
# PROGRAM

## ASAIO 62nd Annual Conference – San Francisco

*"Be the Change You Want to See"*

June 15 – 18, 2016

# ASAIO 63RD ANNUAL CONFERENCE

# CHICAGO

June 21 - 24, 2017

*Plan to Join Us!*

## Stay in touch with ASAIO at www.asaio.com

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- ASAIO Pioneer Interviews
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Science · Medicine and Industry – Innovating for the Future

ASAIO

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# PROGRAM INDEX




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# ACCREDITATION

**Physicians | Nurses**

## CME for Physicians by day:

| | | |
|---|---|---|
| Wednesday, June 15 | Pediatric Day – | 5.75 |
| Wednesday, June 15 | ECMO Course – | 6.75 |
| Thursday, June 16 | – | 17.25 |
| Friday, June 17 | – | 18.25 |
| Saturday, June 18 | Breakout Sessions – | 13.75 |
| Saturday, June 19 | MCS Course – | 5.75 |

## CEU for Nurses by day:

| | | |
|---|---|---|
| Wednesday, June 15 | Pediatric Day – | 6.9 |
| Wednesday, June 15 | ECMO Course – | 8.1 |
| Thursday, June 16 | – | 20.7 |
| Friday, June 17 | – | 21.9 |
| Saturday, June 18 | Breakout Sessions – | 16.5 |
| Saturday, June 19 | MCS Course – | 6.9 |

## 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 under "Annual Conference". For all CME certificate inquiries, please contact the UMMS-OCME at (508) 856-1671 or (508) 856-6838.

## 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.

## DESIGNATION STATEMENT

The University of Massachusetts Medical School designates this educational activity for a maximum of 67.5 *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 81 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 31.6.**

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 SPONSORS

## Diamond Level

**HeartWare Inc**

## Platinum Level

**St. Jude Medical**

## Gold Level

**EvaHeart Inc**

## Bronze Level

**Berlin Heart Inc**
**Fresenius Care Medical NA**
**GeNO LLC**

## Additional Educational Grants

**GeNO LLC**
**Jarvik Heart Inc**
**SynCardia Systems Inc**
**ALung Technologies**

# ASAIO FELLOWSHIPS & AWARDS

## ASAIO Y Nose' International Fellowship

***Sponsored by the Y Nose' Fellowship Fund***

**Jiheum Park, PhD Candidate – Page 19**
*Seoul National University, Seoul, Republic of Korea*

## ASAIO*fyi* – for young innovators Fellowships

***Sponsored by the Paul S Malchesky Fellowship Fund***

**Caitlin Demarest, MD – Page 14**
*Carnegie Mellon University, Pittsburgh, PA*

**Staci Jessen, PhD, BS – Page 14**
*Texas A&M University CV Pathology Lab, Houston, TX*

## Pediatric Device Consortia Consulting Forum Awards

***Awards Sponsored by ASAIO***

**Presentations – Page 11**

**Emily Abada, BS**
*University of California, San Francisco, CA*

**Trevor Synder, PhD**
*VADovations, Oklahoma City, OK*

## Medical Device Entrepreneur's Forum Top Three Finalists

***Awards Sponsored by ASAIO & GeNO LLC***
**Presentations on Page 23**

**Josh Stroud, BSME**
*Sleep Starter, Santa Rosa, CA*

**Joshua Yang, MTM**
*University of California, San Francisco, CA*

**Michael Hemati, MTM**
*PeriKinetics, San Francisco, CA*

## Student Design Competition Projects

***Awards Sponsored by GeNO LLC***

*Seven finalists will present their projects in General Session 2. 1st, 2nd, & 3rd place recipients will receive Awards.*

## Top Abstract

***Award Sponsored by ASAIO***

*One of the Abstracts presented in the Opening General Session will receive the best Abstract Award.*

# ASAIO LEADERSHIP

**Peter Wearden, MD, PhD**
*President*

**William Fissell, MD**
*President-Elect*

**Jonathan Haft, MD**
*Secretary/Treasurer, ASAIO*

**Steven Koenig, PhD**
*Program Chairman*

**Marvin Slepian, MD**
*Deputy Program Chairman*

**Robert Kroslowitz**
*Investment Director*

**William Weiss, PhD**
*Immediate Past President*

**Mark Slaughter, MD**
*ASAIO Journal Editor*
*Past President*

**Kurt Dasse, PhD**
*Liaison to ASAIOfyi*
*Past President*

**Dongfang Wang, MD, PhD**

**Pramod Bonde, MD**

**Egemen Tuzun, MD**

**Salim Olia, BSE**
*President ASAIOfyi*

## Program Track Chairs 2016

**Hari Mallidi, MD**
*Cardiac Track Chair*

**Kartik Sundareswaran, PhD**
*Bioengineering Track Chair*

**Jennifer Conway, MD**
*Pediatric Track Chair*

**Scott Morley, BSE, MBA**
*Pulmonary Track Chair*

**Michael Heung, MD**
*Renal Track Chair*

# ASAIO 62st Annual Conference
# Hyatt Regency San Francisco - Floor Plan

## Atrium Level
Garden Room - Renal Sessions

Waterfront AB
Member Business Meeting
In A & in B - MCS Proficiency Verification Course

Waterfront CDE - MCS Course

Boardroom C - MCS Proficiency Verification Course

Golden Gate Room - MCS Proficiency Verification Course

## Bay Level
Bayview A
Pediatric Sessions
IFAO Session

Bayview B - Bioengineering Sessions

Seacliff AB - Pulmonary Sessions

Seacliff CD
VAD Sessions
In C & in D - MCS Proficiency Verification Course

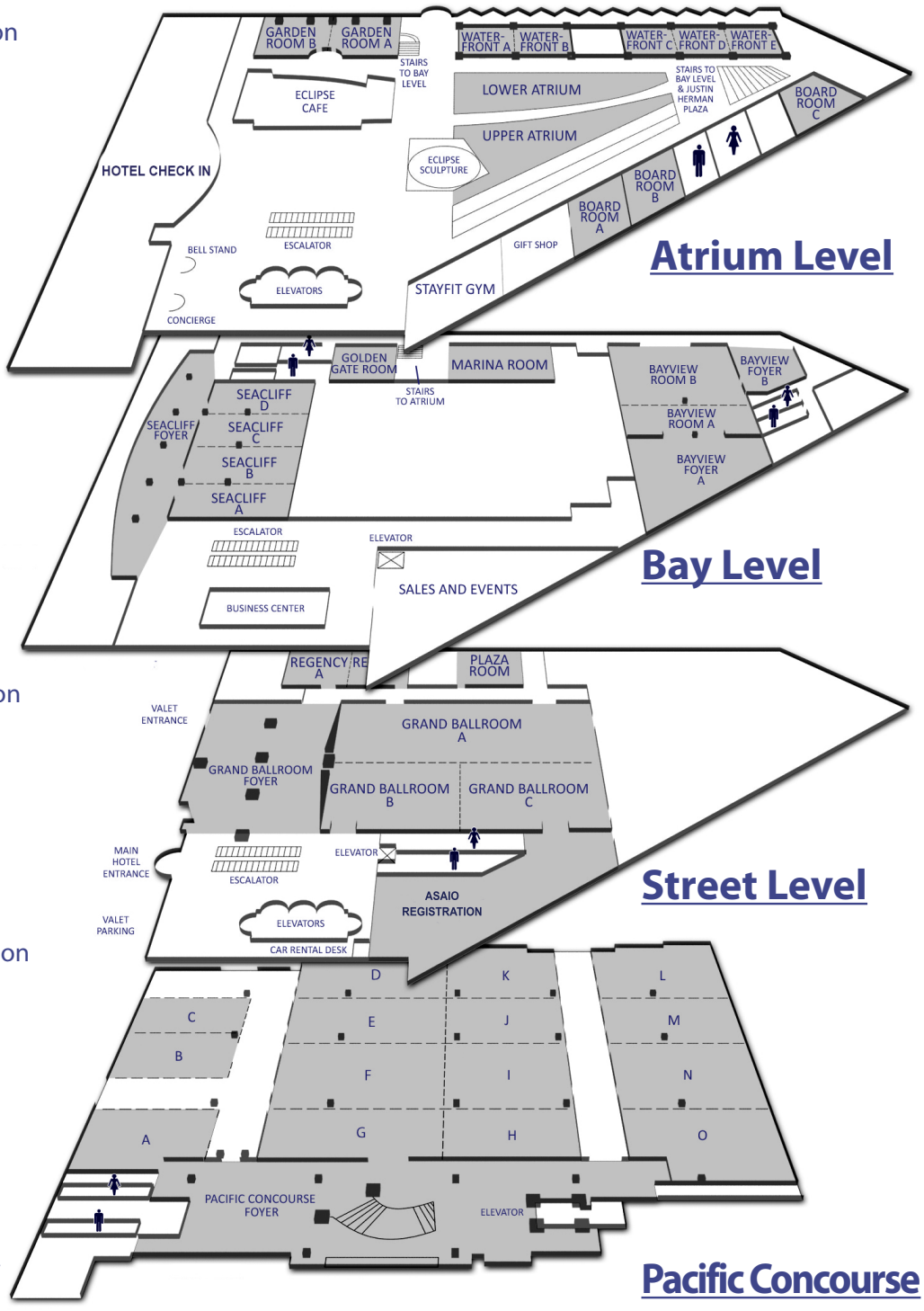
Marina Room - Medical Device Entrepreneur's Forum

## Street Level
Plaza Room - Speaker Ready Room

Market Street Foyer – ASAIO Registration

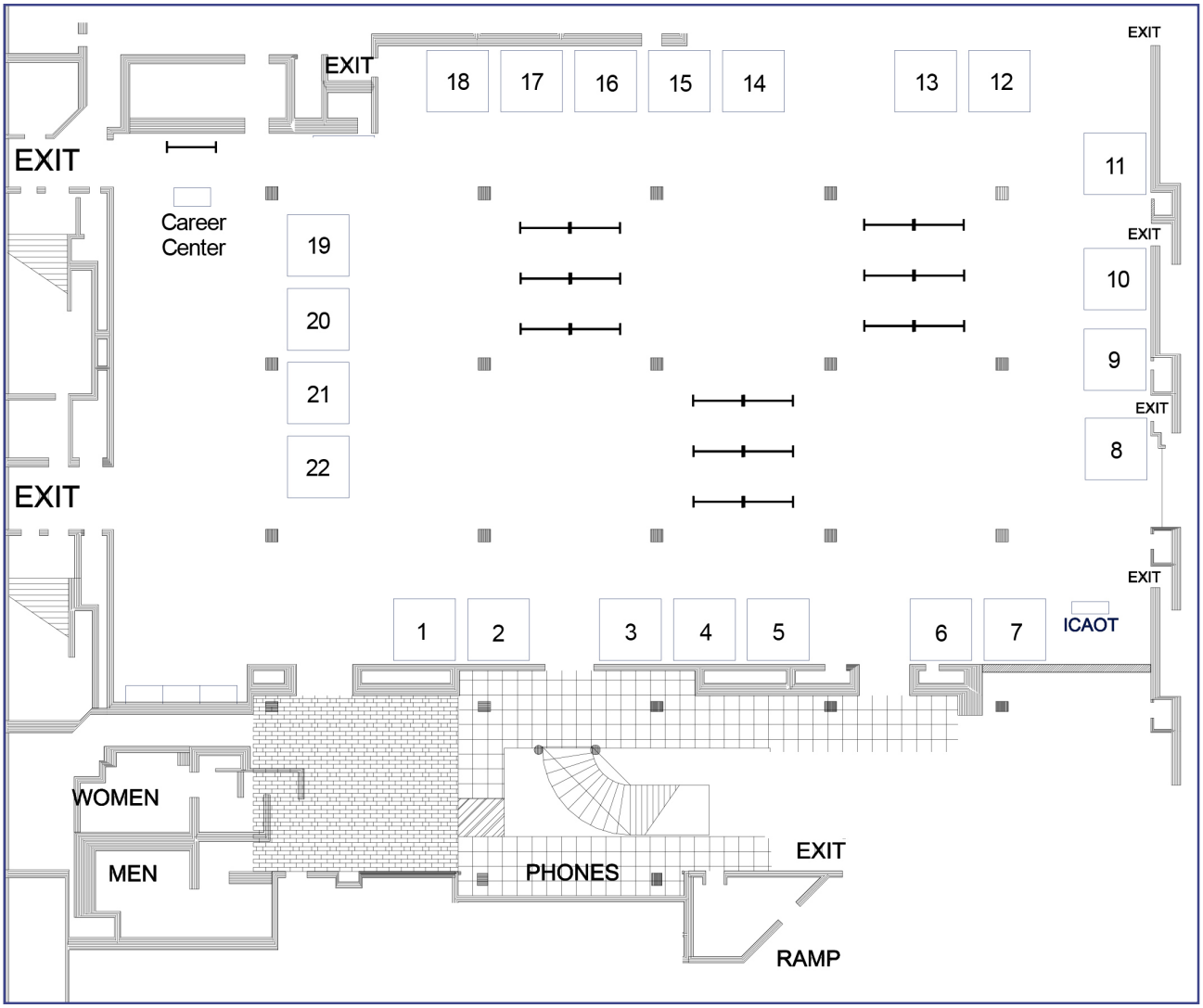
Grand Ballroom
Grand B - Pediatric Day
Grand A - ECMO Course
General Sessions
Cardiac Sessions

## Pacific Concourse
Exhibits | Posters
Refreshment Breaks Thursday & Friday
Welcome Reception



# ASAIO 62st Annual Conference
# Hyatt Regency San Francisco - Pacific Concourse

## Exhibits | Posters | Career Connection




## ASAIO Refreshment Breaks

| Thursday | Friday |
|---|---|
| 9:45 - 10:30am | 10:00 - 10:45am |
| 3:00 - 3:45pm | 3:00 - 3:45pm |

# ASAIO EXHIBITORS

## ABIOMED INC
*Danvers, Massachusetts*
**Booth 11**

Founded: 1981
Corporate Headquarters: Danvers, Massachusetts | European Division: Aachen, Germany
Mission: "Recovering Hearts, Saving Lives"
Employees: 650
Notable achievements:
- Developed World's Smallest Heart Pump, Impella®2.5
- Developed first total replacement heart
- Impella has treated over 30,000 patients in the U.S. with cardiovascular disease and is currently being used in 48 of the top 50 heart hospitals, as ranked by the U.S. News and World report

## ALERE VADCARE™ PROGRAM
*Orlando, Florida*
**Booth 16**

The comprehensive Alere VADCare® Program helps you carefully and efficiently manage your patients after discharge to reduce the risk of hospital readmission. Alere fully supports the transition of VAD patients from hospital to home. Patients receive all of the necessary equipment and wound care supplies they need to take care of their VAD equipment and driveline exit site. Additional services through the Alere VADWatch® program include home INR monitoring; weight and blood pressure management; and tracking of VAD metrics in the Alere VADWatch® Data Management application, which gives clinicians secure, anytime access to patient data.

## 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 HDE regulations by FDA.

## ACTICARE HEALTH
*Livermore, California*
**Booth 9**

ActiCare Health offers the first in-home remote patient monitoring platform designed exclusively for organ transplant and MCS. Our program is artfully designed to improve patient outcomes and quality of life, increase care coordination and staff efficiency, and reduce costs by positively impacting hospital readmissions, length of stay and care plan adherence, and patient safety. The robust technology platform, combined with 24 x 7 support from ActiCare Health clinicians, helps to maintain the closest contact with patients fostering better adherence to discharge instructions and helping to identify risks and complications early.

## ASAIO JOURNAL
**Published by Wolters Kluwer**
*Baltimore, Maryland*
**Booth 18**

ASAIO Journal is in the forefront of artificial organ research and development. On the cutting edge of innovative technology, it features peer-reviewed articles of the highest quality that describe research, development, the most recent advances in the design of artificial organ devices and findings from initial testing. Bimonthly, the ASAIO Journal features state-of-the-art investigations, laboratory and clinical trials, and discussions and opinions from experts around the world.
The official publication of the American Society for Artificial Internal Organs.

## BK ULTRASOUND
*Peabody, Massachusetts*
**Booth 7**

BK Ultrasound, a leader in procedure-driven markets that include urology, surgery and point-of-care, is showcasing Sonic Window, a hand-held, battery operated ultrasound system with unique real-time 2D ultrasound intuitive imaging as if you are looking through the skin into the underlying anatomy. Sonic Window enables clinicians to easily detect the locations and sizes of fistulas of dialysis patients and improve cannulation.

