



The 15th International Conference on
**Pediatric Mechanical Circulatory
Support Systems & Pediatric
Cardiopulmonary Perfusion**



May 9-11, 2019

New York-Presbyterian/Columbia University Irving Medical Center
New York City

Conference Co-Chairs:

Paul J. Chai, MD
Sabrina Law, MD
Akif Ündar, PhD



Welcome to the fifteenth international conference on pediatric mechanical circulatory support systems and pediatric cardiopulmonary perfusion

1 | NEWYORK-PRESBYTERIAN MORGAN STANLEY CHILDREN'S HOSPITAL

We are honored to welcome you to the 15th International Conference on Pediatric Mechanical Circulatory Support Systems and Pediatric Cardiopulmonary Perfusion at NewYork-Presbyterian/Columbia University Irving Medical Center in conjunction with NewYork-Presbyterian Morgan Stanley Children's Hospital New York, NY, USA; May 9-11, 2019. NewYork-Presbyterian Morgan Stanley Children's Hospital offers the best available care in every area of Pediatrics in a family-friendly and technologically advanced setting. Building a reputation for more than a century as one of the nation's premier children's hospitals, Morgan Stanley Children's Hospital is affiliated with the Department of Pediatrics at Columbia University College of Physicians and Surgeons, one of the largest providers of children's health services in the tristate area with a long-standing commitment to its community. It is also a major international referral center, meeting the special needs of children from infancy through adolescence worldwide. NewYork-Presbyterian is the #1 hospital in the New York metropolitan area, according to U.S. News & World Report, and is consistently named to the magazine's Honor Roll of best hospitals in the nation.

At the Congenital Heart Center—a combined program of NewYork-Presbyterian/Morgan Stanley Children's Hospital and NewYork-Presbyterian Komansky Children's Hospital—a fully integrated approach is taken to the treatment of complex heart conditions in people of all ages, from newborns to adults. Ours is one of the first and most preeminent Pediatric Cardiology and heart surgery centers in the country and one of the nation's major Pediatric Transplant centers. With more than 13 000 echocardiograms performed each year and over 1200 diagnostic and interventional cardiac catheterizations, we offer decades of experience and the highest quality of care available in the world. We have the highest survival rate in New York State for pediatric heart surgery, and one of the highest nationwide—even though

our surgeons routinely treat some of the most complex cases, with many patients referred from other institutions.

We have a distinguished roster of highly skilled and experienced pediatric heart surgeons, including national leaders specializing in complex surgery in newborns, hybrid heart surgery, heart transplantation, and mechanical assist devices. Each year, pediatric heart surgeons at the NewYork-Presbyterian Congenital Heart Center perform more than 700 heart operations, including over 25 heart transplants, 175 newborn heart repairs, and 100 adult congenital heart disease (CHD) repairs. Since its inception in 1984, we have performed over 600 heart transplants and over 200 pediatric patients have been supported with ventricular assist devices (VADs) and an additional 260 with extracorporeal membrane oxygenation (ECMO) since 2010.

2 | FIFTEENTH EVENT DETAILS

Mechanical support in CHD is becoming standard of care, with 30% of children bridged to transplant with ECMO, VADs, or a combination of both. In referral hospitals this number approaches 50%. Particularly challenging are single ventricles in terms of their varying combinations of anatomy and physiology, multiple surgeries and comorbidities, as well as their smaller size. This conference focuses on bringing together experts in the field to discuss innovations, foster collaboration, and share support strategies, so that as a community we can enhance the care of this challenging group of patients.

This conference will promote knowledge and understanding of new advances in the field and effective ways to utilize the armamentarium of support strategies available. CHD patients are complex to support and clinicians are forced to innovate. A platform that promotes collaboration and brings these innovations to the bedside is necessary to bridge the gap between theory and practice.

Attendees can expect to be exposed to effective ways to bring mechanical support strategies for complex CHD

patients to the bedside, as well as how best to manage the therapies once they are instituted. We seek to provide a deeper understanding of complications and interventions that are available, and to enhance the comfort level of clinicians taking care of these patients.

The scientific program will start on Thursday, May 9, 2019 and will continue until Saturday, May 11, 2019. Paul Chai, MD, Sabrina Law, MD and Akif Undar, PhD are the scientific cochairs for the 15th Conference. The scientific program will include 4 keynote lectures, 24 invited lectures, and over 30 additional slides and posters selected from submitted abstracts, along with ECMO and VAD simulation sessions and guided tours of Morgan Stanley Children's Hospital. All of the details including an updated scientific program are presented in Table 1.

3 | ARTIFICIAL ORGANS

Cochairs of the past 14 events believe that one of the most impactful outcomes of this conference is the peer-reviewed publications based on invited lectures, slide and poster presentations.¹ *Artificial Organs* is the official journal of the International Conference on Pediatric Mechanical Circulatory Support Systems & Pediatric Cardiopulmonary Perfusion and The International Society for Pediatric Mechanical Cardiopulmonary Support (ISPMCS) <https://www.ispmcs.org/annual-conference>. To date, more than 500 peer-reviewed publications, including original articles, editorials, special reports, letters, and case reports have been published in *Artificial Organs* by the 3400 past participants from 41

TABLE 1 Details of the 15th International Conference on Pediatric Mechanical Circulatory Support Systems and Pediatric Cardiopulmonary Perfusion

| <i>Thursday, May 9, 2019</i> | |
|------------------------------|--|
| 7:00-8:00 a.m. | Registration, Breakfast & Vendor Exhibits |
| 8:00-8:05 a.m. | Welcome Remarks |
| | Emile Bacha, MD, FACS (New York, NY) |
| 8:05-10:00 a.m. | PLENARY SESSION #1: |
| | Pediatric Mechanical Support Systems: What's New on the Menu in 2019? |
| | <i>Moderators: Paul J. Chai, MD (New York, NY) & Marc E. Richmond, MD (New York, NY)</i> |
| 8:05-8:20 a.m. | PumpKIN Trial Updates |
| | Christopher Almond, MD (Palo Alto, CA) |
| 8:20-8:35 a.m. | HeartMate 3 in the Pediatric Patient |
| | Katsuhide Maeda, MD (Palo Alto, CA) |
| 8:35-8:50 a.m. | HeartWare: What Constitutes a Tight Squeeze? How Small is Too Small? |
| | Christina J. VanderPluym, MD (Boston, MA) |
| 8:50-9:05 a.m. | An Introduction to ACTION |
| | Angela Lorts, MD (Cincinnati, OH) |
| 9:05-9:20 a.m. | Syncardia in Pediatrics |
| | David L.S. Morales, MD (Cincinnati, OH) |
| 9:20-9:35 a.m. | Anticoagulation: Are DTI's the Magic Bullet? |
| | Jennifer Conway, MD (Edmonton, Alberta) |
| 9:35-10:00 a.m. | Panel Discussion |
| 10:00-10:45 a.m. | Break, Vendor Exhibits & Digital Posters |
| 10:45-11:15 a.m. | Key Note Lecture #1 |
| | What's Really Changed in 35 Years? A Brief History of Time |
| | Linda J. Addonizio, MD (New York, NY) |
| 11:15-11:45 a.m. | Key Note Lecture #2 |
| | The Economics of Mechanical Support, Heart Failure and Transplantation |
| | Joseph Rossano, MD, MS, FAAP, FACC (Philadelphia, PA) |
| 11:45 a.m.-12:00 p.m. | Presentation of Young Investigators' Awards |
| 12:00-1:00 p.m. | Lunch & Vendor Exhibits |

(Continues)

