Egemen Tuzun, MD, PhD, Texas A&M University, College Station, TX

**ABSTRACT PRESENTATIONS**

11:00 - 11:10am

An *In-vitro* Human Endothelial Cell-Smooth Muscle Cell Co-culture Model to Study the Effects of Pulsatility  
Moustafa Meki, BS, University of Louisville, Louisville, KY

11:10 - 11:20am

Development of a Pumpless Artificial Lung for Pediatric End Stage Lung Failure  
Alex Thompson, PhD, University of Michigan, Ann Arbor, MI

11:20 - 11:30am

Extracorporeal Support Without Systemic Anticoagulation: Nitric Oxide (NO) Releasing Circuits Combined with NO Sweep in Sheep  
Mark Jeakle, BS, University of Michigan, Ann Arbor, MI

11:30 - 11:40am

Drag Reducing Polymers Improve Oxygen Transfer Rate In Miniature Hollow Fiber Membrane Oxygenators  
Dan Crompton, BS, University of Pittsburgh, Pittsburgh, PA

11:40 - 11:50am

Endovascular Reconstitution of Aortic Sinotubular (eRAS) Junction for Type A Dissection  
Jiheum Park, PhD, Yale University, New Haven, CT

11:50am-12:00pm

Study of the Effect of Turbulence on Red Blood Cell Damage and Platelet Activation *In Vitro*  
Shivbaskar Rajesh, BS, University of Pittsburgh, Pittsburgh, PA

**RENAL 6: Emerging Strategies In Acute Kidney Injury and Extracorporeal Support**

10:45am-12:00pm Plaza Room A - Lobby Level T1

**Co-Chairs:**

Balazs Szamosfalvi, MD, University of Michigan MD, Ann Arbor, MI  
H David Humes, MD, University of Michigan, Ann Arbor, MI

10:45 - 11:05am

Safe CRRT-RCA Prescribing: Relative Importance of Protocol Design vs Expertise  
Balazs Szamosfalvi, MD, University of Michigan, Ann Arbor, MI

11:05 - 11:20am

Spectral Apheresis Machine - An Open Platform for CRRT and Hemoperfusion  
Gualitiero Guadagni, PhD, Spectral Diagnostics Inc, Toronto, Canada

**ABSTRACT PRESENTATIONS**

11:20 - 11:30am

A Fundamental and Direct Attack on Volume Control in Dialysis Patients  
Edward Leonard, PhD, Columbia University, New York, NY

11:30 - 11:40am

Mixed Matrix Membrane for Achieving Endotoxin Free Dialysate Combined with High Removal of Uremic Toxins From Human Plasma  
Dimitrios Stamatialis, PhD, University of Twente, Enschede, Netherlands

11:40 - 11:50am

Drainage with Normal Saline in Two Directions for Washing of the Clogging Filter During Cell-free and Concentrated Ascites Reinfusion Therapy  
Naoki Igata, Tokushima University, Tokushima city, Japan

11:50am-12:00pm

Discussion







*Respect Pulsatility™*