**CIRTEC MEDICAL**
*Los Gatos, California*
**Booth 17**

Cirtec Medical is a vertically integrated, full-service outsource partner specializing in Class III medical devices. We are a recognized leader in the development of innovative products for ventricular assist, neuromodulation, implantable drug delivery, cardiac rhythm management, and minimally invasive surgical devices. Cirtec is the industry's leading outsource partner providing comprehensive design, engineering, and manufacturing of ventricular assist devices. Our expertise in active implant design, development of blood contacting surfaces and energy transfer systems makes Cirtec the ideal partner to bring your device from concept to commercialization.

**GETINGE GROUP**
*Wayne, New Jersey*
**Booth 2**

Getinge Group is a leading global provider of products and systems that contribute to quality enhancement and cost efficiency within healthcare and life sciences. We operate under the three brands of ArjoHuntleigh, Getinge and Maquet. ArjoHuntleigh focuses on patient mobility and wound management solutions. Getinge provides solutions for infection control within healthcare and contamination prevention within life sciences. Maquet specializes in solutions, therapies and products for surgical interventions, interventional cardiology and intensive care.

**HEARTWARE INC**
*Framingham, Massachusetts*
**Booth 19**

At HeartWare, we are focused on enhancing outcomes in the treatment of end stage heart failure. We believe a commitment to quality and continuous learning, improving and innovating are requirements for a best in class global medical device company. As a leader in VAD support, HeartWare is committed to partnering with clinicians to help patients gain access to our technology. The HVAD® System has quickly become the VAD of choice, demonstrating high survival rates, low complication rates and improved quality of life.
Our goal: To meaningfully extend the lives of the heart failure patients by enhancing their quality of life.

**EVAHEART INC**
*Houston, Texas*
**Booth 8**

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, and has successfully obtained CE market approval.
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 is ongoing in the US.

**HAEMONETICS CORPORATION**
*Braintree, Massachusetts*
**Booth 4**

Haemonetics is a global healthcare company dedicated to providing innovative blood management solutions for our customers. Together, our devices and consumables, information technology platforms, and consulting services deliver a suite of business solutions to help our customers improve clinical outcomes and reduce the cost of healthcare for blood collectors, hospitals, and patients around the world. Our technologies address important medical markets: blood and plasma component collection, the surgical suite, and hospital transfusion services. To learn more about Haemonetics, visit our web site at http://www.haemonetics.com.

**HEMOCUE AMERICA**
*Brea, California*
**Booth 10**

HemoCue develops, produces and markets medical diagnostic products for Point-of-Care testing. The fundamental concept behind the HemoCue products is to perform important common blood and urine tests that offer lab quality results at the point of care without sacrificing the accuracy and precision offered by a central clinical lab. Tests are fast and easy to perform. Working with healthcare professionals within various clinical areas all over the world, we have developed a profound understanding of your varying needs. HemoCue was acquired by Radiometer, a Danaher company, in April 2013.

**JARVIK HEART INC**
*New York, New York*
**Booth 5**

Jarvik Heart, Inc is a privately held, New York based company that develops and manufactures miniaturized heart 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.

**NXSTAGE**
*Lawrence, Massachusetts*
**Booth 15**

NxStage® is more than a company; we are leading the renal revolution. Our innovative products are helping to shape and transform renal care. Making it simpler, portable, and expanding treatment options, to enhance patient freedom and fulfillment.

**ST. JUDE MEDICAL**
*Pleasanton, California*
**Booth 3**

St. Jude Medical is a leading global medical device manufacturer and is dedicated to transforming the treatment of some of the world's most expensive epidemic diseases. The company has five major areas of focus that include heart failure, atrial fibrillation, neuromodulation, traditional cardiac rhythm management, and cardiovascular diseases. For more information, please visit sjm.com or follow us on Twitter @SJM_Media.

**MINNETRONIX, INC**
*St Paul, Minnesota*
**Booth 20**

Minnetronix is a medical technology and innovation company with deep expertise in electronic and electromechanical devices. Founded in 1996, the company creates new technologies and therapies that solve unmet clinical and business needs for patients and medical device companies.

Minnetronix leverages its broad industry knowledge to provide innovative and strategic partnership options, as well as design, development, and manufacturing services. The company offers multiple pathways to create value, including intellectual property generation and new business models. Minnetronix is FDA Registered and ISO 13485 Certified.

**PRECLINICAL MEDEVICE INNOVATIONS PMI**
*San Carlos, California*
**Booth 6**

Preclinical Medevice Innovations (PMI) is a leader in preclinical medical device contract research with over 25 years of experience in experimental surgery. With four surgical suites and imaging equipment including a Cath lab, c-arms, ultrasound, endo and lap towers, PMI is fully equipped to handle all of your study needs from research and development to non-GLP and GLP. We take a collaborative approach with our clients understanding the complexities of research and the unique needs of individual companies. Our longevity coupled with our expertise will help you get your device to the market more effectively and efficiently than any other preclinical medical device CRO.

**SYNCARDIA SYSTEMS INC**
*Tucson, Arizona*
**Booth 14**

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 Freedom® portable driver has received CE approval in Europe and FDA approval in the U.S. Visit the booth for updates on our growing clinical experience, and the Destination Therapy and 50cc Adult/Pediatric TAH-t clinical studies.

## CARDIOVASCULAR PATHOLOGY LABORATORY AT THE TEXAS A & M UNIVERSITY

*College Station, Texas*

**Booth 12**

The Cardiovascular Pathology Laboratory at Texas A&M University is dedicated to providing high caliber, innovative, and objective pathology support to improve medical device technologies and subsequently, patients' lives. Additionally, we aim to create learning and leadership opportunities for students while being on the forefront of medical and engineering research.

With a special emphasis on cardiovascular and medical device pathology, our lab provides GLP compliant pathology support to Texas A&M and outside investigators. This support includes services such as necropsy, device evaluation, high-resolution imaging, paraffin and plastic histology, micro-CT, micro-X-ray, SEM and EDS.

## INSTITUTE FOR PRECLINICAL STUDIES AT THE TEXAS A & M UNIVERSITY

*College Station, Texas*

**Booth 13**

Texas A&M Institute for Preclinical Studies is a state-of-the-art translational research facility at Texas A&M University. Part of the College of Veterinary Medicine, TIPS offers access to experts in many disciplines of science and medicine including imaging, cardio-thoracic surgery, general surgery, interventional cardiology/ radiology, orthopedics, nuclear medicine, and oncology. Our full-time team of highly qualified veterinarians, medical doctors, and scientists provide services for proof-of-concept testing, non-GLP/GLP studies, and large animal model selection/development. TIPS specializes in medical device testing with extensive experience in cardiovascular devices. Four surgical suites, 16 ICU units, and indoor onsite housing for 244 large animals accommodates high volume.

## TRANSONIC

*Ithaca, New York*

**Booth 22**

### 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:
- VADs
- Organ Preservation
- Artificial Hearts
- And so much more…

## VENTRIFLO – TRUE PULSE PUMPS

*Pelham, New Hampshire*

**Booth 21**

Design Mentor presents the VentriFlo™ True Pulse Pump designed to mimic physiological characteristics of the human heart in an easy to use, reliable, compact, and economical package for extracorporeal circulatory support of patients from pediatrics to adults. Research demonstrates physiologic flow improves systemic perfusion while reducing complication frequency and severity. This versatile system delivers a true physiologic pulse to patients where current short-term pumps cannot. With applications in extracorporeal support including ECMO and CPB, the VentriFlo True Pulse Pump (in development, not cleared for clinical use) is poised to improve perfusion, reduce complications, shorten patient stays, and save hospitals money.

## ICAOT DISPLAY

*Painesville, Ohio*

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 Aphresis & Dialysis. It disseminates information on the historical development, current state of the art and future development of artificial organs.

## Wednesday, June 15, 2016

| | | | | | | |
|---|---|---|---|---|---|---|
| 8:30am – 5:00pm | Pediatric Medical Device Day – Grand Ballroom B, Street Level | | | | | |
| 8:15am – 5:00pm | Adult ECMO Course – Grand Ballroom A, Street Level | | | | | |

## Thursday, June 16, 2016 – Posters available from 8:00 am – 5:00 pm in the Pacific Concourse

| | | | | | | |
|---|---|---|---|---|---|---|
| 7:45am – 12:30pm | Opening General Session – Grand Ballroom, Street Level<br>Top Graded Abstracts \| ASAIO President's Address \| Clinical Translation of Medical Devices with NIH SBIR | | | | | |
| 9:45am – 10:30am | Visit Exhibits & Posters • Enjoy Refreshments | | | | | |
| 12:30pm – 1:30pm | Lunch Break | | | | | |
| 1:30pm – 3:00pm | Cardiac 1 – Grand Ballroom, Street Level | Bioengineering 1 – Bayview B, Street level - Hemocompatibility, Bleeding, Thrombosis... | Pulmonary 1 – Seacliff AB, Bay Level - Optimizing Pulmonary Devices... | Renal 1 - Garden Room, Atrium Level - Understanding Hemodialysis Technology... | | |
| 3:00pm – 3:45pm | Visit Exhibits & Posters • Enjoy Refreshments | | | | | |
| 3:45pm – 5:00pm | Cardiac 2 - Grand Ballroom, Street Level | Bioengineering 2 - Bayview B, Emulating the Human Body... | VAD 1 – Seacliff CD, Bay Level | Pulmonary 2 – Seacliff AB, Bay Level | Renal 2 – Garden Room, Atrium Level – Engineering Innovations... | Pediatric 1 – Bayview A, Bay Level – Mechanical Circulatory... |
| 6:00pm – 7:00pm | ASAIO Welcome Reception | | | | | |

## Friday, June 17, 2016 – Posters available from 8:00 am – 5:00 pm

| | | | | | | |
|---|---|---|---|---|---|---|
| 8:00am – 12:00pm | General Session 2 – Grand Ballroom, Street Level<br>Rapid Fire Presentations \| Student Design Competition \| Keynote Address \| ASAIO Project Bionics Overview & Scientific Biography of Dr. Theodor Kolobow \| ASAIO Hastings Lecture | | | | | |
| 10:00am –10:45 am | Visit Exhibits & Posters • Enjoy Refreshments | | | | | |
| 12:00pm – 1:15pm | Lunch Break | | | | | |
| 1:30pm – 3:00pm | Cardiac 3 - Grand Ballroom, Street Level | Bioengineering 3 – Bayview B, Bay Level – Biomaterials... | VAD 2 – Seacliff CD, Bay Level | Pulmonary 3 – Seacliff AB, Bay Level Advances in ECMO & $ECCO_2R$ | Renal 3 – Garden Room, Atrium Level – Frontiers... | Pediatric 2 – Bayview A, Bay level – Anticoagulation for MCS |
| 3:00pm – 3:45pm | Visit Exhibits & Posters • Enjoy Refreshments | | | | | |
| 3:45pm – 5:00pm | Cardiac 4 – Grand Ballroom, Street Level | Bioengineering 4 – Bayview A, Bay Level – New Technologies... | Pulmonary 4 – Seacliff AB, Bay Level – Beyond the Science... | Renal 4 – Garden Room, Atrium Level Advances in Extra-Corporeal... | Pediatric 3 – Bayview A, Bay Level – The Challenges Facing ECMO | |
| 5:15 pm – 5:45 pm | ASAIO Member Business Meeting | | | | | |

## Saturday, June 18, 2016

| | | | | | |
|---|---|---|---|---|---|
| 8:00am – 5:30pm | ASAIO MCS Course & ASAIO ICCAC MCS Proficiency Verification Course | | | | |
| 8:30am-10:00am | Medical Device Entrepreneur's Forum | | | | |
| 8:30am – 10:00am | Cardiac 5 – Grand Ballroom, Street Level | Bioengineering 5 – Bayview B, Bay Level – Pump Design, Testing... | Pulmonary 5 – Seacliff AB, Bay Level – Transport and Mobility... | Renal 5 – Garden Room, Atrium Level – Quality of Life... | Pediatric 4 – Bayview A, Bay level – Debate and Abstracts |
| 10:00am – 10:45am | Enjoy Refreshments | | | | |
| 10:45am – 12:00pm | Cardiac 6 – Grand Ballroom, Street Level | Bioengineering 6 – Bayview B – Bay Level – Translating Technologies from Bench to Bedside | Renal 6 – Garden Room, Atrium Level – Bioengineering Strategies for Nephrology | | |
| 12:00pm-1:00pm | IFAO Session | | | | |

# WEDNESDAY, JUNE 15

## ASAIO 5th ANNUAL PEDIATRIC MEDICAL DEVICE DAY

**8:30am - 5:00pm** - ***Grand Ballroom B, Street Level***

***Jennifer Conway, MD***
*Pediatric Day Chair*

**8:40 - 10:15am**

### Pediatric Day 1 - NOVEL IDEAS IN THE MAKING

*Co-Chairs:*
*Jennifer Conway, MD, Stollery Children's Hospital, Edmonton, Canada*
*Timothy Maul, CCP, PhD, Nemours Children's Hospital, Orlando, FL*

**8:40 - 9:00am**
**Short Term Mechanical VADs for Children**
*Holger Buchholz, MD, Stollery Children's Hospital, Edmonton, Canada*

**9:00 - 9:20am**
**Use of 3D Modeling for Device Fit in Pediatric Patients**
*Justin Ryan, PhD, Phoenix Children's Hospital, Phoenix, AZ*

**9:20 - 9:40am**
**Potential Use of the HeartMate III and HeartWare MVAD in Children**
*Mark Slaughter, MD, University of Louisville, Louisville, KY*

**9:40 - 10:00am**
**VADs for Failing Fontan Circulation**
*Amy Throckmorton, PhD, Drexel University, Philadelphia, PA*

**10:00 - 10:15am**
**Discussion and Questions**

## 10:15-10:30am PEDIATRIC REFRESHMENT BREAK 1

**10:30 - 11:40am**

### Pediatric Day 2 - NOVEL APPROACHES TO VAD COMPLICATIONS IN PEDIATRICS

*Co-Chairs:*
*Osami Honjo, MD, PhD, The Hospital for Sick Children, Toronto, Canada*
*Chet Villa, MD, Cincinnati Children's Hospital Medical Center, Cincinnati, OH*

**10:30 - 10:45am**
**Approach to Stroke Management**
*Rebecca Ichord, MD, Children's Hospital of Philadelphia, Philadelphia, PA*

**10:45 - 11:00am**
**Pump Thrombosis: Now You See It, Now You Don't**
*Jennifer Conway, MD, Stollery Children's Hospital, Edmonton, Canada*

**11:00 - 11:15am**
**Bugs and VADs: Strategies for Treatment of Device Related Infections**
*Lara Danziger-Isakov, MD, MPH, Cincinnati Children's Hosp Med Ctr, Cincinnati, OH*

**11:15 - 11:30am**
**Bleeding: Is It Unavoidable?**
*Robert Jaquiss, MD, Duke University Medical Center, Durham, NC*

**11:30 - 11:40am**
**Discussion and Questions**

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

**1:30 - 2:45pm** - ***Grand Ballroom B, Street Level***

### Pediatric Day 3 - NOVEL IDEAS IN MCS - HOW TO START THE MOMENTUM FORWARD

*Chairman:*
*Eric Chen, MS, FDA, Silver Spring, FL*

**High Efficiency Artificial Lung (HEAL)**
*Emily Abada, BS, University of California, San Francisco, CA*
**VADovations**
*Trevor Snyder, PhD, VADovations, Oklahoma City, OK*

*Panelists:*
*Semih Oktay, PhD, CardioMed Device Consultants LLC., Baltimore, MD*
*Daniel Burnett, MD, MBA, Theranova LLC, San Francisco, CA*
*Charles Berul, MD, George Washington University, Washington, DC*
*Susan Hastings, BS, BME, Georgia Institute of Technology, Atlanta, GA*

## 2:45 -3:00PM PEDIATRIC REFRESHMENT BREAK 2

**3:00 - 5:00pm**

### Pediatric Day 4 - BREATHING NEW LIFE INTO ADULT DEVICES

*Co-Chairs:*
*Robert Jaquiss, MD, Duke University Medical Center, Durham, NC*
*Katsuhide Maeda, MD, PhD, Stanford University School of Medicine, Stanford, CA*

**3:00 - 3:20pm**
**Modifying Peripherals for Smaller Patients**
*Selvi Sinnadurai, RN, Stollery Children's Hospital, Alberta, Canada*

**3:20 - 3:40pm**
**Cardiac Rehabilitation and Pediatric VAD Patients**
*Christina VanderPluym, MD, Boston Children's Hospital, Boston, MA*

**3:40 - 4:00pm**
**Discharge Planning: How To Get Kids Home**
*Aamir Jeewa, MD, Baylor College of Medicine, Houston, TX*