**TABLE 1** (Continued)

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|-----------------------------|--|
| 1:00-3:00 p.m. | PLENARY SESSION #2: ECMO <i>Moderators: Eva Cheung, MD (New York, NY) & William Middlesworth, MD (New York, NY)</i> |
| 1:00-1:15 p.m. | Current ECPR (Extracorporeal Membrane Resuscitation) Eva Cheung, MD (New York, NY) |
| 1:15-1:30 p.m. | Extracorporeal Membrane Oxygenation in Single Ventricles Ravi Thiagarajan, MD, MPH (Boston, MA) |
| 1:30-1:45 p.m. | Veno-Venous ECMO in Single Ventricles Scott I. Aydin, MD, FAAP (New York, NY) |
| 1:45-2:00 p.m. | Ambulatory Extracorporeal Membrane Oxygenation Koji Takeda, MD, PhD (New York, NY) |
| 2:00-2:15 p.m. | ELSO (Extracorporeal Life Support Organization): Using Registry Data to Refine Outcomes in Single Ventricles D. Michael McMullan, MD, FACS (Seattle, WA) |
| 2:15-2:30 p.m. | Columbia ECMO Program William Middlesworth, MD (New York, NY) |
| 2:30-3:00 p.m. | Panel Discussion |
| 3:00-3:45 p.m. | Break, Vendor Exhibits & Digital Posters |
| 3:45-5:00 p.m. | REGULAR SLIDE PRESENTATIONS #1 <i>Moderators: Warren Zuckerman, MD (New York, NY) & Damien J. LaPar, MD, MSc (New York, NY)</i> Five slide presentations—15 min each. (Selected from submitted abstracts) (10 min. presentation + 5 min discussion) |
| Friday, May 10, 2019 | |
| 7:00-7:55 a.m. | Registration, Breakfast & Vendor Exhibits |
| 7:55-8:00 a.m. | Welcome Remarks Linda J. Addonizio, MD, (New York, NY) |
| 8:00-10:00 a.m. | PLENARY SESSION #3: VAD in Single Ventricles <i>Moderators: Iki Adachi, MD (Houston, TX) & Sabrina Law, MD (New York, NY)</i> |
| 8:00-8:15 a.m. | Heart Failure in Single Ventricles Jack F. Price, MD (Houston, TX) |
| 8:15-8:30 a.m. | Support Strategies for Stage 1 & Stage 2 Single Ventricle Palliation Jonathan M. Chen, MD (Philadelphia, PA) |
| 8:30-8:45 a.m. | Support Strategies for Stage 3 Single Ventricle Palliation Yoshifumi Naka, MD, PhD (New York, NY) |
| 8:45-9:00 a.m. | What Constitutes the “Ideal” Fontan Pump? Mark D. Rodefeld, MD (Indianapolis, IN) |
| 9:00-9:15 a.m. | Dual Organ Transplant in Single Ventricles Sharon Chen, MD, MPH (Palo Alto, CA) |
| 9:15-9:30 a.m. | Destination Therapy Angela Lorts, MD (Cincinnati, OH) |
| 9:30-10:00 a.m. | Panel Discussion |
| 10:00-10:45 a.m. | Break, Vendor Exhibits & Digital Posters |
| 10:45-11:20 a.m. | Key Note Lecture #3 Virtual Fit Technology David L.S. Morales, MD (Cincinnati, OH) |

(Continues)



TABLE 1 (Continued)

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|-------------------------------|--|
| 11:20-11:55 a.m. | Key Note Lecture #4 |
| | Pediatric Specific Modifications for Device Implantations |
| | Iki Adachi, MD (Houston, TX) |
| 11:55 a.m.-1:00 p.m. | Lunch & Vendor Exhibits |
| 1:00-3:00 p.m. | REGULAR SLIDE PRESENTATIONS #2 |
| | <i>Moderators: David M. Kalfa, MD, PhD (New York, NY) & Arthur J. Smerling, MD (New York, NY)</i> |
| | Eight slide presentations—15 min each. (Selected from submitted abstracts) (10 min. presentation + 5 min discussion) |
| 3:00-3:45 p.m. | Break, Vendor Exhibits, Digital Posters & Hands-on Demonstrations |
| 3:45-5:45 p.m. | PARALLEL SESSIONS |
| 3:45-5:45 p.m. | Hands-on Demonstrations |
| | <i>Moderators: Michael P. Brewer, MS, CCP, FPP (New York, NY) & Dana Apsel, MS, CCP, LP (New York, NY)</i> |
| | Simulation Experience with the Pediatric ECLS Systems |
| 3:45-5:45 p.m. | Hospital Tours |
| | (Advanced Registration is Required) |
| Saturday, May 11, 2019 | |
| 8:00-10:00 a.m. | PLENARY SESSION #4: |
| | Perfusion and Potpourri |
| | <i>Moderators: Akif Ündar, PhD (Hershey, PA), Teresa Lee, MD (New York, NY) & Michael P. Brewer, MS, CCP, FPP (New York, NY)</i> |
| 8:00-8:15 a.m. | Everything and the Kitchen Sink: Multimodal Mechanical Support in Two Unique Patients |
| | Michael P. Brewer, MS, CCP, FPP (New York, NY) |
| 8:15-8:30 a.m. | Temporary Devices in Single Ventricles |
| | Alejandro J. Torres, MD (New York, NY) |
| 8:30-8:45 a.m. | Impella Use in the Pediatric Population |
| | Dafne Chianella, CCP (Charleston, SC) |
| 8:45-9:00 a.m. | Neuro Protection on CPB: What “Matters” |
| | Tami M. Rosenthal, BS, MBA, CCP, LP, FPP (Philadelphia, PA) |
| 9:00-9:15 a.m. | Percutaneous and Surgical Options for RV in LVAD Patients |
| | Melana Yuzefpolskaya, MD (New York, NY) |
| 9:15-9:30 a.m. | Weaning, End of Life Care & the Ethics of Ventricular Assist Devices |
| | Roxanne Kirsch, MD, MBE (Toronto, Canada) |
| 9:30-10:00 a.m. | Panel Discussion |
| 10:00-10:45 a.m. | Break, Vendor Exhibits & Digital Posters |
| 10:45 a.m.-1:00 p.m. | REGULAR SLIDE PRESENTATIONS #3 |
| | <i>Moderators: Tarif A. Choudhury, MD (New York, NY) & Ganga Krishnamurthy, MD (New York, NY)</i> |
| | Nine slide presentations—15 min each. (selected from submitted abstracts) (10 min. presentation + 5 min discussion) |
| 1:00 p.m. | CLOSING REMARKS |
| | Paul Chai, MD, Sabrina Law, MD and Akif Ündar PhD |

countries of the conference during the past 14 years.²⁻⁴ All accepted abstracts from the 15th Conference for slide and poster presentations are included in the April 2019 issue of *Artificial Organs*. In addition, the January 2020 issue will be dedicated to our conference manuscripts

(all peer-reviewed). Special thanks to Carol Malchesky, Editorial Assistant, Angela T. Hadsell, Executive Editor, and Paul Malchesky, D.Eng, Editor-in-Chief, for making this issue possible and for their continued support year after year.



4 | YOUNG INVESTIGATOR AWARDS

The following Young Investigator Awards will be given based on the quality of the original manuscripts, not abstracts:

1. The John A. Waldhausen, MD Young Investigator Award.
2. The William S. Pierce, MD Young Investigator Award.

5 | SOCIAL PROGRAM

The event will host a dinner for all participants, the evening of Friday, May 10, at New Leaf restaurant. Tucked away in upper Manhattan's stately Fort Tryon Park, housed in an impressive fieldstone cottage built by John D. Rockefeller in the 1930s, the restaurant is just steps from the Cloisters museum and gardens. The Met Cloisters, located on four acres overlooking the Hudson River is the branch of the Metropolitan Museum dedicated to the art, architecture, and gardens of medieval Europe.

6 | FURTHER INFORMATION

Further details regarding this event, including the scientific and social programs, guidelines for the Young Investigator Awards, and conference registration, can be accessed via the Conference Website available at: <http://www.ColumbiaSurgeryCME.org>.

