**UPDATED SCIENTIFIC PROGRAM** (March 16, 2009)

http://www.hmc.psu.edu/childrens/pedscpb/

**Wednesday, May 27**

2:00pm – 5:00pm **PEDS Conference Wet Labs**

Co-Chairs: Richard Ginther, Jr, CCP (Dallas, TX), Tami Rosenthal, CCP, MBA (Philadelphia, PA), and Akif Ündar, PhD, (Hershey, PA)

**Mast Mounted S5 with Neonatal Circuit**

Tami Rosenthal, CCP, MBA (Philadelphia, PA)

**“Micro” Circuit**

Richard Ginther, Jr., CCP (Dallas, TX)

**Pulsatile vs. Non-Pulsatile Perfusion & Intraoperative Neuromonitoring and Microemboli Detection and Classification (EDAC) system**

Karl Woitas, CCP (Hershey, PA), Stephen J. Kimatian, MD (Cleveland, OH)

**MEDOS Deltastream Blood Pump and Console**

Shigang Wang, MD (Beijing, China)

**New ECMO Circuit with a Levitronix Centrifugal Pump for Pediatric and Adult Patients**

Aly El-Banayosy, MD (Hershey, PA)

6:00pm – 7:30pm **PEDS Conference Surgical Videos**

(up to 8 videos)

Co-Chairs: John L. Myers, MD (Hershey, PA) and V. Mohan Reddy, MD (Stanford, CA)
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00am – 8:00am</td>
<td>PEDS Conference Registration/Speaker Ready Room Open/ Breakfast</td>
</tr>
<tr>
<td>8:00am</td>
<td>Posters Placed ~ Posters will remain in place from 8am – 7pm</td>
</tr>
<tr>
<td>7:45am – 8:00am</td>
<td>Welcome</td>
</tr>
<tr>
<td></td>
<td>Wayne Richenbacher, MD - President ASAIO</td>
</tr>
<tr>
<td></td>
<td>Akif Ündar, PhD - PEDS Conference Founder</td>
</tr>
<tr>
<td>8:00am – 8:20am</td>
<td>IFAO Osbourne Award</td>
</tr>
<tr>
<td>8:20am – 8:50am</td>
<td>LECTURE - In Vitro Organ Models</td>
</tr>
<tr>
<td></td>
<td>Linda Griffith, PhD – Professor of Chemical Engineering, MIT</td>
</tr>
<tr>
<td>8:50am – 9:40am</td>
<td>SYMPOSIUM - Artificial Organ Technologies for Women</td>
</tr>
<tr>
<td></td>
<td>Dialysis in Women - Thomas Depner, MD – Professor of Internal Medicine, University of California at Davis</td>
</tr>
<tr>
<td></td>
<td>Ob/Gyn Tissue Engineering - James Yoo, MD - Assistant Director, Associate Professor &amp; Head Clinical Translation, Wake Forest University</td>
</tr>
<tr>
<td></td>
<td>Breast Implant Update - Andrea Pozez, MD - Chair Plastic Surgery, Virginia Commonwealth University</td>
</tr>
<tr>
<td>9:40am – 10:00am</td>
<td>A TRIBUTE TO DRS. WILLEM KOLFF, ADRIAN KANTROWITZ, PEER PORTNER, &amp; MICHAEL DEBAKEY</td>
</tr>
<tr>
<td>10:00am – 10:45am</td>
<td>Exhibits, Posters &amp; Refreshments</td>
</tr>
<tr>
<td>11:00am – 12:00pm</td>
<td>Key Note Lecture – Clinical</td>
</tr>
<tr>
<td></td>
<td>Historical Perspectives and Personal Experiences</td>
</tr>
<tr>
<td></td>
<td>William I. Norwood, Jr., MD (Greenville, DE)</td>
</tr>
<tr>
<td></td>
<td>Introduction: John L. Myers, MD (Hershey, PA)</td>
</tr>
<tr>
<td>12:00pm – 1:00pm</td>
<td>PEDS Conference Registrant Lunch</td>
</tr>
<tr>
<td>1:00pm – 3:00pm</td>
<td>Plenary Session #1: Clinical Heart Failure and Mechanical Support in Children</td>
</tr>
<tr>
<td></td>
<td>Co-Chairs: Elizabeth D. Blume, MD (Boston, MA) and Anne Dipchand, MD (Toronto, Canada)</td>
</tr>
<tr>
<td></td>
<td>Epidemiology of Pediatric Heart Failure (10 min)</td>
</tr>
<tr>
<td></td>
<td>Elizabeth D. Blume, MD (Boston, MA)</td>
</tr>
</tbody>
</table>
Molecular Aspects of Childhood Heart Failure and Targeted Therapies (20 min)
Jeffrey Towbin, MD (Cincinnati, OH)