**4:00 - 4:20pm**
**Life In The Community**
*Jenna Murray, MSN, RN, CPNP-AC, Lucile Packard Children's Hosp, Palo Alto, CA*

**4:20 - 4:30pm**
**Discussion and Questions**

**4:30 - 5:00pm**
**Closing Comments**

## ADULT ECMO COURSE

**8:15am - 5:00pm** - ***Grand Ballroom A, Street Level***

***Aly El Banayosy, MD***
*Adult ECMO Course Director*

**8:15 - 8:25am**

### Welcome Address

*Aly El Banayosy, MD, INTEGRIS Baptist Medical Center, Oklahoma City, OK*

# WEDNESDAY, JUNE 15 (continued)

**8:25 - 10:00am**

## ECMO SESSION 1

*Co-Chairs:*

*Aly El Banayosy, MD, INTEGRIS Baptist Medical Center, Oklahoma City, OK*

*Christian Bermudez, MD, Hospital of the University of Pennsylvania, Philadelphia, PA*

**8:25 - 8:40am**
**ELSO Report**
*Jonathan Haft, MD, University of Michigan, Ann Arbor, MI*

**8:40 - 8:55am**
**ECMO Network / Hotline - Why Hub and Spoke Model?**
*Karl Nelson, RN, MBA, INTEGRIS Baptist Medical Center, Oklahoma, OK*

**8:55 - 10:00am**

**Modern ECMO Team: Different Members' Different Roles**

***RN:*** *Rebecca Mitchell, RN, BSN, INTEGRIS Baptist Medical Center, Oklahoma City, OK*

***Midlevel:*** *Kelly Williams, MS, MSN, Penn State Hershey Medical Center, Hershey, PA*

***Intensivist:*** *Michael M. Koerner, MD, PhD, INTEGRIS Baptist Med Ctr, Oklahoma City, OK*

***ECMO Coordinator:*** *Holly Wright, MSN, RN, INTEGRIS Baptist Med Ctr, Oklahoma City, OK*

***Referring MD:*** *John Carabello, MD, Oklahoma State University, Still Water, OK*

**10:00 -10:15am ECMO REFRESHMENT BREAK**

**10:15 - 12:00pm**

## ECMO SESSION 2

*Co-Chairs:*

*Georg Wieselthaler, MD, Univ of California San Francisco Medical Ctr, San Francisco, CA*

*Igor Gregoric, University Texas Health Science Center, Houston, TX*

**10:15 - 10:35am**
**Inter-hospital Transport: Logistics and Challenges**
*Holly Wright, MSN, RN, INTEGRIS Baptist Medical Center*

**10:35 - 10:55am**
**Simulators and Apps in Teaching and Training**
*Stephen Winowich, Che, University of Pittsburgh, Medical Center, Pittsburgh, PA*

**10:55 - 11:40am**

**Case Presentations**

**Bleeding and Anticoagulation:** *Igor Gregoric, MD, Univ Texas Health Science Ctr, Houston, TX*

**Management of Pulmonary Edema:**
*Speaker to be announced*

**Transition to Long-Term VAD:** *Aly El Banayosy, MD, INTEGRIS Baptist Med Ctr, Oklahoma City, OK*

**Difficult Cannulation:** *Jonathan Haft, MD, University of Michigan, Ann Arbor, MI*

**11:40am - 12:00pm**
**Panel Discussion**

**12:00 -1:10pm LUNCH BREAK**

**1:10 - 2:45pm**

## ECMO SESSION 3

*Chair:*

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

**1:10 - 1:30pm**
**ED-ECMO: Are We There Yet?**
*Robert Adamson, MD, Adamson & Dembitsky Medical Corp, San Diego, CA*

**1:30 - 1:50pm**
**Imaging**
*Nicholas Cavarocchi, MD, Thomas Jefferson University, Newtown Square, PA*

**1:50 - 2:10pm**
**ECMO in Rare Indications**
*Michael M. Koerner, MD, PhD, INTEGRIS Baptist Med Ctr, Oklahoma City, OK*

**2:10 - 2:30pm**
**Long-Term Results After Weaning From VA ECMO**
*Christoph Brehm, MD, Penn State Hershey Med Ctr, Hershey, PA*

**2:30 - 2:45pm**
**Panel Discussion**

**2:45 -3:00pm ECMO REFRESHMENT BREAK**

**3:00 - 5:00pm**

## ECMO SESSION 4

*Co Chairs:*

*Aly El Banayosy, MD, INTEGRIS Baptist Med Ctr, Oklahoma City, OK*

*Ashish Shah, MD, Johns Hopkins University, Baltimore, MD*

**3:00 - 3:20pm**
**Miniaturized ECMO Circuit for out of Hospital Support: Where we are?**
*Josheph Zwischenberger, MD, University of Kentucky, Lexington, KY*

**3:20 - 3:40pm**
**VV ECMO as a Bridge to Lung Transplantion**
*Christian Bermudez, MD, Hosp of the Univ of Pennsylvania, Philadelphia, PA*

**3:40 - 3:55pm**
**Discussion and Questions**

**3:55 - 4:55pm**
**Panelists:**

*Matthew Bacchetta, MD, Columbia University, New York, NY*

*Jacob Gutsche, MD, University of Pennsylvania, Philadelphia, PA*

*Charles Hoopes, MD, University of Alabama, Birmingham, AL*

*Bhavesh Patel, MD, Mayo Clinic, Rochester, MN*

*Christoph Brehm, MD, Penn State Hershey Medical Center, Hershey, PA*

**PANEL SESSION - MAIN TOPICS:**

**Criteria for Referring Patients for VV ECMO**
**Cannulation**
**Ventilator Management**
**Extubation / Ambulation**
**Volume / Blood and Blood Products Management**
**Weaning**
**Hypoxemia on VV-ECMO**
**Futility**

**4:55 - 5:00pm**
**Closing Remarks**

# THURSDAY, JUNE 16

**7:45am - 12:30pm - *Grand Ballroom, Street Level***

## OPENING GENERAL SESSION

**7:45 - 8:00am**

### INTRODUCTION & WELCOME:

*Steven Koenig, PhD, ASAIO Program Chairman, University of Louisville, Louisville, KY*

**Top Graded Abstracts**

*Three ASAIO Board Members will review these Presentations. They have already reviewed the Abstracts & Manuscripts prepared by these authors. One individual will be recognized for merit.*

**8:00 - 8:15am**
**What Do We Do with the School Age Children? A Comparison of Clinical Outcomes In School Aged Children Bridged to Transplant with Pulsatile and Continuous Flow Ventricular AssistDevices**
*Chet Villa, MD, Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio*

**8:15 - 8:30am**
**FDA Benchmark Flow Models to Support Computational Fluid Dynamics Techniques in the Evaluation of Medical Devices**
*Richard Malinauskas, PhD, FDA, Silver Spring, MD*

**8:30 - 8:45am**
**Normothermic Donor Lung Preservation with Portable EVLP Maintains IL-33-driven Epithelial Integrity Suppressing Inflammation in the Recipient**
*Bettina Wiegmann, MD, Hannover Medical School, Hannover, Germany*

**8:45 - 9:00am**
**Infection, Oxidative Stress and Changes in Circulating Regulatory T Cells of Heart Failure Patients Supported by Continuous-flow Left Ventricular Assist Devices**
*Nandan Mondal, PhD, University of Louisville, Louisville, KY*

**9:00 - 9:15am**
**Surgical Considerations for an Implantable Renal Replacement System**
*Willieford Moses, MD, University of California, San Francisco*

**9:15 - 9:45am**

### ASAIO PRESIDENT'S ADDRESS

*Peter Wearden, MD, PhD, Nemours Children's Hospital, Orlando, FL*

**9:45 - 10:30am VISIT EXHIBITS & POSTERS - ENJOY REFRESHMENTS - *Pacific Councourse***

## OPENING GENERAL SESSION - Continued

**10:30am - 12:30pm**
**Clinical Translation of Medical Devices with NIH SBIR**

**10:30 - 10:40am**
**Introduction**

*Timothy Baldwin, PhD, NHLBI / NIH, Bethesda, MD*

**10:40 - 10:50am**
**SBIR Success Story**
*Kurt Dasse, PhD, GeNo LLC, Lexington, MA*

**10:50 - 11:10am**
**Cardiac: Development of A Miniature Right Heart Support Device**
*Trevor Snyder, PhD, VADovations, Inc., Oklahoma City, OK*

**11:10 - 11:30am**
**Bioengineering/Tissue Engineering: Transcutaneous Energy Transmission System for Fully Implantable VADs**
*Aaron McCabe, PhD, Minnetronix, Inc., Saint Paul, MN*

**11:30 - 11:50am**
**Pulmonary: Ambulatory ECMO as Bridge to Decision, Transplant or Recovery**
*Joseph Zwischenberger MD, Univ of Kentucky College of Medicine, Lexington, KY*

**11:50am - 12:10pm**
**Renal: Biointegrating Dialysis Access Graft with Self-Stabilizing Flow**
*Andrew Marshall, PhD, Healionics Corporation, Seattle, WA*

**12:10 -12:30pm**
**Pediatric: Miniaturization of The Low-Shear Pulsatile TORVAD for Pediatric Heart Failure**
*Jeffrey Gohean, MSME, Windmill Cardiovascular Systems, Inc. Austin, TX*

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

## CARDIAC 1

**1:30 - 3:00pm - *Grand Ballroom, Street Level***

*Co-Chairs:*
*Igor Gregoric, MD, University Texas Health Science Center, Houston, TX*
*Dustin Szczech, RN, BSN, University of Minnesota, Minneapolis, MN*

**1:30 - 2:00pm**
**Placement Options for Adults with Complex Congenital Pathologies**
*Olaf Reinhartz, MD, Stanford Univ School of Medicine, Stanford, CA*

### CARDIAC ABSTRACT PRESENTATIONS

**2:00 - 2:15pm**
**A Novel Method for 3D Modeling of Left Ventricular Assist Device Inflow Cannula Malposition**
*Joyce Chuang, PhD, St. Jude Medical Center, Pleasanton, CA*

**2:15 - 2:30pm**
**Heart Wait Time Modeling Data**
*David Joyce, MD, Mayo Clinic, Rochester, MN*

**2:30 - 2:45pm**
**LVAD Consent Forms: Current Practices, Gaps, & Recommendations**
*Estevan Delgado, Baylor College of Medicine, Houston, TX*

**2:45 - 3:00pm**
**Heartmate II Inflow and Outflow Modifications to Augment Caval and Pulmonary Arterial Blood Flow: Implications for the Mechanical Circulatory Support of a Failing Fontan**
*Michael Swartz, PhD, University of Rochester, Rochester, NY*

## BIOENGINEERING 1 | HEMOCOMPATIBILITY, BLEEDING, THROMBOSIS AND HEMO-SUBSTITUTES

**1:30 - 3:00pm - *Bayview B, Bay Level***

*Co-Chairs:*

*James Long, MD, PhD, INTEGRIS Baptist Medical Center, Oklahoma City, OK*

*Zhongjun Wu, PhD, University of Lousville, Louisville, KY*

**1:30 - 2:00pm**
**Hemocompatibility: Do or Die?**
*James Long, MD, INTEGRIS Baptist Med Ctr, Oklahoma City, OK*

### BIOENGINEERING ABSTRACT PRESENTATIONS

**2:00 - 2:15pm**
**LVAD Outflow Graft Configuration Influences Thrombogenic Potential**
*Venkat Keshav Chivukula, PhD, University of Washington, Seattle, WA*

**2:15 - 2:30pm**
**Computational Evaluation of Thrombosis Risk After Ventricular Remodeling with Long-term Mechanical Support**
*Staci Jessen, BS, Texas A&M University, College Station, TX*
*Fellowship Recipient*

**2:30 - 2:45pm**
**In Vitro and In Vivo Hemocompatibility Assessment of Thin Film Sulfobetaine and Carboxybetaine Zwitterionic Coatings**
*Zohora Iqbal, BS, University of California, San Francisco, CA*

**2:45 - 3:00pm**
**A Physics-Based Hemolysis Model Using Energy Dissipation**
*Choon-Sik Jhun, PhD, Penn State College of Medicine, Hershey, PA*

## PULMONARY 1 | OPTIMIZING PULMONARY DEVICES: EFFICIENCY AND HEMOCOMPATIBILITY

**1:30 - 3:00pm - *Seacliff AB, Bay Level***

*Chair:*
*Keith Cook, PhD, Carnegie Mellon University, Pittsburgh, PA*

**Update From Academia on New Pulmonary Device Development**

**1:30 - 1:40pm**
*Speaker to be announced*

**1:40 - 1:50pm**
*Joseph Zwischenberger MD, Univ Kentucky College of Medicine, Lexington, KY*

**1:50 - 2:00pm**
*Jutta Arens, Dr.-Ing, RWTH Aachen University, Aachen, Germany*

**2:00 - 2:10pm**
*Zhongjun Wu, PhD, University of Louisville, Louisville, KY*

**2:10 - 2:20pm**
*Alvaro Rojas-Peña, MD, University of Michigan, Ann Arbor, MI*

**2:20 - 2:35pm**
**Microfluidic Respiratory Support Technologies**
*Alla Gimbel, Draper Laboratory, Cambridge, MA*

### PULMONARY ABSTRACT PRESENTATIONS

**2:35 - 2:45pm**
**Qualitative Prediction of Hemolysis in an Integrated Pump/oxygenator Using CFD for Design Optimization**
*Priti Albal, ALung Technologies, Pittsburgh, PA*

**2:45 - 2:55pm**
**Clot Formation and Functional Changes in the CardioHelp Oxygenator Over Time**
*Caitlin Demarest, MD, Carnegie Mellon University, Pittsburgh, PA*
*Fellowship Recipient*

## RENAL 1 | UNDERSTANDING HEMODIALYSIS TECHNOLOGY: APPLYING ENGINEERING TO PATIENT CARE

**1:30 - 3:00pm *Garden Room, Atrium Level***

*Co-Chairs:*

*Lenar Yessayan, MD, Henry Ford Hospital, Detroit, MI*

*Michael Heung, MD, University of Michigan, Ann Arbor, MI*

**1:30 - 1:50pm**
**Online Clearance Technology: What It Is, How It Works, and How to Apply it in Everyday Clinical Practice**
*Thomas Depner, MD, University of California, Davis, CA*

**1:50 - 2:20pm**
**Online Dialysate Generation**
*Balazs Szamosfalvi, MD, Henry Ford Hospital, Detroit, MI*

**2:20 - 2:40pm**
**Water for Dialysis**
*Joerg Vienken, PhD, Nikkiso Co, Ltd., Germany*

### RENAL ABSTRACT PRESENTATION

**2:45 - 3:00pm**
**A Portable Hemofiltration System Newly Designed with a Small Centrifugal Pump**
*Takashi Yamane, PhD, Kobe University, Kobe, Japan*

**3:00 - 3:45pm VISIT EXHIBITS & POSTERS - ENJOY REFRESHMENTS - *Pacific Concourse***

## CARDIAC 2

**3:45 - 5:00pm - *Grand Ballroom, Street Level***

*Co-Chairs:*

*Steven Boyce, MD, MedStar Washington Hospital Center, Washington, DC*

*Amanda Schubert, BSN, RN, Cincinnati Children's Hospital Medical Center, Cincinnati, OH*

**3:45 - 4:15pm**
**Non-Standard Implant Techniques in The Complex Redo Patient**
*Nahush Mokadam, MD, University of Washington Medical Center, Seattle, WA*

### CARDIAC ABSTRACT PRESENTATIONS

**4:15 - 4:30pm**
**Influence of a Novel Rotational Speed Modulation System Used with VA-ECMO on Left Ventricular Afterload and Coronary Arterial Flow**
*Noritsugu Naito, National Cerebral and Cardiovascular Center, Osaka, Japan*

**4:30 - 4:45pm**
**Managing the Total Artificial Heart via an Implantable Pulmonary Artery Pressure Monitor**
*David Joyce, MD, Mayo Clinic, Rochester, MN*

**4:45 - 5:00pm**
**Less Invasive HeartMate II LVAD Exchange via Subxiphoid Midline Incision**
*Vakhtang Tchantchaleishvili, MD, University of Rochester, Rochester, NY*

## BIOENGINEERING 2 - EMULATING THE HUMAN BODY ARTIFICIAL LUNGS AND KIDNEYS

**3:45 - 5:00pm** - ***Bayview B, Bay Level***

*Co-Chairs:*

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

*Steven Koenig, PhD, University of Louisville, Louisville, KY*

**3:45 - 4:15pm**
**Role of NHLBI in Accelerating Innovation in Artificial Organs**
*Timothy Baldwin, PhD, NHLBI/NIH, Bethesda, MD*