ACKNOWLEDGMENTS

Special thanks go to Jessica Mead, Director of Special Events, at Columbia University Irving Medical Center, and Hearan Choo, MD, Director of CME, Department of Surgery, Columbia University Irving Medical Center, for their assistance in the coordination of this event.

Sabrina Law¹
Paul Chai^{2,3}
Akif Ündar⁴

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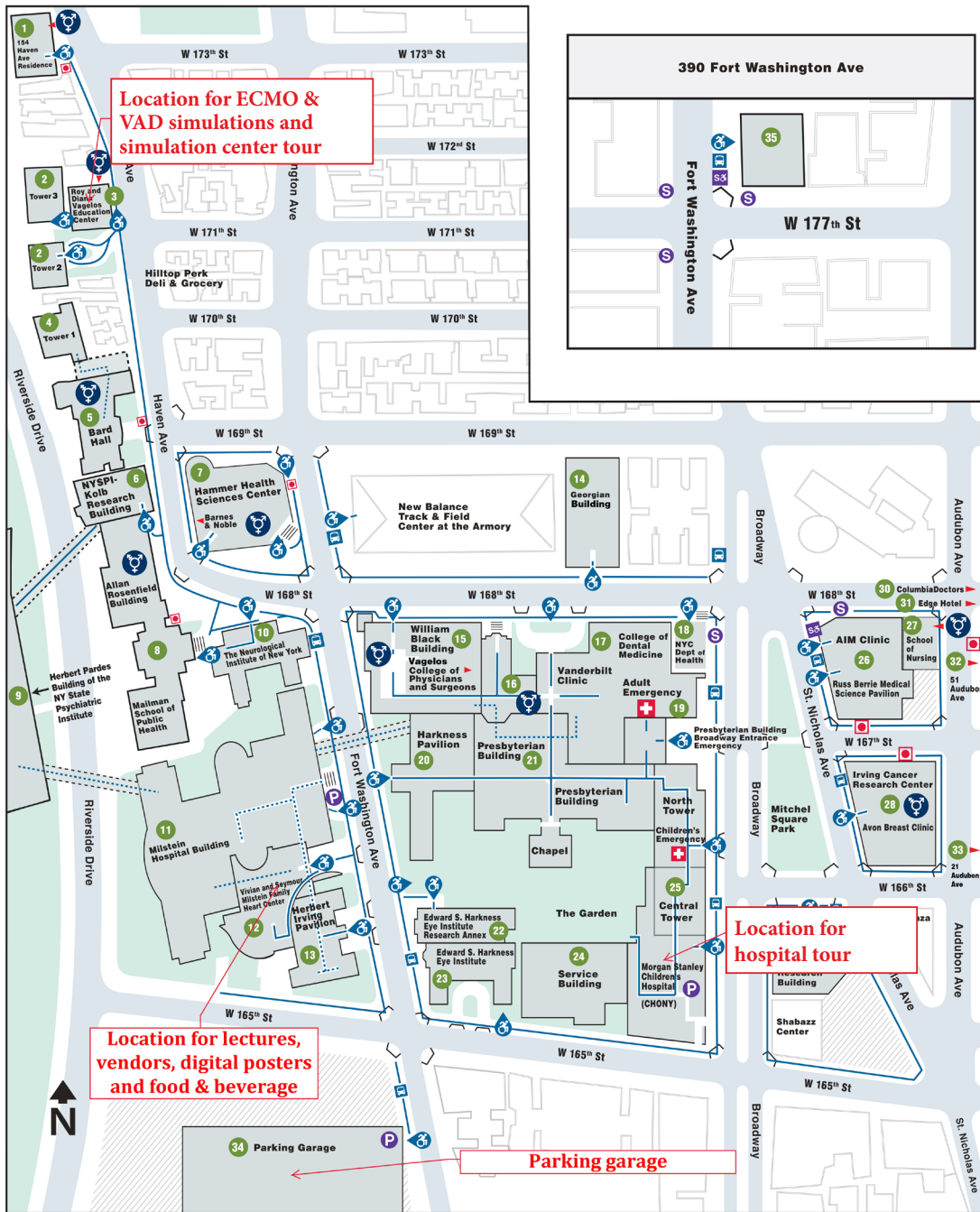
Email: sl3118@cumc.columbia.edu

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Akif Ündar <https://orcid.org/0000-0003-3334-2886>

REFERENCES

1. Ündar A. The relative citation ratio: measuring impact of publications from an international conference with a new NIH metric. *Artif Organs* 2017;41(12):1085–91.
2. Bacha EA, Chai P, Ündar A. Outcomes of the twelfth international conference on pediatric mechanical circulatory support systems and pediatric cardiopulmonary perfusion [guest editorial]. *Artif Organs* 2017;41(1):7–10.
3. Amodeo A, Ündar A. Welcome to the thirteen international conference on pediatric mechanical circulatory support systems and pediatric cardiopulmonary perfusion. *Artif Organs* 2017;41(8): 800–2.
4. Mongé MC, Backer CL, Myers JL, Ündar A. Outcomes of the fourteenth international conference on pediatric mechanical circulatory support systems and pediatric cardiopulmonary perfusion [guest editorial]. *Artif Organs* 2019;43(1):5–8.



COLUMBIA UNIVERSITY IRVING MEDICAL CENTER

MAP KEY

- | | | |
|---|--|--|
| <ol style="list-style-type: none"> 1. 154 Haven Ave. Residence 2. Towers 2 and 3 100 Haven Ave. 3. Roy and Diana Vagelos Education Center 104 Haven Ave. 4. Tower 1 60 Haven Ave. 5. Bard Hall 50 Haven Ave. 6. NYSPI-Kolb Research Building 40 Haven Ave. 7. Hammer Health Sciences Center 701 W. 168th St. 8. Allan Rosenfield Building/Mailman School of Public Health 722 W. 168th St. 9. Herbert Pardes Building of the NY State Psychiatric Institute 1051 Riverside Drive 10. The Neurological Institute of New York 710 W. 168th St. 11. Milstein Hospital Building 177 Fort Washington Ave. 12. Vivian and Seymour Milstein Family Heart Center 173 Fort Washington Ave. 13. Herbert Irving Pavilion 161 Fort Washington Ave. 14. Georgian Residence Building 617 W. 168th St. 15. William Black Building 650 W. 168th St. 16. Vagelos College of Physicians and Surgeons 630 W. 168th St. 17. Vanderbilt Clinic/College of Dental Medicine 622 W. 168th St. 18. NYC Department of Health 600 W. 168th St. 19. NYP Adult Emergency Entrance 3985 Broadway | <ol style="list-style-type: none"> 20. Harkness Pavilion 180 Fort Washington Ave. 21. Presbyterian Building 622 W. 168th St. 22. Edward S. Harkness Eye Institute Annex 160 Fort Washington Ave. 23. Edward S. Harkness Eye Institute 635 W. 165th St. 24. Service Building 627 W. 165th St. 25. Morgan Stanley Children's Hospital (CHONY) 3959 Broadway 26. Russ Berrie Medical Science Pavilion/AIM Clinic 1150 St. Nicholas Ave. 27. School of Nursing 560 W. 168th St. 28. Irving Cancer Research Center 1130 St. Nicholas Ave. 29. Lasker Biomedical Research Building 3960 Broadway 30. ColumbiaDoctors Primary Care Nurse Practitioner Group 516 W. 168th St. 31. Edge Hotel 514 W. 168th St. 32. 51 Audubon Ave. 33. 21 Audubon Ave. 34. Parking Garage 115 Fort Washington Ave. 35. 390 Fort Washington Ave. | <ul style="list-style-type: none"> Accessible Entrance Gender-Inclusive Restroom Curb Cut Stairs Public Parking NOTE: Valet parking at Milstein Hospital Building and CHONY Emergency Emergency Call Boxes MTA Subway Entrance NOTE: A C are accessible I is not accessible Accessible Elevator to Subway NOTE: A C are accessible I is not accessible MTA Bus Stop All MTA buses are wheelchair accessible Accessible Campus Route Interbuilding Access |
|---|--|--|