Patient Selection for Mechanical Support (20 min)
Christopher Almond, MD (Boston, MA)

How the Echocardiographer Can Aid in the Management of the Heart Failure Patient on Mechanical Support (20 min)
Anne Dipchand, MD (Toronto, Canada)

Clinical Trials in Pediatric Cardiology: The Pediatric Heart Network Experience (20 min)
Lynn Mahony, MD (Dallas, TX)

Discussion (30 min)

3:00pm – 3:45pm Exhibits, Posters & Refreshments

3:45pm – 5:00pm Mini-Symposium: Anticoagulation in Pediatric Ventricular Support: Clinical Lessons
Co-Chairs: M. Patricia Massicotte, MSc, MD, FRCPC, MHSc (Edmonton, Alberta, Canada) and Sabine H. Däbritz, MD (Germany)

Developmental Hemostasis: The Changing Coagulation System in Neonates, Infants, Teenagers and Adults (15 min)
Lisa Bomgaars, MD (Houston, TX)

Anticoagulation Medications: How Can We Monitor Their Effect? (15 min)
Holger Buchholz, MD (Edmonton, Alberta, Canada)

Is a Standardized Anticoagulation Protocol for Pediatric Ventricular Assist Devices Possible? (15 min)
M. Patricia Massicotte MSc MD FRCPC MHSc (Edmonton, Alberta, Canada)

Pediatric VAD Anticoagulation: Three Clinical Case Presentations (15 min)
Christopher Almond, MD (Boston, MA)

Discussion (15 min)

5:00pm – 7:10pm Regular Slide Presentations #1 – MCS-ECLS-Bioengineering
Co-Chairs: Aly El-Banayosy, MD (Hershey, PA), Kristine J. Guleserian, MD (Dallas, TX), and Adolfo A. Leirner, MD (Sao Paulo, Brazil)
12 presentations – 10 minutes each (7 min. presentation and 3 min. discussion)

Moderator: Aly El-Banayosy, MD (Hershey, PA)

The Berlin Heart EXCOR Pediatrics – The SickKids experience 2004-2008
Pediatric Application of the CircuLite Synergy Micro-Pump Technology
Gail G. Farnan, RN¹, Oliver Marsille, PhD¹, Wolfgang Kerkhoffs¹, Robert C. Farnan¹, Changfu Wu², Zhongjun J Wu, PhD², Bartley P Griffith, MD²
¹CircuLite, Inc., Saddler Brook, NJ and ²University of MD, Baltimore, MD.

Bridge-to-bridge-To-Transplantation in Berlin Heart Era
Michiaki Imamura, MD, PhD, Stephanie Rockett, APN, MNSc, Janet Bryant, RN, BSN, Parthak Prodhan, MD, Michael Schmitz, MD, W. Robert Morrow, MD, Elizabeth Frazier, Robert D.B. Jaquiss, MD
Arkansas Children’s Hospital, University of Arkansas for Medical Sciences, Pediatric Cardiac Surgery, Cardiology, and Cardiac Anesthesiology, Little Rock, Arkansas, USA.

Exchange Transfusion during Heart Transplantation for Children on Warfarin Therapy
Kim-Chi Tran, Osman O. Al-Radi, Osami Hongo, Jian Wang, Colleen Gruenwald, Glen S. Van Arsdell
SickKids, Toronto, Canada

Moderator: Kristine J. Guleserian, MD (Dallas, TX)

Better Outcomes with Ventricular Assist Device (VAD) vs ECMO as a Bridge to Pediatric Heart Transplantation
Anne I Dipchand MD, Cedric Manlhiot BSc, Brian W McCrindle MD, Glen Van Arsdell MD, Tilman Humpl MD
Labatt Family Heart Centre, Hospital for Sick Children, Toronto, Canada

Extracorporeal Life Support in Pediatric Patients - Outcome of a Single Centre
0Department of Pediatric Cardiology, 1Department of Cardiovascular Surgery, Heart and Diabetes Centre North-Rhine Westphalia, Ruhr-University of Bochum, Bad Oeynhausen Germany; 2Department of Thoracic and Cardiovascular surgery, 3Department of Anaesthesiology, Emergency and Intensive Care Medicine, University of Göttingen, Germany