### BIOENGINEERING ABSTRACT PRESENTATIONS

**4:15 - 4:30pm**
**Development of a Novel Paracorporeal Artificial Lung with Enhanced Flow Mixing**
*Piyumindri Fernando, University of Michigan, Ann Arbor, MI*

**4:30 - 4:45pm**
**A Feasibility Study of a Novel Autologous Heart Valve**
*Yoshiaki Takewa, MD, National Cerebral and Cardiovascular Center, Osaka, Japan*

**4:45 - 5:00pm**
**Design, Fabrication and in vivo Evaluation of a Structural Reinforced Small Intestinal Submucosa Regenerative Vascular Graft for Hemodialysis Access**
*Karen Valencia Rivero, Universidad de los Andes, Bogota, Colombia*

## VAD 1

**3:45 - 5:00pm** - ***Seacliff CD, Bay Level***

*Pamela Combs, PhD, RN*
*VAD Sessions Chair*

*Co-Chairs:*

*Peggy Blood, MSN, RN, University of Alabama, Birmingham, AL*

*Lori Edwards, MSN, RN, Inova Fairfax Hospital, Falls Church, VA*

**3:45 - 3:55pm**
**Personnel and Resources Required To Get The Job Done**
*Karl Nelson, RN, MBA, INTEGRIS Baptist Medical Center, Oklahoma City, OK*

*Pamela Combs, PhD, RN, University of Louisville, Louisville, KY*

**3:55 - 4:10pm**
**LVAD Self-Management: Theoretical and Clinical Application**
*Jesus Casida, PhD, RN, APN-C , Univ of Michigan School of Nursing, Ann Arbor, MI*

**4:10 - 4:20pm**
**On-line Tools for VAD Coordinators**
*Dawn Christensen, MS, FNP-BC, Innovative Program Solutions, Pine Grove, PA*

**4:20 - 4:30pm**
**VAD Patient Independence**
*Peggy Blood, MSN, RN, University of Alabama at Birmingham, Birmingham, AL*

**4:30 - 4:40pm**
**VAD Coordinator Core Curriculum**
*Tonya Elliott, RN, MSN, CCTC, CHFN, MedStar Washington, Children's Hosp., Washington, DC*

**4:40 - 5:00pm**
**Alternative Implant Strategies**
*Simon Maltais, MD, PhD, Mayo Clinic, Rochester, MN*

## PULMONARY 2 - NEXT GENERATION RESPIRATORY TECHNOLOGIES

**3:45 - 5:00pm** - ***Seacliff AB, Bay Level***

*Co-Chairs:*

*Laura Lund, PhD, ALung Technologies, Pittsburgh, PA*

*Andriy Batchinsky, MD, US Army Institute Surgical Research, San Antonio, TX*

**3:45 - 4:00pm**
**Combination of Extracorporeal Life Support and Mesenchymal Stem Cell Therapy for Treatment of ARDS**
*Ergin Kocyildirim, MD, University of Pittsburgh, Wexford, PA*

**4:00 - 4:15pm**
**Development of a Biomimetic Oxygenator**
*Jutta Arens, Dr.-Ing, RWTH Aachen University, Aachen, Germany*

**4:15 - 4:30pm**
**Bioengineering Approaches to Whole Lung Rengeneration**
*Andrew Le, PhD, Yale University School of Medicine, New Haven, CT*

### PULMONARY ABSTRACT PRESENTATIONS

**4:30 - 4:40pm**
**High Efficiency Oxygen Transport Through a Silicon Micropore Membrane Oxygenator**
*Ajay Dharia, MD, University of California, San Francisco, CA*

**4:40 - 4:50pm**
**Rolled Construction and Scalable Design of Cylindrical Microfluidic Artificial Lungs**
*Alex Thompson, PhD, VA Ann Arbor Health Care System, Ann Arbor, MI*

## RENAL 2 - ENGINEERING INNOVATIONS IN HEMODYNAMIC MONITORING

**3:45 - 5:00pm** - ***Garden Room, Atrium Level***

*Co-Chairs:*

*Balazs Szamosfalvi, MD, Henry Ford Hospital, Detroit, MI*

*Howard Loree, PhD, Flow Forward Medical Inc., Lowell, MA*

**3:45 - 4:05pm**
**Why Is Hemodynamic Monitoring Important?**
*Michael Heung, MD, University of Michigan, Ann Arbor, MI*

**4:05 - 4:25pm**
**Hemodynamic Monitoring Tools During Ultrafiltration in the ICU**
*Lenar Yessayan, MD, Henry Ford Hospital, Detroit, MI*

**4:25 - 4:45pm**
**Non-invasive Piezoelectric Ring for Real-time Monitoring of Hemodynamic Instability**
*Sardar Ansari, PhD, University of Michigan, Ann Arbor, MI*

### RENAL ABSTRACT PRESENTATION

**4:45 - 5:00pm**
**A New Algorithm To Predict IDH Through A Multi-parametric Analysis On The Dialysis Project Data**
*Camilla Bianchi, Politecnico di Milano, Milan, Italy*

## PEDIATRIC 1 - MECHANICAL CIRCULATORY SUPPORT

**3:45 - 5:05pm - *Bayview A, Bay Level***

*Chair:*
*Aamir Jeewa, MD, Texas Children's Hospital, Houston, TX*

**3:45 - 4:05pm**
**Debate: Pulmonary Artery Band vs. VAD for Infant Dilated Cardiomyopathy**

*Con:* **All Infants With DCM Should Have A Primary VAD**
*David Morales, MD, Cincinnati Children's Hospital Medical Center, Cincinnati, OH*

*Pro:* **All Infants With DCM Should Have A Primary PA Band**
*Iki Adachi, MD, Texas Children's Hospital, Houston, TX*

### PEDIATRIC ABSTRACT PRESENTATIONS

*Co-Chairs:*

*David Morales, MD, Cincinnati Children's Hospital Med Ctr, Cincinnati, OH*

*Iki Adachi, MD, Texas Children's Hospital, Houston, TX*

**4:05 - 4:15pm**
**Versatility of HeartWare HVAD® Support in Pediatric Patients: Indications and Optimal Timing**
*Katsuhide Maeda, MD, Stanford University, Stanford, CA*

**4:15 - 4:25pm**
**Evaluation of the New Polish ReligaHeart Pediatric VAD Family in Physical, *in-vitro* and *in-vivo* Pre-clinical Studies**
*Maciej Glowachi, BS, Foundation of Cardiac Surgery Development, Zabrze, Poland*

**4:25 - 4:35pm**
**The Spectrum of General Surgery Interventions in Pediatric Patients with VADs**
*Fady Kamel, MD, University of Alberta, Alberta, Canada*

**4:35 - 4:45pm**
**Rotational Fluid Dynamics of Mechanical Cavopulmonary Assistance**
*Amy Throckmorton, PhD, Drexel University, Philadelphia, PA*

**4:45 - 4:55pm**
**Cost of Ventricular Assist Device Hospitalization in Children: Maintaining Value in the Era of Rapidly Expanding Use**
*Raheel Rizwan, MD, Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio*

**4:55 - 5:05pm**
**A Novel, Miniature Implantable Continuous Flow Pediatric Ventricular Assist Device**
*Peter Wearden, MD, PhD, Nemours Children's Hospital, Orlando, FL*

**6:00 - 7:00pm ASAIO WELCOME RECEPTION - *Admission by Ticket***
***Pacific Concourse***

## ABSTRACT POSTER PRESENTATIONS

**8:00am - 5:00pm - *Pacific Concourse***

### Cardiac Posters

**Poster Numbers**

**101** **New Optimized Dual Lumen Self-Expanding Catheter Design**
*Saad Abdel-Sayed, PhD, University Hospital-CHUV, Lausanne, Switzerland*

**102** **Trend Analysis of Intellectual Properties Relating to the Medical Devices Creating from Japanese Academic Institution**
*Eiki Akagawa, PhD, National Cerebral & Cardiovascular Center, Osaka, Japan*

**103** **Prolonged Normothermic Ex-Situ Heart Perfusion with Live Animal Plasma Cross-circulation**
*Fares Alghanem, BS, University of Michigan Health System, Ann Arbor, MI*

**104** **The Prognostic Utility of Brain Natriuretic Peptide in Patients with Left Ventricular Assist Device Implantation**
*Geetha Bhat, MD, Advocate Christ Medical Center, Oak Lawn, IL*

**105** **Neutrophil-to-Lymphocyte Ratio and the Risk of GI Bleeding in Patients with LVAD**
*Geetha Bhat, MD, Advocate Christ Medical Center, Oak Lawn, IL*

**106** **Time-Resolved Detection of Platelet Activation and von Willebrand Factor Cleavage in Deep Suspensions**
*Jacopo Biasetti, PhD, Johns Hopkins University, Baltimore, MD*

**107** **Analytical Estimate of Washout Characteristics in Conical Spiral Groove Bearings for Axial Flow Cardiac Assist Devices**
*Shelby Bieritz, BS, Texas Heart Institute, Houston, TX*

**108** **Examination of Damage to the Erythrocyte Membrane Using Microfluidic Channels and Flow Cytometry**
*James Buerck, BS, University of Oklahoma, Norman, OK*

**109** **The Numerical Flow Analysis Utilization for Pediatric Ventricular Assist Device ReligaHeart Ped Development**
*Wojciech Bujok, MD, Foundation for Cardiac Surgery Development, Zabrze, Poland*

**110** **Native Cardiac Output May Influence Stroke Risk in LVAD Patients**
*Venkat Keshav Chivukula, PhD, University of Washington, Seattle, WA*

**111** **Inflow Cannula Angulation Influences Risk of Thrombosis in LVAD Patients**
*Venkat Keshav Chivukula, PhD, University of Washington, Seattle, WA*

**112** **Left Ventricle Size May Impact LVAD Thrombosis Risk**
*Venkat Keshav Chivukula, PhD, University of Washington, Seattle, WA*

**113** **Pre-clinical Evaluation of the Calon Cardio MiniVAD**
*Graham Foster, PhD, Calon Cardio-Technology Ltd, Swansea, United Kingdom*

**114** **Cardiopulmonary Bypass With Low-versus High-blood Contact Surface Area: Comparison of Cytokine Level DuringCardiopulmonary Bypass in a Rat Model**
*Yutaka Fujii, PhD, National Cerebral and Cardiovascular Center, Osaka, Japan*

**115** **Recurrent Ventricular Tachycardia After Implantation of a Left Ventricular Assist Device: A Interdisciplinary and Interventional Target**
*Jens Garbade, MD, PhD, Heart Center Leipzig, Leipzig, Germany*

**116** **Telemanaging for Anticoagulative Treatment in LVAD Patients - Our Daily Practise**
*Jens Garbade, MD, PhD, Heart Center Leipzig, Leipzig, Germany*

**117** **Hysteresis Levitation Motor for Adult and Pediatric Extracorporeal Life Support**
*George Pantalos, PhD, University of Louisville, Louisville, KY*

**118** **The Implantable Rotary Continuous Flow Blood Pump ReligaHeart ROT First in vitro Investigation**
*Malgorzata Gonsior, PhD, Foundation for Cardiac Surg Development, Zabrze, Poland*

**119** **Comparing Sequential Organ Failure Assessment (SOFA) Score versus Respiratory Extracorporeal Membrane Oxygenation Survival Prediction (RESP) Score for Predicting In Hospital-Mortality for Patients Requiring Extracorporeal Membrane Oxygenation (ECMO)**
*Rian Hasson Charles, MD, The Ohio State University, Columbus, OH*

**120** **Computational Prediction of Effects of LVAD and CRT Treatments on Ventricular Electromechanical Delay**
*Aulia Khamas Heikhmakhtiar, BS, Kumoh National Inst of Tech, Gumi, South Korea*

**121 Mechanical Hemolysis Testing Across the Full Operating Range of a Centrifugal Blood Pump Model**
*Luke Herbertson, PhD, FDA, Silver Spring, MD*

**122 Evaluation of Hemodynamics and Cardiac Metabolism Under LVAD Support with Aortic Valve Regurgitation in Acute Animal Experiments**
*Kei Iizuka MD, National Cerebral and Cardiovascular Center, Osaka, Japan*

**123 Reduction of Stroke Risk from Embolic Shower Following Cardiac Surgery Using Cardiac Compression**
*Paul Isingoma, BS, San Diego State University, San Diego, CA*

**124 Clinical Outcomes in Patients with a Mechanical Aortic Valve Undergoing Left Ventricular Assist Device Placement**
*Geetha Bhat, MD, PhD, Advocate Christ Medical Center, Oak Lawn, IL*

**125 Thrombotic Depositions on Right Impeller of Double-ended Centrifugal Total Artificial Heart in vivo**
*Jamshid Karimov, MD, The Cleveland Clinic, Cleveland, OH*

**126 Deairing Techniques for Double-Ended Centrifugal Total Artificial Heart Implantation**
*Jamshid Karimov, MD, The Cleveland Clinic, Cleveland, OH*

**127 Liposome-encapsulated Hemoglobin Protects Ischemic Myocardium by Preserving Hemodynamics and Oxygen Consumption in the Rat - A Concept of Biological Circulatory Support**
*Akira Kawaguchi, MD, Tokai University School of Medicine, Isehara, Japan*

**128 Blood Flow Stagnation at the Descending Aorta After Aortic Valve Bypass : A Patient-Specific Evaluation of Hemodynamics Using Magnetic Resonance Imaging Based Computational Fluid Dynamics Simulation**
*Koji Kawahito, MD, Jichi Medical University, Tochigi, Japan*

**129 Hemodynamic Impacts of IABP on VA ECMO in Porcine Heart Failure Model**
*Jun Sung Kim, MD, Seoul National Univ Bundang Hospital, Seongnam, South Korea*

**130 Low-shear TORVAD Ventricular Assist Device Preserves von Willebrand Factor in Chronic Ovine Model**
*Erik Larson, PhD, Windmill Cardiovascular Systems, Austin, TX*

**131 Rotational Speed Modulation for Centrifugal Left Ventricle Assist Device Based on Cardiac cycle (MCC)**
*Tarcisio Leao, PhD, Federal Institute of Sao Paulo, Sao Paulo, Brazil*

**132 VWF Hemocompatibility Testing of a Novel Miniature Implantable Blood Pump - Benchtop *in vivo* Results**
*James Long, MD, INTEGRIS Baptist Medical Center, Oklahoma City, OK*

**133 Safety and Efficacy of Activated Prothrombin Complex Concentrates (PCC) for Patients with Intracranial Hemorrhage and Left Ventricular Assist Devices: A Novel Approach**
*Gregory Macaluso, MD, Advocate Christ Medical Center, Oak Lawn, IL*

## Bioengineering Posters

**134 Formal Usability Methods to Support the Expedited Access Paradigm: A Pediatric Blood Pump Case Study**
*Andy Abbate, Drexel University, Philadelphia, PA*

**135 Stretchable Electronics Conformal Skin-adherent Wearable Patches: A Novel Tool for Quantifying Human Motion**
*Kaitlyn Ammann, BS, University of Arizona, Tuscon, AZ*

**136 Flow-induced Coating Erosion and Fibrinogen Fouling**
*Andrew Belanger, BS, University of New Haven, West Haven, CT*

**137 Evaluation of Ceramic Pivot Bearings of Implantable Centrifugal Blood Pump**
*Eduardo Bock, PhD, Federal Institute of Technology, Sao Paulo, Brazil*

**138 The Effect of Mitral Prosthesis Design and LVAD Support on Intraventricular Flow**
*Josue Campos, BS, San Diego State University, San Diego, CA*

**139 Applied Technicians to Keep the VAD Control System on a Safety Condition**
*Andre Cavalheiro, PhD, Fundação Santo André, Santo André, Brazil*

**140 CFD Comparison of Blood Trauma in CF-VAD Under Constant and Pulse and Modulated Speed Rotation Conditions: A Numerical Study**
*Zengsheng Chen, PhD, University of Louisville School of Medicine, Louisville, KY*

**141 Modulation of RBC Traffic Using Blood Soluble Drag Reducing Polymers as Potential Treatment for Sickle Cell Disease (SCD)**
*Dan Crompton, BS, University of Pittsburgh, Pittsburgh, PA*

**142 Study of Coating Diamond Like Carbon in Polycarbonate for Devices Assist Circulatory**
*Aron Andrade, PhD, Institute Dante Pazzanese of Cardiology, Sao Paulo, Brazil*

**143 Efficacy of Subcutaneous ECG Leads for Chronic Counterpulsation Therapy**
*Guruprasad Giridharan, PhD, University of Louisville, Louisville, KY*