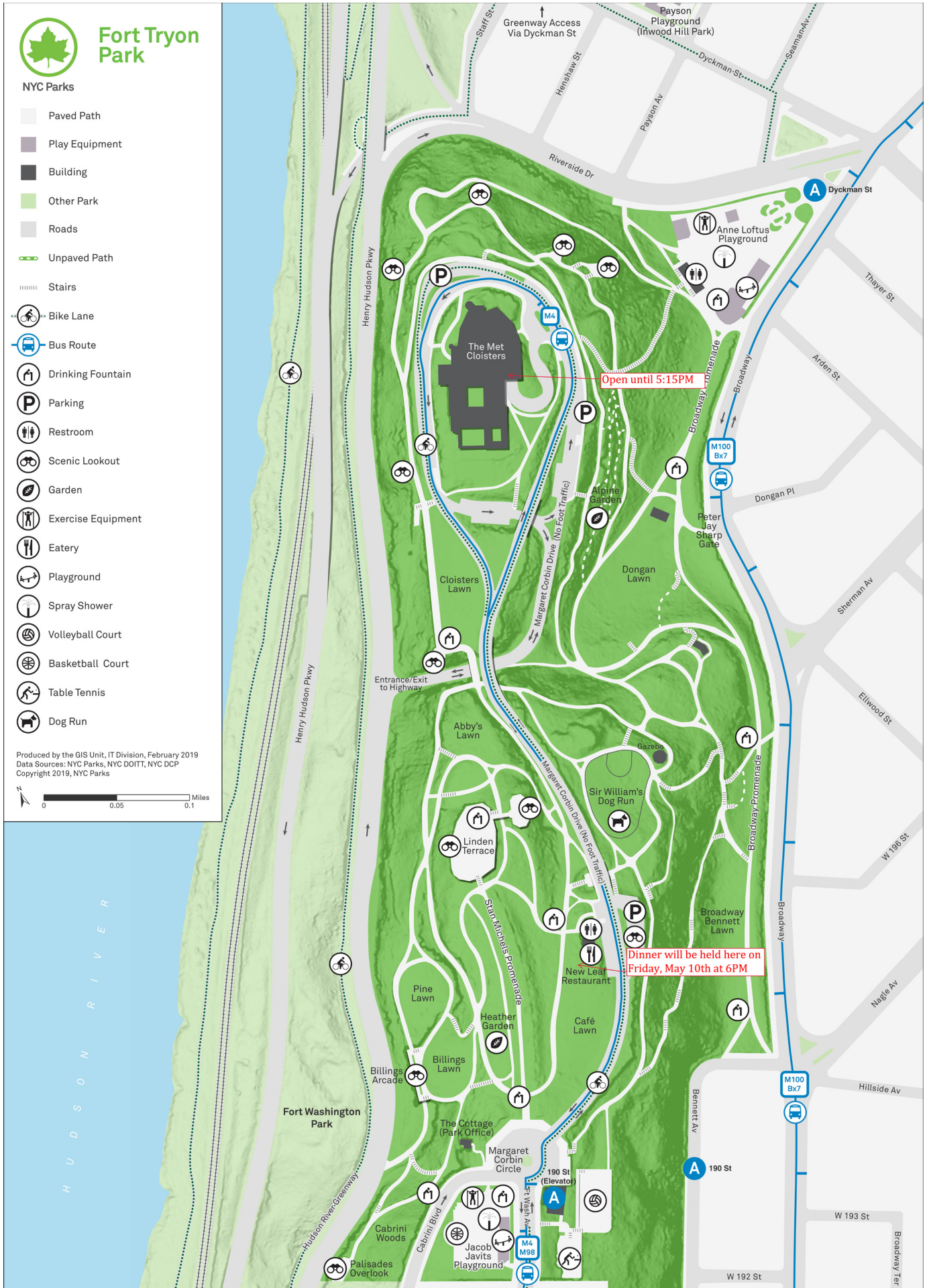


Fort Tryon Park

NYC Parks

- Paved Path
- Play Equipment
- Building
- Other Park
- Roads
- Unpaved Path
- Stairs
- Bike Lane
- Bus Route
- Drinking Fountain
- Parking
- Restroom
- Scenic Lookout
- Garden
- Exercise Equipment
- Eatery
- Playground
- Spray Shower
- Volleyball Court
- Basketball Court
- Table Tennis
- Dog Run

Produced by the GIS Unit, IT Division, February 2019
 Data Sources: NYC Parks, NYC DOITT, NYC DCP
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Overview

Mechanical support in congenital heart disease (CHD) is becoming standard of care, with 20% - 30% of children bridged to transplant with extracorporeal membrane oxygenation (ECMO), ventricular assist devices (VAD) or a combination of both. In referral hospitals this number approaches 50%. Particularly challenging are single ventricles (SV) in terms of their varying combinations of anatomy and physiology, multiple surgeries and co-morbidities, as well as their smaller size. This conference focuses on bringing together experts in the field to discuss innovations, foster collaboration and share support strategies, so that as a community we can enhance the care of this challenging group of patients.

Target Audience

An international symposium for cardiothoracic surgeons, cardiologists, perfusionists, ECMO specialists, bioengineers, basic scientists and other healthcare professionals. This meeting will give attendees the opportunity to network with over 200 healthcare providers. The overall objective of the conference is to collaborate and discuss effective ways to bring mechanical support strategies for complex CHD patients to the bedside, as well as, how best to manage the therapies once they are instituted. There will also be a focus on the deeper understanding of complications, interventions that are available and ways to enhance the comfort level of clinicians taking care of these patients.

Accreditation Statement

In support of improving patient care, this activity has been planned and implemented by Columbia University Department of Surgery and Amedco LLC. Amedco LLC is jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC), to provide continuing education for the healthcare team.

Credit Designation Statement



PHYSICIANS

Amedco LLC designates this live activity for a maximum of 17.50 *AMA PRA Category 1 Credits*[™]. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

PHYSICIAN ASSISTANTS

AAPA accepts certificates of participation for educational activities certified for *AMA PRA Category 1 Credits*[™] from organizations accredited by ACCME or a recognized state medical society. PAs may receive a maximum of 17.50 *AMA PRA Category 1 Credits*[™] for completing this activity.

NURSE PRACTITIONERS

The American Academy of Nurse Practitioners Certification Board (AANPCB) recognizes the Accreditation Council for Continuing Medical Education (ACCME) and the American Nurses Credentialing Center (ANCC) as approved accreditors and allow reciprocity for AANPCP continuing education credit.

American Board of Cardiovascular Perfusion

This course has been awarded 18.70 American Board of Cardiovascular Perfusion (ABCP) CEU's. In order to receive your credits, you must sign in each day you attend. You will be given a letter of certification prior to your departure which you are required to submit to the ABCP. Credit breakdown is as follows:

Thursday, May 9 = 7.40

Friday, May 10 = 6.20

Saturday, May 11 = 5.10

Satisfactory Completion

Learners must complete an evaluation form to receive a certificate of completion. Your chosen sessions must be attended in their entirety. Partial credit of individual sessions is not available. If you are seeking continuing education credit for a specialty not listed above, it is your responsibility to contact your licensing/certification board to determine course eligibility for your licensing/certification requirement.

Participants must sign in once a day to verify attendance.

Support

We received support for this program through grants from medical device and pharmaceutical companies.