Extracorporeal Membrane Oxygenation Following Norwood Stage 1 Procedures
Department of Cardiovascular Surgery, Okayama University Hospital, Okayama, Japan
Comparison of Two Types of ECLS Membrane Oxygenators with Pulsatile and Nonpulsatile Perfusion
Nikkole Haines, BS, Shigang Wang, MD, John L. Myers, MD, Akif Ündar, PhD
Pediatric Cardiac Research Laboratory, Departments of Pediatrics, Surgery, and Bioengineering, Penn State College of Medicine, Penn State Children’s Hospital, Hershey, Pennsylvania, USA

Moderator: Adolfo A. Leirner, MD (Sao Paulo, Brazil)

Evaluation of an Ultra-Compact Extracorporeal Membrane Oxygenation (ECMO) System for Pediatric Use in an Acute Animal Study
Teruyuki Hayashi1, MS, Eisuke Tatsumi2, MD, Nobumasa Katagiri2, MS, Toshihide Mizuno2, DVM, Toshikatsu Yagihara3, MD
1Department of Clinical Engineering, 2Department of Artificial Organs, 3Department of Cardiovascular Surgery, National Cardiovascular Center, Suita, Osaka, Japan

Application of Computer Modeling of Systemic VAD Support in Failing Fontan Physiology
Lucian A. Durham, III, MD, PhD, Harold M. Burkhart, MD, Joseph A. Dearani, MD, Frank Cetta, Jr., MD, Sabrina D. Phillips, MD, Kartik Sundareswaran, PhD, Soon J. Park, MD
Divisions of Cardiovascular Surgery and Pediatric Cardiology, The Mayo Clinic, Rochester, MN and Thoratec Corp., Pleasanton, CA. USA

Pediatric Mechanical Support with Artificial Myocardium System with Baroreflex Function
Tomoyuki Yambe, MD, Yasuyuki Shiraishi, PhD, Hidekazu Miura, PhD, Kou Imachi, PhD
Department of Medical Engineering and Cardiology, Institute of Development, Aging and Cancer, Tohoku University, Sendai, Japan

Development of a Computer-aided 3 D Bioprinting System for Bioartificial Organ
Seung Joon Song1,2, Jaesoong Choi3, Yong Doo Park1, Kyung Sun1,3
1Korea Artificial Organ Center, Korea University, Korea, 2Department of Biomedical Engineering, Brain Korea 21 Project for Biomedical Science, College of Biomedical Science, College of Medicine, Korea University, Korea, 3Department of Thoracic and Cardiovascular Surgery, College of Medicine, Korea University, Seoul, Korea

Poster Presentations - MCS-ECLS-Bioengineering
Posters will be available for viewing from 8:00am – 7:00pm

Left Ventricular Assist for Pediatric Patients with Dilated Cardiomyopathy Using Medos VAD Cannula and Centrifugal Pump
Shu-Chien Huang, MD, Nai-Hsein Chi, MD, Yih-Sharng Chen, MD, Nai-Kuan Chou, MD, Wen-Je Ko, MD, Shoel-Shen Wang, MD, PhD
Departments of Surgery, National Taiwan University Hospital, Taipei, Taiwan
Management of Deep Wound Complications with Vacuum-Assisted Therapy after Berlin Heart EXCOR® Placement in the Pediatric Population
Peter C. Kouretas, MD, PhD, Philip T. Burch, MD, Aditya K. Kaza, MD, Linda M. Lambert, MSN, CFNP, Madolin K. Witte, MD, Melanie D. Everitt, MD, Faizi A. Siddiqi, MD
Departments of Surgery, Pediatrics and Critical Care, The University of Utah, Primary Children's Medical Center, Salt Lake City, Utah.

Experience with the Levitronix CentriMag® in the Pediatric Population as a Bridge to Decision and Recovery
Peter C. Kouretas, MD, PhD, Aditya K. Kaza, MD, Philip T. Burch, MD, Stephen E. Clayson, MD, Melanie D. Everitt, MD, Craig H. Selzman, MD
Department of Surgery and Pediatrics The University of Utah, Primary Children's Medical Center, Intermountain Medical Center, Salt Lake City, Utah.

Initial Clinical Experience with the HeartMate® II Ventricular Assist System in a Pediatric Institution
'Division of Congenital Heart Surgery, Texas Children's Hospital, Houston, Texas, U.S.A. 'Michael E DeBakey Department of Surgery, Division of Congenital Heart Surgery, Baylor College of Medicine, Houston, Texas, U.S.A. 'Department of Pediatric Cardiology, Baylor College of Medicine, Houston, Texas, U.S.A.