**144 Creating a Modular LVAD Equipment Tracking System**
*Wesley Hejl, BS, Seton Health Medical Center, Austin, TX*

**145 Design Optimization of a Dimpled Membrane for an Endothelializable Oxygenator Using Computational Fluid Dynamics**
*Felix Hesselmann, RWTH Aachen University, Aachen, Germany*

**146 Synthesis and Physicochemical Characterization of Small Intestinal Submucosa Hydrogels for Deep Wound Regeneration**
*Juliana Jaramillo, BS, Universidad de los Andes, Bogota, Colombia*

**147 Determination of Reynolds Shear Stress Level for Hemolysis**
*Choon-Sik Jhun, PhD, Penn State College of Medicine, Hershey, PA*

**148 Time-frequency Analysis of Swallowing Sounds in Non-invasive Evaluation of Swallowing Funtion**
*Masaya Kani, BS, Toin University of Yokohama, Yokohama, Japan*

**149 Liposome-Encapsulated Tacrolimus Ameliorates Total Brain Ischemia and Reperfusion Injury in the Rat**
*Akira Kawaguchi, MD, Tokai University School of Medicine, Isehara, Japan*

**150 Computational Prediction for Effects of Valvular Regurgitation on IABP Function Using 3D Cardiac Mechanics Model**
*Changhyun Kim, Kumoh National Institute of Technology, Gumi, South Korea*

**151 *In vitro* Evaluation for Impeller Configuration Selection for a Temporary Circulatory Support Device**
*Bruno Utiyama da Silva, Institute Dante Pazzanese of Cardiology, Sao Paulo, Brazil*

**152 Long-term Ultrafiltration**
*Edward Leonard, PhD, Columbia University, New York, NY*

## Pediatric Posters

**153 Pediatric Artificial Lung: Effects on Right Ventricle Afterload in an Ovine Model of Pulmonary Hypertension**
*Fares Alghanem, BS, University of Michigan, Ann Arbor, MI*

**154 Maintaining Fetal Circulation in the Artificial Placenta Model**
*Megan Coughlin, MD, University of Michigan, Ann Arbor, MI*

**155 The Artificial Placenta Avoids Damage Caused by Mechanical Ventiliation**
*Megan Coughlin, MD, University of Michigan, Ann Arbor, MI*

**156 At-home Compression Therapy for Patients with Single Ventricle Physiology**
*Joseph Hernandez, Virginia Commonwealth University, Richmond, VA*

# THURSDAY, JUNE 16 (continued)

**157** **Pediatric Use of Impella 5.0: Difficulty Removing Device Through Axillary Artery**
*David Horne, MD, Texas Children's Hospital, Houston, TX*

**158** **Glial Fibrillary Acidic Protein (GFAP) as Neurobiomarker in Pediatric Patients on Mechanical Circulatory Support (MCS)**
*Jessica McPhaul, MD, Cincinnati Children's Hospital Medical Center, Cincinnati, OH*

**159** **Case Presentation: Berlin Heart EXCOR; Pump Exchanged on the Inpatient Cardiology Floor: "Can You Actually Do That?"**
*Jenna Murray, MSN, CPNP-AC, Lucile Packard Children's Hospital, Palo Alto, CA*

**160** **Continuing Development of a Single Ventricle Pediatric Mock Circulation for Student Instruction and Clinical Simulation**
*Andrew Swiergosz, BS, University of Louisville, Louisville, KY*

## Pulmonary Posters

**161** **Development of an Ultra Compact ECMO System and Evaluation in a Long-term Animal Experiment**
*Nobumasa Katagiri, PhD, National Cerebral and Cardiovascular Center, Osaka, Japan*

**162** **Development of Combined Diagnostic Medical Device**
*Hojoong Kim, MD, Samsung Medical Center, Seoul, South Korea*

**163** **Evaluation of Pulsatlie Blood Flow in Oxygenators**
*Lotte Schraven, RWTH Aachen University, Aachen, Germany*

**164** **Determination of the Optimal Nitric Oxide Dose for Oxygenator Sweep Gas**
*Caitlin Demarest, MD, Carnegie Mellon University, Pittsburgh, PA*

# FRIDAY, JUNE 17

**8:00am - 12:00pm** - ***Grand Ballroom, Street Level***

## GENERAL SESSION 2

*Co-Chairs:*

*William Fissell, MD, Vanderbilt University Medical Center, Nashville, TN*

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

**8:00 - 8:30am**

**ASAIO*fyi* - *for young innovators* - Rapid Fire Presentations**

**8:00 - 8:05am**

Poster Numbers

**RF 1** **Effects of Using a Torsional Ventricular Assist Device (tVAD) on the Global Hemodynamics of a Failing Heart**
*Elaine Soohoo, MS, BME, Carnegie Mellon University, Pittsburgh, PA*

**8:05 - 8:10am**

**RF 2** **Impact of Hemocompatible Coatings on Oxygen Permeability of Polydimethylsiloxane (PDMS) for Membrane Oxygenation**
*Emily Abada, BS, University of California, San Francisco*

**8:10 - 8:15am**

**Prolonged Artificial Placenta Support with Transition to Mechanical Ventilation**
*Megan Coughlin, MD, University of Michigan Health System, Ann Arbor, MI*

**8:15 - 8:20am**

**RF 3** **Investigating Shear Degradation of Von Willebrand Factor Induced by Ventricular Assist Device-related Flow Conditions in Well-defined Shear Systems**
*Shuo Yang, PhD, Illinois Institute of Technology, Chicago, IL*

**8:20 - 8:25am**

**Ex Situ Perfusion of Human Limbs for 24 Hours**
*Nicole Werner, MD, University of Michigan, Ann Arbor, MI*

**8:25 - 8:30am**

**Hemodynamic Benefit of Intra-atrial Right-to-Left Shunt Flow for Pulmonary Hypertension Induced-Right Heart Failure: A Simulation Study**
*Po-Lin Hsu, PhD, Soochow University, Suzhou, China*

**8:30 - 9:30am**

**Student Design Competition Presentations**

Poster Numbers

**SDC 1** **D-Clot**
*Michael Williams-Hart, Rice University, Houston, TX*

**SDC 2** **Electrical Stimulation Plate for Neuronal Tissue Regeneration**
*Rita Matta, University of Connecticut, Storrs, CT*

**SDC 3** **Tongue-Computer Interface**
*Kevin Kerr, University of Illinois at Chicago, Chicago, IL*

**SDC 4** **Sensory Substitution VEST for the Blind**
*Zichao Wang, Rice University, Houston, TX*

**SDC 5** **A Mock Circulation Loop for the Right Heart**
*Giuliana Lentini, Politencico di Milano, Milan, Italy*

**SDC 6** **Neonatal EEG Monitor for Low-Resource Settings**
*Yusi Ou, Rice University, Houston, TX*

**SDC 7** **WombOx: Minimally Invasive Monitoring of Fetal Blood Oxygen**
*Samir Saidi, Rice University, Houston, TX*

**9:30 - 10:00am**

**KEYNOTE ADDRESS**

**Artificial Organs and Revolutionary Medical Devices at the Intersection of Precision Medicine and Population Health**

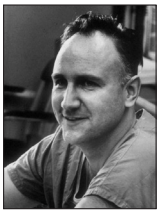
*Dean Li, MD, PhD, University of Utah Health Sciences, Salt Lake City, UT*
*Introduction - Dr. Tim Baldwin*

**10:00 - 10:45am** **VISIT EXHIBITS & POSTERS - ENJOY REFRESHMENTS** - *Pacific Concourse*

**10:45 - 11:15am**

**ASAIO History Group Overview**
*George Pantalos, PhD, University of Louisville, Louisville, KY*

**Scientific Biography of Dr. Theodor Kolobow - A Tribute**
*John Trahanas, MD, University of Michigan ECMO Lab, Ann Arbor, MI*

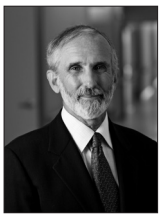


*Theodor Kolobow, MD*

# FRIDAY, JUNE 17 (continued)

**11:15 - 11:45am**

**ASAIO Hastings Lecture: Evolution of Modern Technologies**



*Walter Dembitsky, MD, Sharp CV and Thoracic Center, San Diego, CA*
*Introduction - Dr. Karen May-Newman*

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

## CARDIAC 3

**1:30 - 3:00pm - *Grand Ballroom, Street Level***

*Co-Chairs:*

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

*To be determined*

**1:30 - 2:00pm**

**Early and Late RV Dysfunction After LVAD Implant; Avoidance with Totally Implantable Systems**
*Stravos Drakos, MD, PhD, University of Utah, Salt Lake City, UT*

### CARDIAC ABSTRACT PRESENTATIONS

**2:00 - 2:15pm**

**Long Term Outcomes Following a Continuous Flow Left Ventricular Assist Device Exchange**
*Antone Totooles, MD, Advocate Christ Medical Center, Oak Lawn, IL*

**2:15 - 2:30pm**

**The Combination of Pulmonary Vascular Resistance and the Ratio of Central Venous Pressure to Pulmonary Capillary Wedge Pressure Is a Useful Predictor for Right Ventricular Assist Device Requirement**
*Daisuke Nitta, MD, The University of Tokyo Hospital, Tokyo, Japan*

**2:30 - 2:45pm**

**The Prognostic Nutrition Index is Predictive of Length of Stay Following Left Ventricular Assist Device Implantation**
*Geetha Bhat, MD, Advocate Christ Medical Center, Oak Lawn, IL*

**2:45 - 3:00pm**

**Remote Pulmonary Artery Hemodynamic Monitoring in Patients Supported with a Left Ventricular Assist Device**
*Amarinder Bindra, MD, Baylor University Medical Center, Dallas, TX*

## BIOENGINEERING 3 - BIOMATERIALS AND INTELLIGENT MATERIALS

**1:30 - 3:00pm - *Bayview B, Bay Level***

*Co-Chairs:*

*Marina Kameneva, PhD, University of Pittsburg, Pittsburg, PA*

*John Watson, PhD, University of California, San Diego, CA*

### BIOENGINEERING ABSTRACT PRESENTATIONS

**1:30 - 1:45pm**

**In-vitro Evaluation of Drug Sequestration in the Extracorporeal Membrane Oxygenation (ECMO) Circuit**
*Jiheum Park, BS, Seoul National University, Seoul, South Korea*
*Fellowship Recipient*

**1:45 - 2:00pm**

**Silicon Nanopore Membranes (SNM) Provide Islet Immunoisolation Under Convective Transport**
*Shang Song, BA, University of California, San Francisco, CA*

**2:00 - 2:15pm**

**The Effect of 3-dimential Micro-geometrical Structures of Bio-material Surface on Flow and Adhesion Phase in Thrombus Cascade**
*Toru Masuzawa, PhD, Ibaraki University, Ibaraki, Japan*

**2:15 - 2:30pm**

**Characterization of AV Tissue Biomechanics During LVAD Support and Implementation in a Bioreactor Design**
*Karen May-Newman, PhD, San Diego State University, San Diego, CA*

**2:30 - 2:45pm**

**Membrane Ventilators with Integrated Biofunctionally Modified Hollow Fibers That Avoid Material-mediated Neutrophil Activation**
*Martin Scholz, PhD, Leukocare AG, Planegg, Germany*

**2:45 - 3:00pm**

**Exogenous Nitric Oxide Supplementation to Enhance the Outcome of Fluid Resuscitation from Hemorrhagic Shock**
*Julian Crump, PhD, Universidad de Los Andes, Bogota, Colombia*

## VAD 2

**1:30 - 3:00pm - *Seacliff CD, Bay Level***

*Co-Chairs:*

*Pamela Combs, PhD, RN, University of Louisville, Louisville, KY*

*Thomas Schloeglhofer, BSc, Medical University of Vienna, Vienna, Austria*

**1:30 - 1:40pm**

**The Tale The Controller Tells**
*Sarah Witthoefft, BSN, RN, Seton Medical Center, Austin, TX*

**1:40 - 1:50pm**

**Fulfilling The VAD Coordinator: Job Satisfaction and Retention**
*Heather Moody, APRN, ACNP, University of Louisville, Louisville, KY*

**1:50 - 2:05pm**

**Algorithm for Remote Interventions for VAD Outpatients**
*Thomas Schloeglhofer, BSc, Medical University of Vienna, Vienna, Austria*

**2:05 - 2:20pm**

**Diversification of the VAD Team: Integrating Advanced Practice Nurses Into Patient Care, Inpatient and Outpatient**
*Jennifer Beckman, MSN, ARNP, Univ of Washington Medical Center, Seattle, WA*

**2:20 - 2:35pm**

**He Won't Do What I Want! Compliance, Adherence and Concordance**
*Annemarie Kaan, MCM, RN, St Paul's Hospital, Vancouver, Canada*

**2:35 - 3:00pm**

**Hot Topics in VAD Research**
*Mark Slaughter, MD, University of Louisville, Louisville, KY*

## PULMONARY 3 - ADVANCES IN ECMO AND ECCO2R

**1:30 - 3:00pm - *Seacliff AB, Bay Level***

*Co-Chairs:*

*Dongfang Wang, MD, PhD, University of Kentucky College of Medicine, Lexington, KY*

*Zachary Kon, MD, University of Maryland Medical Center, Baltimore, MD*

**1:30 - 1:45pm**

**New Advances in $CO_2$ Removal Technologies**
*Andriy Batchinsky, MD, US Army Institute Surgical Research, San Antonio, TX*

**1:45 - 2:00pm**
**The Future of Respiratory Support Devices: A Pulmonologist's Perspective**
*Keith Wille, MD, University of Alabama, Birmingham, AL*

**Update From Industry**

**2:00 - 2:10pm**
*Speaker to be announced*

**2:10 - 2:30pm**
*Lara Lund, PhD, ALung Technologies, Pittsburgh, PA*

**2:30 - 2:40pm**
*Georg Matheis, MD, PhD, Xenios, Heilbronn, Germany*

**2:40 - 2:50pm**
*Brian Duncan, MD, Sorin Group, Arvada, Co*

### PULMONARY ABSTRACT PRESENTATION

**2:50 - 3:00pm**
**Extracorporeal $CO_2$ Removal by Hemodialysis for Hypercarbic Respiratory Failure: A Bench Feasibility Study**
*Alexandra May, BS, University of Pittsburgh, Pittsburgh, PA*

## RENAL 3 - FRONTIERS IN VASCULAR ACCESS

**1:30 - 3:00pm** - ***Garden Room, Atrium Level***
*Co-Chairs:*

*William Fissell, MD, Vanderbilt University, Nashville, TN*

*Joseph Groszek, BS, Vanderbilt University, Nashville, TN*

**1:30 - 1:50pm**
**Endovascular Fistula - Updates from the Novel Endovascular Access Trial (NEAT)**
*Charmaine Lok, MD, University of Toronto, Toronto, Canada*

**1:50 - 2:20pm**
**Clinical Applications of Dynamic HD Access Pressure Monitoring: An Update**
*Stanley Frinak, MSEE, Henry Ford Health System, Detroit, MI*

**2:20 - 2:40pm**
**Dialysis Access Cannulation - Changing Paradigm Using Hand Held Ultrasound Device**
*Lalathaksha Kumbar, MD, Henry Ford Hospital, Detroit, MI*

### RENAL ABSTRACT PRESENTATION

**2:45 - 3:00pm**
**Computational Study of AFE System Outflow Vein Blood Flow**
*Howard Loree, PhD, Flow Forward Medical Inc, Lowell, MA*

## PEDIATRIC 2 - ANTICOAGULATION FOR MCS

**1:30 - 3:00pm** - ***Bayview A, Bay Level***
*Co-Chairs:*

*Peter Wearden, MD, PhD, Nemours Children's Hospital, Orlando, FL*

*Timothy Maul, CCP, PhD, Nemours Children's Hospital, Orlando, FL*

**1:30 - 1:45pm**
**How Should We Anticoagulate Children on ECMO?**
*Caroline Ozment, MD, Duke University, Durham, NC*

**1:45 - 2:00pm**
**Anticoagulation Lessons Learned From The Berlin Heart Trial**
*Patricia Massicotte, MD, University of Alberta, Alberta, Canada*

**2:00 - 2:15pm**
**Hemolysis and Anticoagulation: The PumpKIN Team's Approach for the Infant Jarvik Ventricular Assist System**
*Timothy Baldwin, PhD, NHLBI / NIH, Bethesda, MD*

**2:15 - 2:30pm**
**What Should We Measure and How Do We Know When We are Therapeutic?**
*Christopher Almond, MD, Stanford University, Palo Alto, CA*

**2:30 - 2:45pm**
**Newer Agents and Their Role in Pediatric Mechanical Circulatory Support**
*Leonardo Brandao,MD, MSc, Hospital for Sick Children, Toronto, Canada*