Course Organizers

Hearan Choo, MD

Director of CME

Columbia University Irving Medical Center

Department of Surgery, CME Office

Jessica Mead

Director of Special Events

Columbia University Irving Medical Center

Department of Surgery, CME Office

Phone: 212.304.7817

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Program Agenda

Wednesday, May 8, 2019

2:00pm – 5:00pm On-site Registration (only if space is available) & Exhibit Set-up

Thursday, May 9, 2019

7:00am – 8:00am Registration, Breakfast & Vendor Exhibits

8:00am – 8:05am Welcome Remarks
Emile Bacha, MD, FACS (New York, NY)

**8:05am – 10:00am PLENARY SESSION #1:
Pediatric Mechanical Support Systems:
What's New on the Menu in 2019?**
Moderators: Paul J. Chai, MD (New York, NY) & Marc E. Richmond, MD, MS (New York, NY)

8:05am – 8:20am PumpKIN Trial Updates
Christopher Almond, MD (Palo Alto, CA)

8:20am – 8:35am Heartmate 3 in the Pediatric Patient
Katsuhide Maeda, MD (Palo Alto, CA)

8:35am – 8:50am Heartware: What Constitutes a Tight Squeeze? How Small is Too Small?
Christina J. VanderPluym, MD (Boston, MA)

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9:05am – 9:20am Syncardia in Pediatrics
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Jennifer Conway, MD (Edmonton, Alberta)

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10:00am – 10:45am Break, Vendor Exhibits & Digital Posters

10:45am – 11:15am Key Note Lecture #1
What's Really Changed in 35 Years?
A Brief History of Time
Linda J. Addonizio, MD (New York, NY)

11:15am – 11:45am Key Note Lecture #2
The Economics of Mechanical Support, Heart Failure and Transplantation
Joseph Rossano, MD, MS, FAAP, FACC (Philadelphia, PA)

11:45am – 12:00pm Presentation of Young Investigators' Awards

12:00pm – 1:00pm Lunch & Vendor Exhibits

| | |
|------------------------|---|
| 1:00pm – 3:00pm | PLENARY SESSION #2: ECMO <i>Moderators: Eva Cheung, MD (New York, NY) & William Middlesworth, MD (New York, NY)</i> |
| 1:00pm – 1:15pm | Current ECPR (Extracorporeal Membrane Resuscitation) <i>Eva Cheung, MD (New York, NY)</i> |
| 1:15pm – 1:30pm | Extracorporeal Membrane Oxygenation in Single Ventricles <i>Ravi Thiagarajan, MD, MPH (Boston, MA)</i> |
| 1:30pm – 1:45pm | Veno-Venous ECMO in Single Ventricles <i>Scott I. Aydin, MD, FAAP (New York, NY)</i> |
| 1:45pm – 2:00pm | Ambulatory Extracorporeal Membrane Oxygenation <i>Koji Takeda, MD, PhD (New York, NY)</i> |
| 2:00pm – 2:15pm | ELSO (Extracorporeal Life Support Organization): Using Registry Data to Refine Outcomes in Single Ventricles <i>D. Michael McMullan, MD, FACS (Seattle, WA)</i> |
| 2:15pm – 2:30pm | Columbia ECMO Program <i>William Middlesworth, MD (New York, NY)</i> |
| 2:30pm – 3:00pm | Panel Discussion |
| 3:00pm – 3:45pm | Break, Vendor Exhibits & Digital Posters |
| 3:45pm – 5:00pm | Regular Slide Presentations #1 <i>Moderators: Warren Zuckerman, MD (New York, NY) & Damien J. LaPar, MD, MSc (New York, NY)</i> |

Regular Slide Presentations #1

S1. **Post-Transplant Outcomes in Pediatric Patients Receiving Mechanical Circulatory Support: A Multicenter Study from the International Society for Heart and Lung Transplantation (ISHLT) Registry**

Jonathan B. Edelson¹, Yuan-shung Huang², Heather Griffis², Christopher E. Mascio³, Jonathan M. Chen³, Danielle S. Burstein¹, Kimberly Y. Lin¹, Matthew J. O'Connor¹, Joseph W. Rossano¹

¹Children's Hospital of Philadelphia, Philadelphia, PA, Department of Pediatric Cardiology, ²Children's Hospital of Philadelphia, Philadelphia, PA, Healthcare Analytics Unit, ³Children's Hospital of Philadelphia, Philadelphia, PA, Division of Cardiothoracic Surgery

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- S2. **4-Factor Prothrombin Complex Concentrate Use in Pediatric Patients with Ventricular Assist Device Presenting for Cardiac Transplant**
Matthew D. Amidon DO¹, Ke Yan PhD², Jian Zhang PhD² Robert A. Niebler, MD¹
Medical College of Wisconsin, Department of Pediatrics, ¹Division of Pediatric Critical Care and ²Division of Quantitative Health Sciences; Milwaukee, Wisconsin, USA
- S3. **Paving a road to home: Developing education for a pediatric home VAD program**
Vicky Duffy RRT, Matt Deitemyer RN BSN, Deipanjan Nandi MD, Ashely Hodge MBA CCP FPP, Janet Simsic MD
The Heart Center at Nationwide Children's Hospital, Columbus, Ohio, USA
- S4. **Bivalirudin administration in pediatric ventricular assist devices**
Chiara Giorni, MD¹, Isabella Favia, MD¹, Alessandra Rizza, MD¹, Simona Benegni, MD¹, Eleonora Marinari, MD¹, Francesca Giovanna Iodice, MD¹, Cristiana Garisto, MD¹, Valeria Raggi, MD¹, Alessio Franceschini, MD¹, Leonardo Vallesi, MD², Daniele Selvaggio, MN³, Antonio Amodeo, MD⁴, Luca Di Chiara, MD¹, Zaccaria Ricci, MD¹
¹Pediatric Cardiac Intensive Care Unit, Department of Cardiology and Cardiac Surgery, Bambino Gesù Children's Hospital, IRCCS, Rome, Italy
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⁴ MCS unit, Department of Cardiology and Cardiac Surgery, Bambino Gesù Children's Hospital, IRCCS, Rome, Italy
- S5. **Evaluation of centrifugal blood pumps in terms of hemodynamic performance using simulated neonatal and pediatric ECMO circuits**
Morgan K. Moroi BS¹, Shigang Wang, MD¹, Allen R. Kunselman, MA¹, John L. Myers, MD¹, Akif Undar PhD^{1,2}
¹Penn State Health Pediatric Cardiovascular Research Center, Department of Pediatrics, ²Department of Surgery and Department of Bioengineering, Penn State Milton S. Hershey Medical Center, Penn State College of Medicine, Penn State Health Children's Hospital, Hershey, PA, USA.
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Friday, May 10, 2019

- 7:00am – 7:55am Registration, Breakfast & Vendor Exhibits
- 7:55am – 8:00am Welcome Remarks
Linda J. Addonizio, MD, (New York, NY)
- 8:00am – 10:00am PLENARY SESSION #3:
VAD in Single Ventricles**
Moderators: Iki Adachi, MD (Houston, TX) & Sabrina Law, MD (New York, NY)
- 8:00am – 8:15am Heart Failure in Single Ventricles
Jack F. Price, MD (Houston, TX)
- 8:15am – 8:30am Support Strategies for Stage 1 & Stage 2 Single Ventricle Palliation
Jonathan M. Chen, MD (Philadelphia, PA)
- 8:30am – 8:45am Support Strategies for Stage 3 Single Ventricle Palliation
Yoshifumi Naka, MD, PhD (New York, NY)
- 8:45am – 9:00am What Constitutes the “Ideal” Fontan Pump?
Mark D. Rodefeld, MD (Indianapolis, IN)
- 9:00am – 9:15am Dual Organ Transplant in Single Ventricles
Sharon Chen, MD, MPH (Palo Alto, CA)
- 9:15am – 9:30am Destination Therapy
Angela Lorts, MD (Cincinnati, OH)
- 9:30am – 10:00am Panel Discussion
- 10:00am – 10:45am Break, Vendor Exhibits & Digital Posters
- 10:45am – 11:20am Key Note Lecture #3**
Virtual Fit Technology
David L.S. Morales, MD (Cincinnati, OH)
- 11:20am – 11:55am Key Note Lecture #4**
Pediatric Specific Modifications for Device Implantations
Iki Adachi, MD (Houston, TX)
- 11:55am – 1:00pm Lunch & Vendor Exhibits
- 1:00pm – 3:00pm Regular Slide Presentations #2**
Moderators: David M. Kalfa, MD, PhD (New York, NY) & Arthur J. Smerling, MD (New York, NY)