Hemorrhagic Stroke in a Child with a Low Total Serum Cholesterol and New Support with a Berlin Heart Excor® Left Ventricular Assist Device
Wesley A. McKamie, C.C.P., Michael L. Schmitz, M.D., Charles F. Johnson, R.N., C.C.P., Michiaki Imamura, M.D., Ph.D., Robert D. B. Jaquiss, M.D.
'Arkansas Children's Hospital and bThe University of Arkansas for Medical Sciences

Orthotopic Heart Transplantation in a Child with Hereditary Spherocytosis
Charles F. Johnson, R.N., Michael L. Schmitz, M.D., Wesley A. McKamie, C.C.P., R. Erik Edens, M.D., Ph.D., Michiaki Imamura, M.D., Ph.D., Robert D.B. Jaquiss, M.D.
'Arkansas Children's Hospital, bThe University of Arkansas for Medical Sciences, College of Medicine, cUniversity of Iowa Children's Hospital

A Novel Implantable Mechanical Circulatory Support System: The Artificial Ventricle
Hisham M.F. Sherif, MD, Newark, DE, USA

Initial in Vivo Evaluation of the 'TinyPump™' for LVAD application
Mariko Kobayashi, MD, Masaharu Yoshikawa, MD, PhD, Takashi Kitao, DVM Satoshi Shoji, Shinya Machida, Hideyuki Osawa, Taisuke Ishii, Satoshi Waguri, MS, Tomohiro Konno, PhD, Kazuhiko Ishihara, PhD, Setsuo Takatani, PhD, DMed
'Department of Artificial Organs, Tokyo Medical and Dental University,
The Effect of Pumpless Extracorporeal Lung Assist in Experimental Lung Injury
Feilong Hei, MD, Yulin Tian, MD, Yongli Cui, MD, Kun Yu, MD, Cun Long, MD
Department Extracorporeal Circulation, Cardiovascular Institute and Fuwai Hospital, Chinese Academy of Medical Sciences, Peking Union Medical College, Beijing 100037, China

In vitro Thrombogenicity Evaluation of the TandemTot Pediatric Centrifugal Pump
Amber N. Loree, BS, Robert G. Svitek, PhD.
CardiacAssist, Inc. Pittsburgh, Pennsylvania, USA

Optimal Pressure Regulation of the Pneumatic VAD with Bellows-type Driver
Jung Joo Lee, PhD, Bum Soo Kim, MS, Jaesoon Choi, PhD, Hyuk Choi, PhD, Chi Bum Ahn, MS, Kyung Won Nam, PhD, Gi Seok Jeong, PhD, Choon Hak Lim, MD, PhD, Ho Sung Son, MD, PhD, Kyung Sun, MD, PhD
Korea Artificial Organ Center, Korea University, Biomedical Science of Brain Korea 21, College of Medicine, Korea University, Department of Anesthesiology and Pain Medicine, Korea University Medical College, Department of Thoracic and Cardiovascular Surgery, Korea University Medical College, Seoul, Korea

Estimation of Native Cardiac Output of Patients Under Ventricular Assist Device Support Using Frequency Analysis of Arterial Pressure Waveform
Jun Woo Park, PhD, Jaesoon Choi, PhD, Jung Joo Lee, PhD, Hyuk Choi, PhD, Byoung Goo Min, PhD, Kyung Sun, MD, PhD, MBA
1Korea Artificial Organ Center, College of Medicine, Korea University, Seoul, Korea
2Biomedical Engineering Branch, Research Institute, National Cancer Center, Gyeonggi, Korea
3Dept. of Biomedical Engineering, College of Medicine, Seoul National University, Seoul, Korea

Cuff-less and Non-invasive Estimation of Continuous Blood Pressure Based on PTT
Youngsung Kim, Jaesoon Choi, PhD, Kyung Sun, MD, PhD, MBA
Korea Artificial Organ Center, College of Medicine, Korea University, Seoul, Korea

Development of a Control Algorithm to Maintain Full-Filling State of the Blood Pump for a Bellow-type Pneumatic Ventricular Assist Device
C.B. Ahn, MS, J.J. Lee, PhD, J. Choi, PhD, and K. Sun, MD, PhD
Korea Artificial Organ Center, Department of Biomedical Engineering, Brain Korea 21 Project for Medical Science, College of Medicine, and Department of Thoracic and Cardiovascular Surgery, College of Medicine, Korea University, Seoul, Korea