**2:45 - 3:00pm**
**Discussion and Questions**

**3:00 - 3:45pm VISIT EXHIBITS & POSTERS - ENJOY REFRESHMENTS -** *Pacific Concourse*

## CARDIAC 4

**3:45 - 5:00pm** - ***Grand Ballroom, Street Level*** *Co-Chairs:*

*Hiroshi Hashiguchi, MD, Nihon Premium Clinic, Singapore*

*Simon Maltais, MD, Mayo Clinic, Rochester, MN*

**3:45 - 4:15pm**
**The Challenge of The Driveline and It's Avoidance with Totally Implantable Systems**
*Jeffrey Morgan, MD, Baylor College of Medicine, Houston, TX*

### CARDIAC ABSTRACT PRESENTATIONS

**4:15 - 4:30pm**
**Simultaneous Laparoscopic Sleeve Gastrectomy in Morbidly Obese BTT Patients Undergoing Left Ventricular Assist Device Implantation**
*Igor Gregoric, MD, University of Texas Health Science Center, Houston, TX*

**4:30 - 4:45pm**
**Infections After Total Artificial Heart Implantation**
*Alduz, Cabasa, MD, Mayo Clinic, Rochester, MN*

**4:45 - 5:00pm**
**Leukocyte Modulation: A Strategy During Cardiopulmonary Bypass to Mitigate Systemic Inflammatory-like Response**
*Thomas Johnson, University of Michigan, Ann Arbor, MI*

## BIOENGINEERING 4 - NEW TECHNOLOGIES ON THE HORIZON

**3:45 - 5:00pm** - ***Bayview B, Bay Level***
*Co-Chairs:*

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

*Walter Dembitsy, MD, Sharp Memorial Hospital, San Diego, CA*

**3:45 - 4:00pm**
**Next Generation LVAD Platforms (Thoratec)**
*Kevin Bourque, MSME, St Jude Medical, Burlington, MA*

**4:00 - 4:15pm**
**Next Generation LVAD Platforms (HeartWare)**
*Jeff LaRose, MSME, HeartWare, Inc., Miami Lakes, FL*

**4:15 - 4:30pm**
**Next Generation Percutaneous Pump Platforms (Abiomed)**
*Thorsten Siess, PhD, Abiomed Inc., Aachen, Germany*

### BIOENGINEERING ABSTRACT PRESENTATIONS

**4:30 - 4:45pm**
**Design, Testing, and Optimization of a Novel, Implantable RVAD**
*J.Ryan Stanfield, University of Utah, Salt Lake City, UT*

**4:45 - 5:00pm**
**Novel Magnetically Levitated Right Ventricular Assist Device**
*Amy Throckmorton, PhD, Drexel University, Philadelphia, PA*

## PULMONARY 4 - BEYOND THE SCIENCE: OPTIMIZING EXTRACORPOREAL SUPPORT

**3:45 - 5:00pm** - ***Seacliff AB, Bay Level***
*Chair:*

*Mauer Biscotti, MD, Columbia University Medical Center, New York, NY*

**3:45 - 4:05pm**

**Human Factors in Extracorporeal Support**
*Drew Pihera, BS, Georgia Technical Institute, Atlanta, GA*

**4:05 - 4:25pm**
**Advanced Monitoring and Closed Loop Control of ECLS**
*Andriy Batchinsky, MD, US Army Institute Surgical Research, San Antonio, TX*

**4:25 - 4:45pm**
**The Top 3 Needs in ECLS: A User's Perspective**
*Zachary Kon, MD, University Maryland School of Medicine, Baltimore, MD*

### PULMONARY ABSTRACT PRESENTATION

**4:45 - 4:55pm**
**Early Tracheostomy in Patients Undergoing Veno-venous Extracorporeal Life Support Improves Survival**
*Bryan Whitson, MD, Ohio State University, Columbus, OH*

**3:45 - 5:00pm** - ***Garden Room, Atrium Level***

## RENAL 4 - ADVANCES IN EXTRA-CORPOREAL TOXIN REMOVAL

*Co-Chairs:*

*Balazs Szamosfalvi, MD, Henry Ford Hospital, Detroit, MI*

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

**3:45 - 4:05pm**
**Coupled Plasma Filtration and Adsorption: The IMPACT System**
*Patrick Maguire, MD, PhD, MBA, Hemolife Medical, Dana Point, CA*

**4:05 - 4:25pm**
**Carbon Block Column for Regeneration of Dialysate in CVVHD**
*Stephen Ash, MD, HemoCleanse Technologies LLC, Lafayette, IN*

**4:25 - 4:45pm**
**Mixed Matrix Membrane**
*Dimitrios Stamatialis, PhD, University of Twente, Enschede, Netherlands*

### RENAL ABSTRACT PRESENTATION

**4:45 - 5:00pm**
**Predicting Removal of β-2-microglobulin in the Silicon Nanopore Membrane Based Artificial Kidney**
*Benjamin Feinberg, PhD, University of California, San Francisco, CA*

**3:45 - 5:00pm** - ***Bayview A, Bay Level***

## PEDIATRIC 3 - THE CHALLENGES FACING ECMO

*Co-Chairs:*

*Richard Walczak, BS, Duke University, Durham, NC*

*Shri Desphande, MD, Childrens Healthcare of Atlanta, Atlanta, GA*

**3:45 - 4:00pm**
**The Team: Challenging and Changing the Traditional Bedside Model**
*Don Granoski, RRT, Stollery Children's Hospital, Alberta, Canada*

**4:00 - 4:15pm**
**How To Improve ECMO Outcomes in Pediatrics**
*Peter Wearden, MD, PhD, Nemours Children's Hospital, Orlando, FL*

**4:15 - 4:30pm**
**Is Everyone an ECMO Candidate?**
*Roxanne Kirsch, MD, The Hospital for Sick Children, Toronto, Canada*

**4:30 - 4:45pm**
**Is Smaller Better?**
*George Pantalos, PhD, University of Louisville, Louisville, KY*

**4:45 - 5:00pm**
**Discussion and Questions**

**5:15 - 5:45pm** - ***Waterfront AB, Atrium Level***
**ASAIO MEMBER BUSINESS MEETING**

**8:00am - 5:00pm** - ***Pacific Concourse***

## ABSTRACT POSTER PRESENTATIONS

### Cardiac Posters

**Poster Numbers**

**165** **A Model of Anterograde Oxygenated Lung Blood Perfusion in Acardia**
*Sotirios Marinakis, MD, CHU Charleroi, Londelisart, Belgium*

**166** **The Effect of Reverse Remodeling on Intraventricular Flow in the LVAD-Assisted Heart Studied in a Mock Circulatory Loop**
*Karen May-Newman, PhD, San Diego State University, San Diego, CA*

**167** **Neurocognitive Impairment Associated with Discordant Upper-lower Body Oxygenation or North-South Syndrome After Bailout Extracorporeal Membrane Oxygenator Support for Post-cardiotomy Shock**
*Jose Mendez, MD, Baylor University Medical Center, Houston, TX*

**168** **The Effects of Various Gasses on Platelet P-selectin and Leukocyte CD11b Expression in a Rabbit Model of Cardiopulmonary Bypass**
*Azmath Mohammed, MD, University of Michigan, Ann Arbor, MI*

**169** **Super Computer Simulation for Evaluating EVAHEART Augmented Pulsatility**
*Tadashi Motomura, MD, EvaHeart Inc., Houston, TX*

**170** ***In-vitro*** **Mock Circulation Study for Identifying the Optimal Pump Speed in Evaheart LVAD**
*Tadashi Motomura, MD, EvaHeart Inc., Houston, TX*

**171** **Optimized Rapid Electrolytic Processing of Nitinol Wire Components within Tissue for Paraffin Embedded Histology**
*Andrew Nguyen, BS, Texas A&M University, College Station, TX*

**172** **Hemodynamic Evaluation of Ventricular Support Using the Axial Flow Blood Pump Placed at Descending Aorta**
*Eiji Okamoto, PhD, Tokai University, Sapporo, Japan*

**173** **A Novel Device for Venous Retroperfusion of the Myocardium; Preliminary *in vitro* Results**
*George Pantalos, PhD, University of Louisville, Louisville, KY*

**174** **Intracardiac Thrombus in Patients Undergoing Left Ventricular Device Implantation: Predictive Capability Correlated to Intraoperative Findings**
*Raphael Parrado, MD, Mayo Clinic, Rochester, MN*

**175** **Early Echocardiography After Left Ventricular Assist Device Implantation: Indications, Resultant Interventions and Utility**
*Raphael Parrado, MD, Mayo Clinic, Rochester, MN*

**176** **Fluid Structure Interaction Model Analysis of Cerebrospinal Fluid in Patients with Continuous-Flow Left Ventricular Assist Devices**
*Clifford Pierre, MD, University of Rochester Medical Center, Rochester, NY*

**177** **Patient-Specific Models for TAVI Planning Assistance**
*Juliana Sánchez-P, BS, Universidad de los Andes, Bogota, Colombia*

178 **Transcranial Detection of Signals (HITS/ MES) in an Implantable Pump Compared with a Non-implantable Pump (Preliminary Study)**
*Koichi Sato, MD, Niigata University, Niigata, Kashiwazaki, Japan*

179 **Monitoring LVAD Performance in Globally Remote Areas**
*Akshay Sharma, MD, Fortis Memorial Research Institute, Gurgaon, India*

180 **Oxidative Stress and Endotoxemia Potentiate Free Hemoglobin (Hb)-induced Blood-Brain Barrier (BBB) Disruption**
*Jan Simoni, PhD, Texas HemoBioTherapeutics & BioInnovation Center, Lubbock, TX*

181 **New Technology to Achieve True Physiologic Pulsatile Flow During Cardiopulmonary Bypass**
*Gengo Sunagawa, MD, Cleveland Clinic, Cleveland, OH*

182 **Performance of the Heartmate II Risk Score in an External Validation Cohort**
*David Joyce, MD, Mayo Clinic, Rochester, MN,*

183 **A Miniature Platform Technology for Multiple Applications of Chronic Mechanical Circulatory Assistance**
*Richard Wampler, MD, Oregon Health & Science University, Portland, OR*

184 **Destination Therapy by Choice: Patients' Perspectives on Why Ventricular Assist Device Therapy May Be Preferable to Cardiac Transplantation**
*Estevan Delgado, BA, Baylor College of Medicine, Houston, TX*

185 **In-vivo Hemocompatibility Study of CH-VAD, an Ultra-Compact Fully Magnetically Suspended Centrigugal Blood Pump**
*Zhongjun Wu, PhD, University of Louisville, Louisville, KY*

186 **Risk Stratification of 30 Day and 360 Day Mortality of Patients Requiring ECMO**
*Abdelhadi Rifai, MD, Advocate Christ Medical Center, Chicago, IL*

187 **Computational Quantification of LVAD Function During Ventricular Fibrillation Using 3D Cardiac Electromechanics Model**
*Ana Yuniarti, BS, Kumoh National Institute of Technology, Gumi-Si, South Korea*

188 **Population-driven Design of a Right-sided Blood Pump**
*Christopher Zarins, BS, Abiomed Inc, Danvers, MA*

189 **Endothelial Cell Glycocalyx Modulates Shear-induced Tubule Formation**
*Ping Zhao, Beihang University, Beijing, China*

190 **Driver Optimization to Decrease Hemolysis and Promote Urine Production in a Patient with a Total Artificial Heart on Hemodialysis - A Case Report**
*Lucas Schroedl, CCP, Mayo Clinic Arizona, Phoenix, AZ*

191 **tPA Titration to Waveform Analysis: Successful Fibrinolysis After Acute HeartWare LVAD Pump Thrombosis-case Study**
*Lucas, Schroedl, MS, CCP, Mayo Clinic, Pheonix, AZ*

192 **The Tale the Controller Tells: Identifying Cause of Death Based on Controller History**
*Sarah Witthoefft, RN, Seton Heart Specialty Care and Transplant Center, Austin, TX*

## Bioengineering Posters

193 **The Relationship of Blood Viscosity to Hemolysis Index in vitro Hemolysis Test**
*Xin-Yang Li, BS, The University of Tokyo, Tokyo, Japan*

194 **Reducing Water Transmission of Dynamically Loaded Polyurethane (PU) Using Multilayer Barrier Coatings Applied by Plasma-Enhanced Chemical Vapor Deposition (PECVD)**
*Felix Hesselmann, Dipl.-Ing, Institute of Applied Medical Engineering, Aaachen, Germany*

195 **A Theoretical Analysis of Shape Optimization to Minimize Clinging of Double Lumen Catheters with Side Holes**
*Yoichi Marushita, PhD, Toin University of Yokohama, Yokohama, Japan*

196 **A Novel Coil with Flexibility for Transcutaneous Energy Transmission System of Artificial Hearts**
*Haruka Murakami, The University of Tokyo, Tokyo, Japan*

197 **Examination of Mechanism Underlying Shunt Sound Using Numerical Computation**
*Noriaki Nakane, PhD, Toin University of Yokohama, Yokahama, Japan*

198 **A Method for Identification of Pumping States in an Implantable Rotary Blood Pump: Experimental Validation for the LVAD Sputnik**
*Dmitrii Petukhov, MD, National Research University of Electronic Technology, Zelenograd, Russia*

199 **Qualitative Method Using EDX Analysis with Fluorophore-conjugated Antibodies to Differntiate Cells in a Mixed Cellular Population**
*Melanie Rivas-Bustamante, BS, Texas A&M University, College Station, TX*

200 **Flow Visualization at the Outlet of the HeartMate II Left Ventricular Assist Device Using Particle Image Velocimetry**
*Grant Rowlands, The Pennsylvania State University, University Park, PA*

201 **Non-invasive Detection of Coagulation in Blood Circuits Based on Measurement of Light Absorbance**
*Hideo Sakamoto, BS, Toin University of Yokohama, Yokahama, Japan*

202 **Measurement of Cannula Centering Forces for Transvalvular Ventricular Assist Devices**
*Heinrich Schima, PhD, Medical University of Vienna, Vienna, Austria*

203 **A Study of the Effects of Side Holes in Indwelling Needles for Hemodialysis on Actual Blood Flow Rate Using Computational Fluid Dynamics Analysis**
*Naoya Shimazaki, BS, Toin University of Yokohama, Yokohama, Japan*

204 **Feasibility Study and Application of a MEMs Accelerometer Sensor for Acquisition of Vibration Signs in Pivot Bearing**
*José Ricardo Sousa, Federal Institute of Technology in Sao Paulo, Sao Paulo, Brazil*

205 **Optimized Settings for Side Holes to Ensure Actual Blood Flow Through 17G Indwelling Needles for Hemodialysis**
*Yuuki Taguchi, BS, Toin University of Yokohama, Yokohama, Japan*

206 **Physicochemical and Biological Characterization of Small Intestinal Submucosa Scaffolds for Wound Dressing Applications**
*Vivian Talero, BS, Universidad de los Andes, Bogotá, Colombia*

207 **Development of Prediction Method of Thrombus Formation on Wall by High Shear Rate on Pipe Flow Through an Orifice with Considering Transportation of Concentration**
*Masaaki Tamagawa, PhD, Kyushu Institue of Technology, Kitakyushu, Japan*

208 **Development of Simulated Ascites for the Training of Procedure and Evaluation of Machines for Cell-free and Concentrated Ascites Reinfusion Therapy (cart)**
*Daiki Tanaka, The Tokushima University, Tokushima, Japan*

209 **Evaluation of Oxygen Solubility of Perfluorooctylbromide (pfob) Emulsions**
*Juan Carlos Briceño, PhD, Universidad de los Andes, Bogota, Colombia*

210 **Short Term in vivo Studies with a Centrifugal Apico-Aortic Blood Pump**
*Bruno Utiyama, Instituto Dante Pazzanese de Cardiologia, São Paulo, Brazil*

# FRIDAY, JUNE 17 (continued)

**211 Control Strategy for the Inductively Coupled Wireless Power Transfer Circuit for Implants**
*Yong Wu, BS, San Francisco State University, San Francisco, CA*

**212 Evaluation of the Aachen Couette Shearing Device Using Transient CFD Analysis**
*Peng Wu, PhD, Soochow University, Suzhou, China*

**213 "Intracellular Transplant": Replacement of Native Hemoglobin with Donor Hemoglobin in Autogenic RBCs for Potential Treatment of Sickle Cell Disease**
*Luke Ziegler, McGowan Institute for Regenerative Medicine, Pittsburgh, PA*

**214 The Modified Mechanical Fragility Index: A New Tool for Clinical Measurement of Red Blood Cell Mechanical Fragility**
*Luke Ziegler, McGowan Institute for Regenerative Medicine, Pittsburgh, PA*