Regular Slide Presentations #2

S6. **Safety of inter-hospital ECLS transport in pediatric patients**

Kalpana Singh MD¹, Jorge Ojito CCP FPP², Jun Sasaki MD²

¹ *Department of Pediatric Intensive Care Unit, ² Department of Cardiology, Nicklaus Children's Hospital, Miami, Florida*

S7. **Ten-year-experience of interhospital extracorporeal membrane oxygenation transport for pediatric patients**

Ruey-Hung Tai, Ching-Chia Wang, Hen-Wen Chou, Chien-Hen Lai, Yih-Sharng Chen, En-Ting Wu, Shu-Chien Huang

Department of Pediatrics, Department of Surgery, National Taiwan University Children's Hospital College of Medicine, National Taiwan University

S8. **Pediatric Ventricular Assist Device Therapy for Advanced Heart Failure-A Single Center Experience**

Wing-Kuk Timmy Au¹, Barnabe Antonio Rocha¹, Nicholason Yam¹, Kin-Shing Lun², Tak-cheung Yung²

¹*Department of Cardiothoracic Surgery, Queen Mary Hospital, Hong Kong*

²*Department of Pediatric Cardiology, Queen Mary Hospital, Hong Kong*

S9. **Development of a pulsatile ventricular assist device designed to operate within physiologic parameters**

Stevan K Martins MD¹, Edison E dos Reis BSc², Luis Henrique V Fonseca BSc², Patricia M Dodd DVM³, and Rodrigo Machado DVM³

¹*Cardiovascular Surgery, Hospital do Coração HCor - Sao Paulo, Brazil, ² Zammi Industrial - Rio de Janeiro, Brazil, ³ Labcor Laboratories - Belo Horizonte, Brazil*

S10. **Hemodynamic Performance Evaluation of Commercially Available ECMO Systems with Rotary Blood Pumps in a Simulated Adolescent & Adult Cardiogenic Shock Model**

Morgan Moroi, BS*, Shigang Wang, MD*, Allen R. Kunselman, MA‡, and Christoph E. Brehm, MDS, Akif Ündar, PhD*†

**Department of Pediatrics, Penn State Health Pediatric Cardiovascular Research Center; †Department of Surgery and Bioengineering; ‡Department of Public Health and Sciences; and §Heart & Vascular Intensive Care Unit, Penn State Milton S. Hershey Medical Center, Penn State College of Medicine, Penn State Health Children's Hospital, Hershey, PA, USA.*

S11. Perioperative blood product transfusion of two different perfusion strategies on pediatric patients undergoing aortic arch surgery

Yuanyuan Tong¹, MD, Jinping Liu^{1*}, PhD, Shoujun Li², PhD, Jun Yan², PhD, Peiyao Zhang¹, MD, Zhengyi Feng¹, MD, Ju Zhao¹, PhD

¹ Department of Cardiopulmonary Bypass, National Center for Cardiovascular Disease and Fuwai Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College Fuwai Hospital, Beijing, China.² Pediatric Cardiac Surgery Center, National Center for Cardiovascular Disease and Fuwai Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College Fuwai Hospital, Beijing, China.

S12. In-vitro Evaluation of Vacuum-assisted Venous Drainage and Kinetic-assisted Venous Drainage in a Simulated Pediatric Circuit – a pilot study.

Daniel P. Guimaraes MD¹, Luiz F. Caneo PhD¹, Gregory S. Matte CCP LP FPP², Luciana P. Carletto CCP¹, Matheus H. C. Miranda CCP¹, Priscila S. Costa CCP¹, Marcelo B. Jatene PhD¹, Idágene Cestari PhD¹, and Fabio B. Jatene PhD¹

¹Cardiovascular Surgery Division, Instituto do Coração, Hospital das Clínicas da Faculdade de Medicina da Universidade de São Paulo (InCor-HCFMUSP), São Paulo, SP, Brazil. ²Department of Cardiac Surgery, Boston Children's Hospital, Boston, MA, USA.

S13. In vitro comparison of two neonatal ECMO circuits using a roller or centrifugal pump with three different in-line hemoconcentrators for maintaining hemodynamic energy delivery to the patient

Madison Force, BS¹, Morgan Moroi, BS¹, Shigang Wang, MD¹, David A. Palanzo, CCP¹, Allen R. Kunselman, MA², and Akif Undar, PhD^{1,3,4}

¹Penn State Health Pediatric Cardiovascular Research Center, Department of Pediatrics, ²Public Health and Sciences, ³Department of Surgery, ⁴Department of Bioengineering, Penn State Milton S. Hershey Medical Center, Penn State College of Medicine, Penn State Health Children's Hospital, Hershey, PA, USA

3:00pm – 3:45pm Break, Vendor Exhibits, Digital Posters & Hands-on Demonstrations

3:45pm – 5:45pm Parallel Sessions
(Advanced Registration is Required for Both Sessions)

3:45pm – 5:45pm Hands-on Demonstrations
Moderators: Michael P. Brewer, MS, CCP, FPP (New York, NY) & Dana Apsel, MS, CCP, LP (New York, NY)

Simulation Experience with the Pediatric ECLS Systems

3:45pm – 5:45pm Hospital Tours

6:00pm Cocktail Reception & Dinner at New Leaf Restaurant

Saturday, May 11, 2019

- 7:00am – 8:00am Registration, Breakfast & Vendor Exhibits
- 8:00am – 10:00am PLENARY SESSION #4:
Perfusion and Potpourri**
Moderators: Akif Ündar, PhD (Hershey, PA), Teresa M. Lee, MD, MS (New York, NY) & Michael P. Brewer, MS, CCP, FPP (New York, NY)
- 8:00am – 8:15am Everything and the Kitchen Sink:
Multimodal Mechanical Support in Two Unique Patients
Michael P. Brewer, MS, CCP, FPP (New York, NY)
- 8:15am – 8:30am Temporary Devices in Single Ventricles
Alejandro J. Torres, MD (New York, NY)
- 8:30am – 8:45am Impella Use in the Adolescent Population
Dafne Chianella, CCP (Charleston, SC)
- 8:45am – 9:00am Neuro Protection on CPB: What “Matters”
Tami M. Rosenthal, BS, MBA, CCP, LP, FPP (Philadelphia, PA)
- 9:00am – 9:15am Percutaneous and Surgical Options for RV in LVAD Patients
Melana Yuzefpolskaya, MD (New York, NY)
- 9:15am – 9:30am Weaning, End of Life Care & the Ethics of Ventricular Assist Devices
Roxanne Kirsch, MD, MBE (Toronto, Canada)
- 9:30am – 10:00am Panel Discussion
- 10:00am – 10:45am Break, Vendor Exhibits & Digital Posters
- 10:45am – 1:00pm Regular Slide Presentations #3**
Moderators: Tarif A. Choudhury, MD (New York, NY) & Ganga Krishnamurthy, MD (New York, NY)

Regular Slide Presentations #3

- S14. **Contrast exposure before cardiopulmonary bypass: a new challenge for kidney protection in young children undergoing cardiac surgery**
Shengwen Guo MD¹, Jinping Liu MD¹, Xin Duan MD¹
¹ *Department of Cardiopulmonary Bypass, State Key Laboratory of Cardiovascular Disease, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College*
- S15. **Postpartum Pulmonary Arterial Hypertension in Twin Mothers at the Similar Time but with Different Outcomes**
Kanyarad Boonthim
Perfusion division, Department of surgery, King Chulalongkorn Memorial Hospital (the Thai Red Cross Society), Bangkok, Thailand

S16. Bloodless Repair of Total Anomalous Pulmonary Venous Connection in a 3.4-kg Neonate

Paul Kerins CCP, Daniel Duncan CCP FPP, and Christian Pizarro MD

The Nemours Cardiac Center, Nemours Alfred¹ DuPont Hospital for Children, Wilmington Delaware

S17. Evaluation of Pulsatile Frequency of a Diagonal Pump on Circuit Pressure, Pressure Drop, and Hemodynamic Energy Transmission in a Simulated Neonatal ECLS System

Madison Force, BS¹, Shigang Wang, MD¹, Morgan K. Moroi, BS¹, Allen R. Kunselman, MA², Akif Ündar, PhD^{1,3}

Penn State Health Pediatric Cardiovascular Research Center, Department of Pediatrics¹, Public Health and Sciences², Department of Surgery and Bioengineering³, Penn State Milton S. Hershey Medical Center, Penn State College of Medicine, Penn State Health Children's Hospital, Hershey, PA, USA.

S18. Impella Use for Left Heart Decompression While on ECMO in a Pediatric Patient

Ashish A. Ankola, MD

Columbia

S19. Evolution of Ventricular Assist Devices and their complications - a 24-year single center experience

Benjamin S. Mantell, MD, PhD^{1,2}, Paul J. Chai, MD³, Emile Bacha, MD³, David M. Kalfa, MD, PhD³, Warren A. Zuckerman, MD¹, Teresa M. Lee, MD¹, Marc E. Richmond, MD, MS¹, Linda J. Addonizio, MD¹, Sabrina P. Law, MD¹

¹- Division of Pediatric Cardiology, Department of Pediatrics, ²- Pediatric Cardiology Fellowship Program, ³- Division of Cardiothoracic Surgery, NewYork-Presbyterian Hospital, Columbia University Irving Medical Center, Morgan Stanley Children's Hospital, New York, NY 10032

S20. Title to come

Author(s) to come

Institution to come

S21. Title to come

Author(s) to come

Institution to come

S22. Evidence-based research using a multi-disciplinary team approach for optimization of neonatal CPB circuitry

Akif Ündar PhD

Penn State Pediatric Cardiovascular Research Center, Department of Pediatrics, Surgery and Bioengineering, Penn State College of Medicine, Penn State Health Children's Hospital, Hershey, PA, USA

1:00pm - 1:05pm Closing Remarks

Paul J. Chai, MD, Sabrina Law, MD and Akif Ündar, PhD

Digital Posters May 9 – 11, 2019

P1. **In-vitro Hemodynamic Evaluation of Neonatal Arterial Cannulae and Arterial & Venous Tubing in Simulated CPB Circuits**

Akif Ündar, PhD^{1,3}, Shigang Wang, MD¹, and Allen R. Kunselman, MA²

Pediatric Cardiovascular Research Center, Department of Pediatrics¹, Public Health Sciences², Surgery and Bioengineering³. Penn State Milton S. Hershey Medical Center, Penn State Hershey College of Medicine, Penn State Hershey Children's Hospital, Hershey, PA, USA

P2. **In-vitro Evaluation of Venous Line Pressure Using Different Venous Line Lengths and Venous Cannula Sizes in Pediatric Veno-arterial Extracorporeal Life Support (VAECLS) and Veno-venous ECLS (VV ECLS) Circuits**

Shigang Wang, MD¹, Allen R. Kunselman, MA², Akif Ündar, PhD^{1,3}

Penn State Health Pediatric Cardiovascular Research Center, Department of Pediatrics¹, Department of Public Health and Sciences², Surgery & Bioengineering³, Penn State Milton S. Hershey Medical Center, Penn State College of Medicine, Penn State Health Children's Hospital, Hershey, PA, USA.

P3. **A Novel 5D Bioprinting System and its Expected Application of Artificial Organs**

DuckHee Lee MS¹, SeungJoon Song Ph.D², Seongjun Kim MS¹, Chibum Ahn PhD³, Jaeyoung Kim Ph.D², Sanghoon Jung Ph.D², Jaesoon Choi Ph.D¹, Kyung Sun MD, PhD⁴

¹Medical Engineering R&D Center, Asan Institute for Life Sciences, Asan Medical Center, University of Ulsan, College of Medicine, ²Biomedical Research Center, Korea University Ansan Hospital, ³Department of Molecular Medicine, Gachon University, ⁴Department of Thoracic and Cardiovascular Surgery, College of Medicine, Korea University

P4. **The Preliminary Study of Buckling for Blood Flow in Arteries Using Finite Element Method**

Duck Hee Lee MS^{1,3}, Seoung Joon Song PhD⁴, SeongJun Kim MS¹, and Jaesoon Choi PhD^{1,2}

¹Medical Engineering R&D Center, Asan Institute for Life Sciences, Asan Medical Center, ²College of Medicine, University of Ulsan, ³Korea Artificial Organ Center, College of Medicine, Korea University, ⁴Biomedical Research Center, Korea University Ansan Hospital

P5. **Biomechanics Studies of 3D Printed Scaffolds for the Artificial Trachea**

Chi Bum Ahn Ph.D¹, Sung Ho Lee MD, Ph.D⁴, Jea-Ik Lee MD, Ph.D³, Jin Woo Lee Ph.D^{1,2}, Kuk Hui Son, MD, Ph.D^{3*}

¹Department of Molecular Medicine, Gachon University, Incheon, Korea, ²Department of Health Science and Technology, GAHIST, Gachon University, Korea, ³Department of Thoracic and Cardiovascular Surgery, Gachon University Gil Medical Center, Incheon, ⁴Department of Thoracic and Cardiovascular Surgery, College of Medicine, Korea University

P6. In Vitro Comparison of Pediatric Oxygenators with and without Integrated Arterial Filters in Maintaining Optimal Hemodynamic Stability and Managing Gaseous Microemboli

Morgan Moroi, BS¹, Madison Force, BS¹, Shigang Wang, MD¹, Allen R. Kunselman, MA², and Akif Ündar, PhD^{1,3}

¹Penn State Health Pediatric Cardiovascular Research Center, Department of Pediatrics, ²Public Health and Sciences, ³Department of Surgery and Bioengineering, Penn State Milton S. Hershey Medical Center, Penn State College of Medicine, Penn State Health Children's Hospital, Hershey, PA, USA.

P7. In Vitro Evaluation of ECG-Synchronized Pulsatile Flow using i-Cor Diagonal Pump in Neonatal and Pediatric ECLS Systems

Morgan Moroi, BS^{1,*}, Madison Force, BS^{1,*}, Shigang Wang, MD¹, Allen R. Kunselman, MA², and Akif Ündar, PhD^{1,3}

*¹Penn State Health Pediatric Cardiovascular Research Center, Department of Pediatrics, ²Public Health and Sciences, ³Department of Surgery and Bioengineering, Penn State Milton S. Hershey Medical Center, Penn State College of Medicine, Penn State Health Children's Hospital, Hershey, PA, USA. *Both authors contributed equally to this work.*

P8. In vitro Hemodynamic Evaluation of ECG-synchronized pulsatile flow using i-cor pump as short-term cardiac assist device for neonatal and pediatric population

Madison Force, BS^{1*}, Morgan Moroi, BS^{1*}, Shigang Wang, MD¹, Allen R. Kunselman, MA², and Akif Ündar, PhD^{1,3}

*¹Penn State Health Pediatric Cardiovascular Research Center, Department of Pediatrics, ²Public Health and Sciences, ³Department of Surgery and Department of Bioengineering, Penn State Milton S. Hershey Medical Center, Penn State College of Medicine, Penn State Health Children's Hospital, Hershey, PA, USA. * Both authors contributed equally to this work*

P9. Hemodynamic Characteristics of Femoral Arterial Cannulae with Different Perfusion Modes in a Simulated Adolescent & Adult ECLS Circuit

Madison Force, BS^{*}, Shigang Wang, MD^{*}, Allen R. Kunselman, MA[†], Christoph Brehm, MD[§], Akif Ündar, PhD^{*,‡}

Departments of Pediatrics^{}, Public and Health Sciences[†], Surgery and Bioengineering[‡]; Penn State Hershey Pediatric Cardiovascular Research Center, Penn State Hershey College of Medicine, Hershey, PA. [§]Heart and Vascular Institute, Penn State Milton S. Hershey Medical Center, Hershey, PA*

P10. Hemodynamic Performance Evaluation of VV-ECLS and VA-ECLS Cannulae

Shigang Wang, MD¹, Madison Force, BS¹, Allen R. Kunselman, MA², David Palanzo, CCP³, Christoph Brehm, MD⁴, Akif Ündar, PhD^{1,5}

Penn State Health Pediatric Cardiovascular Research Center, Department of Pediatrics¹, Public Health and Sciences², Perfusion³, Heart and Vascular Institute⁴, Surgery and Bioengineering⁵, Penn State Milton S. Hershey Medical Center, Penn State College of Medicine, Penn State Health Children's Hospital, Hershey, PA, USA.