## Renal Posters

**215 The Influence of Catheter Design on Convection-Dominated Heparin Leakage**
*Venkat Keshav Chivukula, PhD, University of Washington, Seattle, WA*

**216 Outside in Filter Design for Long Term Hemodialysis and Hemofiltration**
*Mohamed Labib, PhD, Novaflux Technologies, Princeton, NJ*

**217 Validity of a Kinetic Modeling for Continuous Renal Replacement Therapy (CRRT)**
*Michio Mineshima, PhD, Tokyo Women's Medical University, Tokyo, Japan*

**218 Impact of Sterilization Techniques on Polymer-coated Silicon for Renal Replacement Applications**
*Willieford Moses, MD, University of California, San Francisco, CA*

**219 Design and Testing of Inflow Conduit Tip for Arteriovenous Fistula Eligibility (AFE) System**
*John Richardson, Flow Forward Medical, Inc., Lowell, MA*

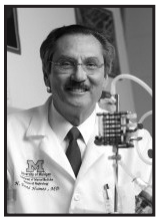
**220 Four Methods to Reduce Exposure to Heparin During Hemodialysis**
*Bernd Stegmayr, MD, PhD, Umea University, Umea, Sweden*

**221 Effect of the Blood Vessels Resistance in the Maturation of Grafts as Arteriovenous Fistula for Hemodialysis**
*Karen Valencia, Universidad de los Andes, Bogota, Colombia*

# SATURDAY, JUNE 18

## ASAIO 5th ANNUAL MEDICAL DEVICE ENTREPRENEUR'S FORUM

**8:30 - 10:00am** - ***Marina Room, Bay Level***
*Chairman:*



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

*The MDEF is for medical technologies at the concept and seed funding stages of commercialization. These Three Proposals will be presented in San Francisco before a Panel with expertise in regulatory, reimbursement, intellectual property and venture capital.*

*Panelists:*

*Edward Berger, PhD, Larchmont Strategic Advisors, Chestnut Hill, MA*

*Omar Amirana, MD, Allied Minds LLC, Boston, MA*

*Eric Chen, MS, FDA, Silver Spring, MD*

**Sleep Starter**
*Josh Stroud, BSME, Santa Rosa, CA*

**KIT: Kidney Injury Test**
*Joshua Yang, MTM, University of California, Berkeley, CA*

**PeriKinetics**
*Michael Hemati, MTM, Theranova, San Francisco, CA*

## CARDIAC 5

**8:30 - 10:00am** - ***Grand Ballroom, Street Level***

*Chair:*

*David Morales, MD, Cincinnati Children's Hospital Medical Center, Cincinnati, OH*

**8:30 - 9:00am**

**Debate: All Continuous Flow LVADs Have The Same Physiologic Impact on Patients**

*Pro: Nader Moazami, MD, Cleveland Clinic, Cleveland, OH*

*Con: Jonathan Rich, MD, Northwestern University, Skokie, IL*

### CARDIAC ABSTRACT PRESENTATIONS

**9:00 - 9:15am**
**Impact of Outflow Graft Diameter and Aortic Incompetence on Cerebral Blood Flow in Continuous Flow Pumps: Relevance to Strokes**
*Ramarathnam Krishna Kumar, PhD, Indian Institute of Technology Madras, Tamil Nadu, India*

**9:15 - 9:30am**
**Hemodynamic Contribution of HeartMate II and HVAD at Low Speed: Implications in Assessing Cardiac Recovery**
*Gengo Sunagawa, MD, Cleveland Clinic, Cleveland, OH*

**9:30am-9:45am**
**Beta Blockade Induced Heart Failure Provides a Model for Assessing Cardiac Support**
*Benjamin Schmitt, Wright State Univesity, Dayton, OH*

**9:45 - 10:00am**
**Pressure-flow Performance Comparison of Specific Axial and Centrifugal Flow Rotary Pump Designs, the HeartMate II and HeartMate 3**
*Chris Cotter, St. Jude Medical Center, Burlington, MA*

## BIOENGINEERING 5 - PUMP DESIGN, TESTING AND CONTROL SYSTEMS

**8:30 - 10:00am** - ***Bayview B, Bay Level***
*Co-Chairs:*

*Ulrich Steinseifer, PhD, RWTH Aachen University, Aachen, Germany*

*Po-Lin Hsu, PhD, Soochow University, Suzhou, China*

### BIOENGINEERING ABSTRACT PRESENTATIONS

**8:30 - 8:45am**
**A Sensorless Control Algorithm for Physiologic Control, Flow Balance, and Suction Preventionfor Rotary Biventricular Assist Devices**
*Guruprasad Giridharan, PhD, University of Louisville, Louisville, KY*

**8:45 - 9:00am**
**The Impacts of Left Ventricular Assist Device Design and Operation on Pump Acoustics**
*Gardner Yost, Advocate Christ Medical Center, Oak Lawn, IL*

**9:00 - 9:15am**
**Improving Safety Acceptance Criteria for in vitro Hemolysis Testing of Medical Devices**
*Richard Malinauskas, PhD, FDA, Silver Spring, MD*

**9:15 - 9:30am**
**How Different Configurations of the Intra-Aortic Balloon (IAB) Can Influence the Aortic Flow**
*Gionata Fragomeni, PhD, Magna Graecia University, Catanzaro, Italy*

**9:30 - 9:45am**
**An Empirical Model to Estimate Blood Damage in Turbulent Flow in Medical Devices**
*Mesude Ozturk, PhD, University of Oklahoma, Norman, OK*

**9:45 - 10:00am**
**Modeling of Thrombus Formation in the LVAD-assisted Left Ventricle**
*Brian Herold, BS, San Diego State University, San Diego, CA*

## PULMONARY 5 - TRANSPORT AND MOBILITY IN ECLS

**8:30 - 10:00am - *Seacliff AB, Bay Level***
*Co-Chairs:*

*Keith Willie, MD, University of Alabama, Birmingham, AL*

*Zhongjun Wu, PhD, University of Louisville, Louisville, KY*

**8:30 - 8:50am**
**Clinical Perspective: Mobility and Transport From Bedside to Airside**
*Mauer Biscotti, MD, Columbia University Medical Center, New York, New York*

**8:50 - 9:10am**
**Vacular Access: A Challenge for Long Term Respiratory Support**
*Alvaro Rojas-Peña, MD, University of Michigan, Ann Arbor, MI*

### PULMONARY ABSTRACT PRESENTATIONS

**9:10 - 9:20am**
**In-vitro and Acute in-vivo Studies of an Integrated Wearable Pump-lung**
*Shalv Madhani, BS, University of Pittsburgh, Pittsburgh, PA*

**9:20 - 9:30am**
**Developing a Biohybrid Lung: Ex vivo Testing of Limitations and Possibilities**
*Erin Schumer, MD, University of Louisville, Louisville, KY*

**9:30 - 9:40am**
**Changes in Pulmonary Artery Impedance and RV Pressure-volume Loop in Embolism-induced Pulmonary Hypertension-right Heart Failure Sheep Model**
*Dongfang Wang, MD, PhD, University of Kentucky, Lexington, KY*

## RENAL 5 - QUALITY OF LIFE FOR THE NEPHROLOGY PATIENT: WHAT DOES THE FUTURE HOLD?

**8:30 - 10:00am - *Garden Room, Atrium Level***
*Co-Chairs:*

*Joseph Groszek, BS, Vanderbilt University, Nashville, TN*

*Michael Heung, MD, University of Michigan, Ann Arbor, MI*

**8:30 - 8:50am**

**Revolutionizing the Treatment of Kidney Disease Using MEMS**
*Shuvo Roy, PhD, & Steven Kim, MD, University of San Francisco, San Francisco, CA*

**8:50 - 9:10am**
**Implantable Artificial Kidney**
*William Fissell, MD, Vanderbilt University Medical Center, Nashville, TN*

**9:10 - 9:30am**
**Dialysis on the Go: Wearable PD (AWAK Technologies)**
*Martin Roberts, PhD, AWAK Technologies Inc, North Hills, CA*

**9:30 - 9:50am**
**Patient Centered Kidney Care - Optimizing the Dialysis Experience**
*Jose Morfin, MD University of California, Davis, CA*

**9:50 - 10:00am**
**Discussion**

## PEDIATRIC 4 - DEBATE AND ABSTRACTS

**8:30 - 10:00am - *Bayview A, Bay Level***

*Chair:*

*To be announced*

**8:30 - 8:50am**

**Debate: To Extubate or Not To Extubate on ECMO**

*Pro:* **All Patients Should Be Extubated on ECMO**
*Lara Shekerdemian, MD, Texas Children's Hospital, Houston, TX*

*Con:* **Not All Patients Should Be Extubated on ECMO**
*Kyle Rehder, MD, Duke Children's Hospital, Durham, NC*

### PEDIATRIC ABSTRACT PRESENTATIONS

*Co-Chairs:*

*Lara Shekerdemian, MD, Texas Children's Hospital, Houston, TX*

*Kyle Rehder, MD, Duke Children's Hospital, Durham, NC*

**8:50 - 9:00am**
**Induction of ECMO in Operating Room Significantly Improves Survival in Infants With Congenital Heart Disease**
*Yasuhiro Fujii, PhD, Okayama University Graduate School of Medicine, Dentistry, and Pharmaceutical Sciences, Okayama, Japan*

**9:00 - 9:10am**
**Artificial Placenta versus Mechanical Ventilation: Quantification of Lung Alveolarization**
*Elena Perkins, BS, University of Michigan, Ann Arbor, MI*

**9:10 - 9:20am**
**Is Single Ventricle Still a Risk Factor for Extracorporeal Membrane Oxygenation AfterPediatric Cardiac Surgery?**
*Yasuhiro Kotani, MD, Okayama University, Okayama, Japan*

**9:20 - 9:30am**
**Prolonged Use of a Thoratec CentriMag RVAD with Oxygenator for Severe Acute Lung Injury**
*Kristen Nelson McMillan, MD, Johns Hopkins Univ School of Medicine, Baltimore, MD*

**9:30 - 9:40am**
**A Novel Test Bench to Simulate Failing Superior Cavo-Pulmonary Connection**
*Francesco De Gaetano, Politecnico di Milano, Milan, Italy*

**9:40 - 9:50am**
**PC-MRI of Mechanical Cavopulmonary Assist Using an Intravascular Blood Pump**
*Steven Chopski, PhD, Drexel University, Philadelphia, PA*

**9:50 - 10:00am**
**Ventricular Assist Device Support for Systemic Right Ventricle: A Surgical Consideration**
*Sarah Burki, MD, Texas Children's Hospital, Houston, TX*

*10:00 - 10:45am* **COFFEE BREAK**

## CARDIAC 6

**10:45am - 12:00pm** - ***Grand Ballroom, Street Level***
*Co-Chairs:*

*David Joyce, MD, Mayo Clinic, Rochester, MN*

*Vakhtang Tchantchaleishvili, MD, Univ of Rochester Medical Center, Rochester, NY*

**10:45 - 11:15am**
**Thrombosis and Anticoagulation in LVAD Patients**
*John Stulak, MD, Mayo Clinic, Rochester, MN*

### CARDIAC ABSTRACT PRESENTATIONS

**11:15 - 11:30am**
**Impact of the HeartWare Ventricular Assist Device Lavare Cycle on Intraventricular Flow Patterns**
*Heinrich Schima, PhD, Medical University of Vienna, Vienna, Austria*

**11:30 - 11:45am**
**The Utility of Frequency Analysis of Sounds Produced by Left Ventricular Assist Devices to Detect Pump Thrombosis**
*Saso Klesnik, BS, Memorial Hermann Hospital, Houston, TX*

**11:45am - 12:00pm**
**International Normalized Ratio (INR): Time in Therapeutic Range for VAD Patients**
*Pamela Combs, PhD, RN, University of Louisville, Louisville, KY*

## BIOENGINEERING 6 - TRANSLATING TECHNOLOGIES FROM BENCH TO BEDSIDE

**10:45am - 12:00pm** - ***Bayview B, Bay Level***
*Co-Chairs:*

*Nicole Milligan, BS, FDA, Silver Spring, MD*

*Arielle Drummond, PhD, FDA, Silver Spring, MD*

**10:45 - 11:00am**
**Role of The FDA in Accelerating Innovation to Market**
*Arielle Drummond, PhD, FDA, Silver Spring, MD*

**11:00 - 11:15am**
**Role of Computational Fluid Dynamics in Blood Pump Development**
*Jingchun Wu, PhD, Advanced Design Optimization, LLC., Irvine, CA*

### BIOENGINEERING ABSTRACT PRESENTATIONS

**11:15 - 11:30am**
**Hemodynamic Numerical Simulations of Spiral Flow within a Patient-specific Abdominal Aoritc Aneurysm Model**
*Ming Liu, PhD, Beihang University, Beijing, China*

**11:30 - 11:45am**
**The Investigation of Fluid Shear Stress and Subsequent Conformational Changes of Von Willebrand Factor Observed in an Optical Trap**
*Xavier Candela, BS, The Pennsylvania State University, State College, PA*

**11:45 - 12:00pm**
**Hemodynamics in a Pediatric Aorta Model with Asynchronous PVAD Pumping**
*Bryan Good, Pennsylvania State University, State College, PA*

## RENAL 6 - BIOENGINEERING STRATEGIES FOR NEPHROLOGY

**10:45am - 12:00pm** - ***Garden Room, Atrium Level***
*Co-Chairs:*

*Joerg Vienken, PhD, Nikkiso Co, Ltd, Hessen, Germany*

*Shuvo Roy, PhD, University of California, San Francisco, CA*

**10:45 - 11:10am**
**Development of Living Membranes Combining Artificial Membranes and Kidney Epithelial Cells**
*Dimitrios Stamatialis, PhD, University of Twente, Enschede, Netherlands*

**11:10 - 11:35am**
**Bioengineering of A Proximal Tubule**
*Rosalinde Masereeuw, PhD, Utrecht University, Utrecht, Netherlands*

**11:35am - 12:00pm**
**Biomimetic Membranes to Treat the Immunologic Dysregulation of Acute and Chronic Renal Failure**
*H. David Humes, MD, University of Michigan, Ann Arbor, MI*

## IFAO SESSION

**12:00 - 1:00pm** - ***Bayview A, Bay Level***
*Co-Chairs:*

*Bernd Stegmayr, MD, PhD, Umea University, Umea, Sweden*

*Steven Koenig, PhD, University of Louisville, Louisville, KY*

**Hemodialysis in Japan**
*Kenichi Matsuda, MD, PhD, Univ Yamanshi School of Medicine, Yamanshi, Japan*

**Blood Pump Development in Japan**
*Toru Masuzawa, PhD, College of Engineering, Ibaraki University, Ibaraki, Japan*

**ESAO Congress - September 2016 Warsaw**
*Dimitrios Stamatialis, PhD, University of Twente, Enschede, Netherlands*

**IFAO and ESAO Joint Congress - September 2017 Vienna**
*Heinrich Schima, PhD, Medical University Vienna, Vienna, Austria*

**8:00am - 5:00pm**

## ASAIO / ICCAC MCS Proficiency Verification Course

*Course Coordinators:*

*Michael Sobieski, RN, CCP, University of Louisville, Louisville, KY*

*Dawn Christensen, MS, FNP-BC, Innovative Program Solutions LLC, Pine Grove, PA*

**Objectives:**

**The objectives of this course are designed to meet the Joint Commission's "Goals of Annual Competency" for MCS personnel. These include:**

1. *Review basic concepts surrounding MCS technology;*
2. *Reivew critical thinking skills necessary in assessment and management of patients supported by MCS technology;*
3. *Assessment of the participant's knowledge regarding the technical information and procedures required for operating specific MCS devices;*
4. *Confirmation of proficiency of operation of specific MCS devices.*

**Instruction Method:**

This course utilizes a small group construct in which participants will proceed through 10 separate stations over the 8 hour course. Participants will be assigned to a group of no more than 10 individuals. Four stations will consist of problem based learning scenarios designed to reinforce critical thinking skills necessary to care for an advanced heart failure patient who is supported by a MCS device. Scenarios will also include recognition and management of common MCS complications. The other 6 stations will consist of skills verification for FDA approved MCS devices. They will involve hands on skills verification utilizing manufactuer recommended skills necessary to operate each device.

**Device complications that will be covered include:**

HeartWare HVAD waveform interpretation and pump thrombosis detection and treatment

Hypotension and Hypertension evaluation and treatment

HeartMate II hemolysis evaluation and treatment

Controller malfunction and failure

All group exercises will be conducted in a manner that encourages participation by attendees.

Group interaction and discussion is the basis for succeess in this educational experience.

Rooms are assigned a specific topic or skills evaulation:

***Bay Level Rooms:***
Golden Gate Room: SynCardia and Berlin Heart
Seacliff C: HeartMate II
Seacliff D: HVAD

***Atrium Level Rooms:***
Waterfront A: Scenario 1 and Scenario 2
Waterfront B: Scenario 3 and Scenario 4
Boardroom C: Centrimag and Impella

You will be notified of your group assignment and schedule of progression through the stations when you pick up your Conference Badge at the Registration Desk.

## ASAIO MCS COURSE

**8:00am - 5:30pm - *Waterfront CDE, Atrium Level***
*Course Director:*

*Pramod Bonde, MD, Yale University, New Haven, CT*

**8:00 - 9:00am**

### MCS 1 - DIDACTIC

**8:00 - 8:10am**
**Introduction and Welcome**
*Pramod Bonde, MD, Yale University, New Haven, CT*

**8:10 - 8:20am**
**How To Setup a MCS Program - From Temporary to BTT/DT VAD**
*Mark Slaughter, MD, University of Louisville, Louisville, KY*

**8:20 - 8:30am**
**Temporary MCS Support**
*Hari Mallidi, MD, Brigham and Women's Hospital, Harvard Med Sch, Boston, MA*

**8:30 - 8:40am**
**Durable MCS Support**
*Hari Mallidi, MD, Brigham and Women's Hospital, Harvard Med Sch, Boston, MA*

**8:40 - 8:50am**
**Financial Aspects & Regulatory Requirements**
*Speaker to be announced*

**8:50 - 9:00am**
**Discussion**

**9:00 - 10:00am**

### MCS 2 - WHAT IS NEEDED TO PUMP? CONNECTIONS, ACTUATION & POWER DELIVERY

**9:00 - 9:20am**
**Connections and Axial Bearings**
*Tim Kauffman, PhD, RWTH Aachen University, Aachen, Germany*

**9:20 - 9:30am**
**Hydrodynamic Lift**
*Jeffrey LaRose, MSME, HeartWare Inc, Miami, FL*

**9:30 - 9:40am**
**Magnetic Suspension**
*Kevin Bourque, MSME, St. Jude Medical, Burlington, MA*

**9:40 - 9:50am**
**Power Supply**
*John Rudser, HeartWare Inc, Maimi Lakes, FL*

**9:50 - 10:00am**
**Discussion**

**10:00 - 11:00am**

### MCS 3 - INDICATIONS FOR MCS THERAPY

**10:00 - 10:20am**
**Indication for VAD Therapy**
*Jacob Schroeder, MD, Duke University School of Medicine, Durham, NC*

**10:20 - 10:35am**
**High Risk VAD Candidate**
*Mark Slaughter, MD, University of Louisville, Louisville, KY*

**10:35 - 10:50am**
**Who Is Not A VAD Candidate/Palliative Care Option**
*Guy MacGowan, MD, Freeman Hospital Newcastle Upon Tyne, UK*

**10:50 - 11:00am**
**Discussion**

**11:00am - 12:00pm**

### MCS 4 - OPTIMIZATION PRIOR TO MCS THERAPY

**11:00 - 11:10am**
**Optimized Medical Care**
*Nir Uriel, MD, MSc, University of Chicago, Chicago, IL*

**11:10 - 11:20am**
**Inotropic Therapy**
*Nir Uriel, MD, MSc, University of Chicago, Chicago, IL*

**11:20 - 11:30am**
**IABP Versus Impella/Temdem/ECMO Prior To VAD**
*Yoshiya Toyoda, MD, PhD, Temple University School of Medicine, Philadelphia, PA*

**11:30 - 11:40am**
**Advantages and Disadvantages of Bridging with Acute MCS**
*Lyle Joyce, MD, PhD, Mayo Clinic, Rochester, MN*

**11:40 - 11:50am**
**Survival: Bridging with Acute MCS to Durable VAD's**
*Aditya Bansal, MD, Ochsner Clinic Foundation, New Orleans, LA*

# SATURDAY, JUNE 18 (continued)

**11:50am - 12:00pm**
**Discussion**

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

**1:00 - 1:30pm**

## MCS 5 - TECHNICAL ASPECTS OF TEMPORARY MCS

**1:00 - 1:10pm**
**i. Approach: Percutaneous versus Sternotomy versus Minimally Invasive**
*Si Pham, MD, University of Maryland School of Medicine, Baltimore, MD*

**1:10 - 1:20pm**
**ii. Cannulation Strategies:**
**1. Direct versus Indirect**
**2. LA versus LV**
**3. Aorta versus Femoral Artery**
**4. PA versus RVOT**
**5. Prevention of Limb Ischemia**
*Pavan Atluri, MD, University of Pennsylvania, Philadelphia, PA*

**1:20 - 1:30pm**
**iii. Assessment of Recovery on Temporary MCS**
**iv. Weaning and Decannulation**
**v. Bridge to Durable Devices**
*Stephan Schueler, MD, PhD, Freeman Hospital, Newcastle Upon Tyne, United Kingdom*

**1:30 - 2:00pm**

## MCS 6 - TECHNICAL ASPECTS OF DURABLE IMPLANTS

**1:00 - 1:20pm**
**i. Pump Pocket**
**ii. Apical Coring**
**iii. Apical Cannulation**
**iv. Outflow Graft Length**
**v. Outflow Graft Anastomosis**
**vi. Tricuspid Annuloplasty: Size of Ring, Technique and Pitfalls**
**vii. Driveline Exit and Course Planning**
*Pramod Bonde, MD, Yale University Medical Center, New Haven, CT*

**1:20 - 1:30pm**
**viii. Concomitant Cardiac Procedures**
**ix. Planning for re-entry into to the Chest**
*Nader Moazami, MD, Cleveland Clinic, Cleveland, OH*

**2:00 - 2:30pm**

## MCS 7 - ANESTHESIA FOR VADS & ANTICOAGULATION MANAGEMENT

**2:00 - 2:10pm**
**Anesthesia for VADS**
*Gerard McClosky, MD, Yale New Haven Hospital, New Haven, CT*

**2:20 - 2:30pm**
**Anticoagulation Management**
**x. Heparin: ACT or PTT?**
**xi. Coumadin: INR Range?**
**xii. ASA and /or Plavix?**
**xiii. Role of Newer Anticoagulants**
*Michael Chen, MD, Yale University, New Haven, CT*

**2:30 - 3:00pm**

## MCS 8 - ADVERSE EVENT IDENTFICATION, MANAGEMENT AND PREVENTION

**2:00 - 2:10pm**
**xiv. Bleeding: How Long Can I Stop / Delay Anticoagulation Safely?**
**xv. Device Thrombosis: How to Identify Early and non-operative and Operative Options**
*Nader Moazami, MD, Cleveland Clinic, Cleveland, OH*

**2:10 - 2:20pm**
**xvi. GI Bleeding: Which Investigations and What Therapy?**
*Simon Maltais, MD, Mayo Clinic, Rochester, MD*

**2:20 - 2:30pm**
**xvii. Early RV Failure**
**xvii. Delayed RV Failure**
*Speaker to be announced*

**3:00 - 3:40pm**

## MCS 9 - PSYCHOSOCIAL ASPECTS

**3:00 - 3:10pm**
**xix. Limited Social and Family Support**
*Pamela Combs, PhD, RN, University of Louisville, Lousiville, KY*

**3:10 - 3:20pm**
**xx. Outpatient's Management: What to Check and What to Manage?**
*Sarah Witthoefft, BSN, RN, Seton Healthcare, Austin, TX*

**3:20 - 3:30pm**
**xxii. The Problem LVAD Patient: Non-Compliance and its Implications**
*Basar Srreyuplogu, MD, Univ Hospitals of Case Western, Cleveland, OH*

**3:30 - 3:40pm**
**xxiii. Caregiver Fatigue: How to Identify and What can be Done.**
*Dawn Chrsitensen, MS, FNP-BC, Innoative Program Solutions LLC, Pine Grove, PA*

**3:40 - 4:10pm**

## MCS 10 - OUTCOMES OF MCS THERAPY

**3:40 - 3:55pm**
**Outcomes and Survival of Acute MCS Therapy**
*Hari Mallidi, MD, Brigham and Women's Hospital, Harvard Med Sch, Boston, MA*

**3:55 - 4:10pm**
**Outcomes and Survival Following Durable VADS (INTERMACS data)**
*William Holman, MD, University of Alabama, Birmingham, AL*

**4:10 - 4:40pm**

## MCS 11 - TOTAL ARTIFICIAL HEART

**4:10 - 4:20pm**
**Indication and Patient Selection**
**Technical Pearls**
*Zain Khalpey, MD, PhD, Arizona Health Science Center, Tucson, AZ*

**4:20 - 4:30pm**
**Post TAH Care**
**Renal issues in TAH Patients**
*Marvin Slepian, MD, University of Arizona, Tucson, AZ*

**4:30 - 4:40pm**
**TAH Systems in Pipeline**
*Daniel Timms, PhD, BiVACOR, Seal Beach, CA*

**4:40 - 5:30pm**

## MCS 12 - FUTURE ADVANCES IN MCS THERAPY

**4:40 - 4:50pm**
**Conventional Cardiac Surgery Under LVAD Backup**
*Kaushik Mandal, MD, MPH, Johns Hopkins Univ School of Med, Baltimore, MD*

**4:50 - 5:00pm**
**Wireless LVADs**
*Pramond Bonde, MD, Yale University, New Haven, CT*

**5:00 - 5:10pm**

**Pulsatility**
*Egemen Tuzun, MD, PhD, Texas A&M Inst Preclinical Studies, College Station, TX*

**5:10 - 5:20pm**

**Hemocompatibility**
*Zhongjun Wu, PhD, University of Louisville, Louisville, KY*

**5:20 - 5:30pm**

**Miniaturization**
*Trevor Snyder, PhD, VADovations, Oklahoma City, OK*

## ASAIO MOCK CIRCULATION LOOP CHALLENGE DISPLAYS

**An anatomical Mock Heart Circulation Loop to test Medical Devices**
*So-Hyun Jansen, MSc, RWTH Aachen University, Aachen, Germany*

**Mock Circulation for VADs and TAH**
*Wilmo Orejola, MD, Hackensack University Medical Center, Hackensack, NJ*

**Automated Mock Flow Loop for Mechanical Circulation Support Program Training**
*Young Choi, University of Louisville, Louisville, KY*

**Virtual Mock Circulation Loop**
*Frank Tinker, PhD, Da Vinci Research, LLC, Tucson, AZ*

**Single Ventricle Pediatric Mock Circulation for Student Instruction and Clinical Simulation**
*Andrew Swiergosz, BS, University of Louisville, Louisville, KY*

**Infant Mock Circulation for ECMO and VAD Support**
*George Pantalos, PhD, University of Louisville, Louisville, KY*

**Mock Circulation Loop for Testing Thromboembolism in Ventricular Assist Devices**
*Staci Jessen, PhD, CV Pathology Laboratory, Texas A&M University, College Station, TX*

**Development of a Mechanical Circulatory Suppport Training Platform**
*Edward Bertterton, BS, Banner University Medical Center, Tuscon, TX*

**Hydraulic Assessment of a Mock Loop System for the Pulmonary Circuit**
*Alvaro Rojas-Pena, MD, University of Michigan, Ann Arbor, MI*

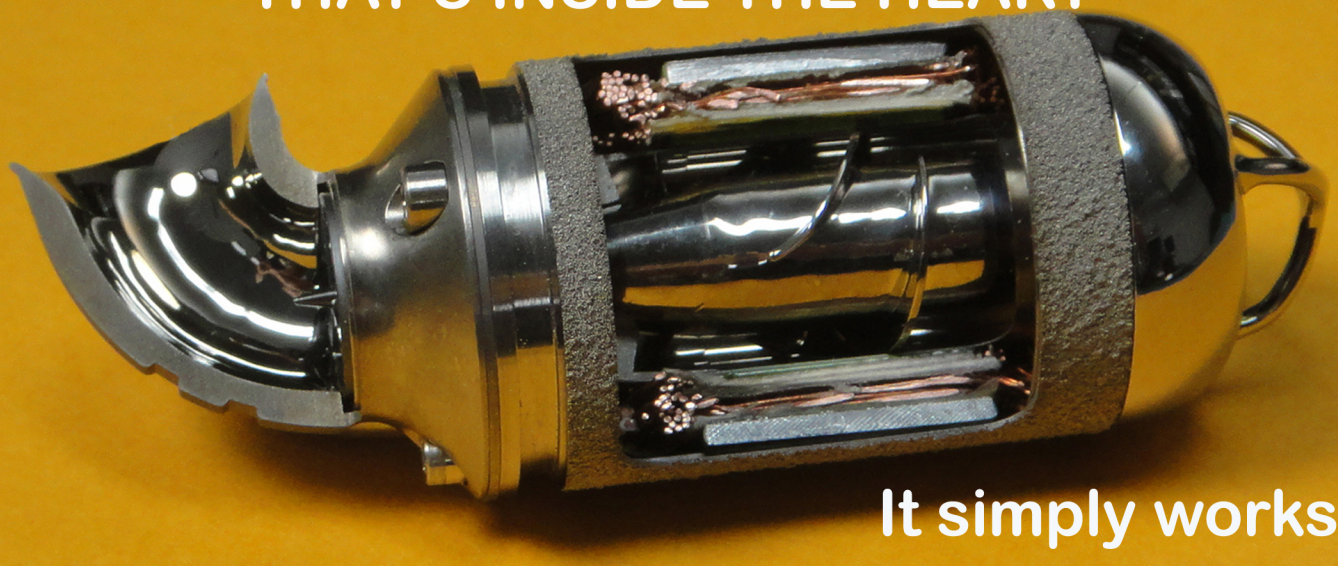
## NOTES

# NOTES

www.jarvikheart.com

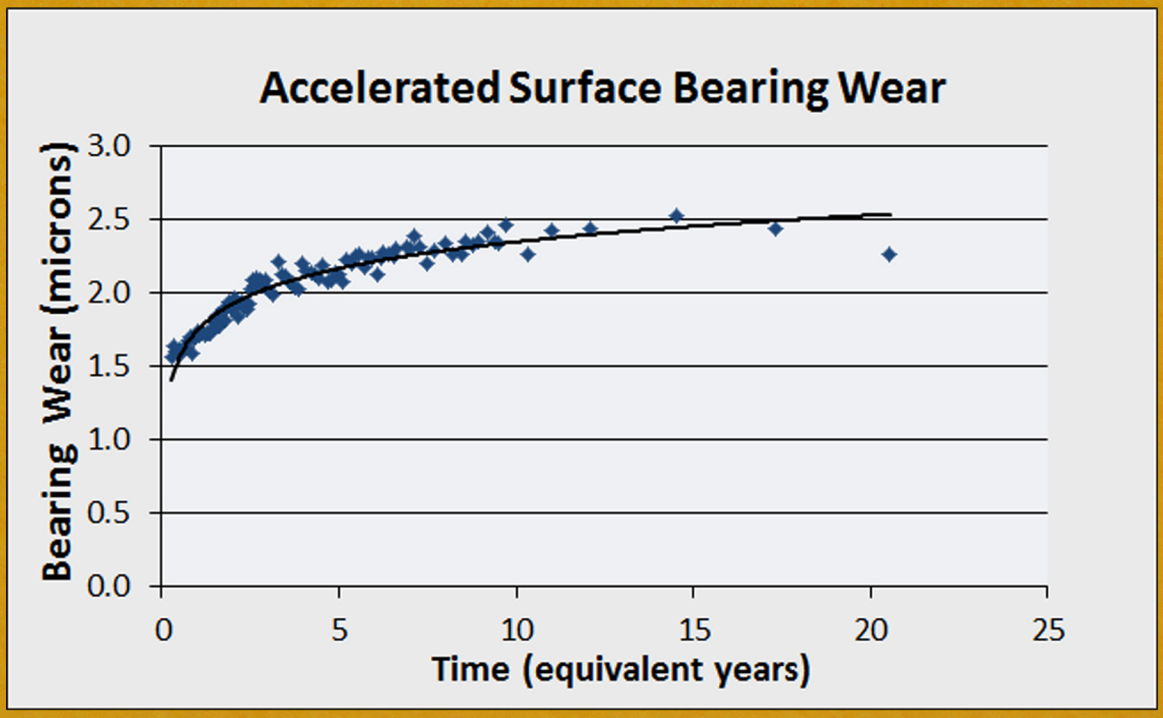
# The Jarvik 2000®

## INSIDE THE PUMP
## THAT'S INSIDE THE HEART



**It simply works.**

**No mechanical failures of the pump or bearings in >900 implants up to 9.5 years of support**




3x accelerated bench tests show 1 micron of bearing wear in 20 years