P11. Impact of different perfusion modalities on coronary and carotid blood flow velocities in an ECLS swine model

Akif Ündar, PhD^{1,3,5}, Shigang Wang, MD¹, Sunil Patel, MBBS¹, Jenelle M. Izer, DVM, MS², Joseph B. Clark, MD^{1,3}, Allen R. Kunselman, MA⁴, Ronald P. Wilson, VMD, MS²

Penn State Hershey Pediatric Cardiovascular Research Center, Department of Pediatrics¹, Comparative Medicine², Surgery³, Public Health and Sciences⁴, and Bioengineering⁵, Penn State Milton S. Hershey Medical Center, Penn State Hershey College of Medicine, Penn State Hershey Children's Hospital, Hershey, PA, USA

P12. Effects of Pulsatile Control Algorithms for Diagonal Pump on Hemodynamic Performance

Shigang Wang, MD¹, Madison Force, BS¹, Morgan K. Moroi, BS¹, Sunil Patel, MD¹, Allen R. Kunselman, MA², and Akif Ündar, PhD^{1,3}

Penn State Health Pediatric Cardiovascular Research Center, Department of Pediatrics¹, Department of Public Health and Sciences², Surgery & Bioengineering³, Penn State Milton S. Hershey Medical Center, Penn State College of Medicine, Penn State Health Children's Hospital, Hershey, PA, USA.

P13. In-Vitro Evaluation of Capiox FX05 and RX05 Oxygenators in Neonatal Cardiopulmonary Bypass Circuits with Varying Venous Reservoir and Vacuum-Assisted Venous Drainage Levels

Shyama Sathianathan, BS¹, Rafay Nasir¹, Shigang Wang, MD¹, Allen R. Kunselman, MA², and Akif Ündar, PhD^{1,3}

¹Pediatric Cardiovascular Research Center, Department of Pediatrics, ²Public Health and Sciences, ³Surgery and Bioengineering, Penn State Milton S. Hershey Medical Center, Penn State College of Medicine, Penn State Health Children's Hospital, Hershey, PA, USA.

P14. Evaluation of hemodynamic performance of a combined ECLS and CRRT circuit in seven configurations with a simulated neonatal patient

Elizabeth Profeta, BS¹, Kaitlyn Shank, BS¹, Shigang Wang, MD¹, Allen R. Kunselman, MA², John L. Myers, MD^{1,3}, and Akif Ündar, PhD^{1,3,4}

¹Penn State Health Pediatric Cardiovascular Research Center, Department of Pediatrics, ²Public Health and Sciences, ³Department of Surgery, ⁴Department of Bioengineering, ⁵Penn State Heart and Vascular Institute, Penn State Milton S. Hershey Medical Center, Penn State College of Medicine, Penn State Health Children's Hospital, Hershey, PA, USA.

Conference Co-Chairs:

Akif Ündar, PhD

Professor of Pediatrics, Surgery, and Bioengineering, Penn State College of Medicine, Penn State Children's Hospital, Founder & Director, Penn State Hershey Pediatric Cardiovascular Research Center, Founder & President, International Society for Pediatric Mechanical Cardiopulmonary Support

Paul J. Chai, MD

Surgical Director, Pediatric Cardiac Transplantation and Mechanical Assistance Programs, NYP/Morgan Stanley Children's Hospital; Associate Professor of Surgery at CUIMC, NYP/Columbia University Irving Medical Center

Sabrina Law, MD

Medical Director of the Pediatric Ventricular Assist Device (VAD) Program, NYP/Morgan Stanley Children's Hospital; Assistant Professor of Pediatrics at CUIMC, NYP/Columbia University Irving Medical Center

Key Note Lecturers:

Iki Adachi, MD, Texas Children's Hospital

Linda J. Addonizio, MD, NYP/Morgan Stanley Children's Hospital

David L.S. Morales, MD, Cincinnati Children's Hospital Medical Center

Joseph Rossano, MD, MS, FAAP, FACC, Children's Hospital of Philadelphia

Invited Speakers:

Christopher Almond, MD, Stanford Children's Health

Scott I. Aydin, MD, FAAP, Kravis Children's Hospital at Mount Sinai

Jonathan M. Chen, MD, Children's Hospital of Philadelphia

Sharon Chen, MD, MPH, Stanford Children's Health

Dafne Chianella, CCP, Medical University of South Carolina

Jennifer Conway, MD, University of Alberta

Roxanne Kirsch, MD, MBE, Hospital for Sick Children

Angela Lorts, MD, Cincinnati Children's Hospital Medical Center

Katsuhide Maeda, MD, Stanford Children's Health

D. Michael McMullan, MD, FACS, Seattle Children's Hospital

Jack F. Price, MD, Texas Children's Hospital

Mark D. Rodefeld, MD, Indiana University School of Medicine

Tami M. Rosenthal, BS, MBA, CCP, LP, FPP, Children's Hospital of Philadelphia

Ravi Thiagarajan, MD, MPH, Boston Children's Hospital

Christina J. VanderPluym, MD, Boston Children's Hospital

Local Faculty:

Dana Apsel, MS, CCP, LP, NYP/Columbia University Irving Medical Center

Emile Bacha, MD, FACS, NYP/Morgan Stanley Children's Hospital

Michael P. Brewer, MS, CCP, FPP, NYP/Columbia University Irving Medical Center

Eva Cheung, MD, NYP/Morgan Stanley Children's Hospital

Tarif A. Choudhury, MD, NYP/Morgan Stanley Children's Hospital

David M. Kalfa, MD, PhD, NYP/Morgan Stanley Children's Hospital

Ganga Krishnamurthy, MD, NYP/Morgan Stanley Children's Hospital

Damien J. LaPar, MD, MSc, NYP/Morgan Stanley Children's Hospital

Teresa M. Lee, MD, MS, NYP/Morgan Stanley Children's Hospital

William Middlesworth, MD, NYP/Morgan Stanley Children's Hospital

Yoshifumi Naka, MD, PhD, NYP/Columbia University Irving Medical Center

Marc E. Richmond, MD, MS, NYP/Morgan Stanley Children's Hospital

Arthur J. Smerling, MD, NYP/Morgan Stanley Children's Hospital

Koji Takeda, MD, PhD, NYP/Columbia University Irving Medical Center

Alejandro J. Torres, MD, NYP/Morgan Stanley Children's Hospital

Melana Yuzefpolskaya, MD, NYP/Columbia University Irving Medical Center

Warren Zuckerman, MD, NYP/Morgan Stanley Children's Hospital

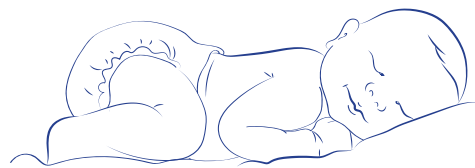
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The 15th International Conference on
**Pediatric Mechanical Circulatory
Support Systems & Pediatric
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