Reliability Study of Extracorporeal Electro-mechanical Pneumatic Biventricular Assist Device
Eulerian Method for Numerical Prediction of Hemolysis in PediaFlow VAD
Jeongho Kim, MS1, Samuel J. Hund, MS1, Amanda Daly, MS2, Marina V. Kameneva2, PhD, James F. Antaki, PhD1
1Department of Biomedical Engineering, Carnegie Mellon University, Pittsburgh, PA, USA, 2Department of Bioengineering, Department of Surgery, University of Pittsburgh, Pittsburgh, Pennsylvania, USA

Aortic Valve Surgery in Congenital Heart Disease: A Single Centre Experience
Coskun KO, Popov AF, Tirilomis T, Schmitto JD, Ruschewski W
Department of Thoracic, Cardiac and Vascular Surgery, University of Goettingen, Germany

A Hemodynamic Evaluation of the Levitronix PediVAS Centrifugal Pump and Jostra HL-20 Roller Pump under Pulsatile and Non-Pulsatile Perfusion in an Infant CPB Model
Noel Ressler, MPH, Alan R. Rider, Allen R. Kunselman, MA, J. Scott Richardson, Kurt A. Dasse, Ph.D, Shigang Wang, MD, Akif Ündar, PhD
Pediatric Cardiac Research Laboratory, Departments of Pediatrics, Surgery, Bioengineering, and Health Evaluation Sciences, Penn State College of Medicine, Penn State Children’s Hospital, Hershey, Pennsylvania, USA
Levitronix LLC, Waltham, MA, USA

The Aachen MiniHLM – in vitro test results of the new design
Jutta Arens, Dipl.-Ing.; Heike Schnoering, MD; Michael Pfennig, Dipl.-Ing.; Ilona Mager; Jaime F. Vazquez-Jimenez, MD; Thomas Schmitz-Rode, MD; Ulrich Steinseifer, Dr. Ing.  
1Applied Medical Engineering, Helmholtz Institute, RWTH Aachen University, Germany  
2Pediatric Cardiac Surgery, Medical Faculty, RWTH Aachen University, Germany

7:30pm – 10 pm  PEDS Registrants’ Gala Dinner & Awards Recognition
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00am – 8:00am</td>
<td>PEDS Conference Registration/Speaker Ready Room Open/Breakfast</td>
</tr>
<tr>
<td>8:00am</td>
<td>Posters Placed ~ Posters will remain in place from 8am – 7pm</td>
</tr>
</tbody>
</table>
| 8:00am – 10:00am | PLENARY SESSION #2: Minimizing Adverse Effects of CPB: A Multi-Disciplinary International Approach  
Co-Chairs: J. William Gaynor, MD (Philadelphia, PA) and Shunji Sano, MD (Okayama, Japan)  
Open Heart Surgery and Cardiopulmonary Support/Bypass in the Premature Infant (15 min)  
V. Mohan Reddy, MD (Stanford, CA)  
Aortic Arch Reconstruction without Circulatory Arrest Using Moderate Hypothermia (15 min)  
Kristine J. Guleserian, MD (Dallas, TX)  
Warm Perfusion in Pediatric Cardiac Surgery: The European Experience with 8,000 Patients (15 min)  
Yves Durandy, MD (Massy, France)  
Myocardial Protection in Congenital Heart Surgery (15 min)  
Joanne P. Starr, MD (Newark, NJ)  
Pulsatile vs. Non-pulsatile Perfusion in Neonates and Infants (15 min)  
Atif Akcevin, MD (Istanbul, Turkey)  
Neuromonitoring During CPB Procedures (15 min)  
Stephen J. Kimatian, MD (Cleveland, OH)  
Valve Surgery in Congenital Heart Disease (15 min)  
Giovanni Battista Luciani, MD (Verona, Italy)  
A Dual-platform Proteomics Study of Plasma Biomarkers in Pediatric Patients Undergoing Cardiopulmonary Bypass  
Todd M. Umstead, BS (Hershey, PA) |
| 10:00am – 10:45am | Exhibits, Posters & Refreshments                                    |
10:45am – 12:00pm
Invited Lectures
Moderator: John L. Myers, MD (Hershey, PA)

Recent Advances of Brain Protection During Cardiac Surgery – From Deep Hypothermia And Circulatory Arrest to Cerebral Perfusion (20 min)
Shunji Sano, MD, PhD (Okayama, Japan)

Determinants of Neurodevelopmental Outcome for Children with Congenital Heart Defects (20 min)
J. William Gaynor, MD (Philadelphia, PA)

An Update on Tissue Engineering in Heart Valves (20 min)
Sabine H. Däbritz, MD (Germany)

12:00pm – 1:00pm
PEDS Conference Registrants Lunch

1:00pm – 3:00pm
PLENARY SESSION #3: Engineering Applications in the Pediatric Cardiac Surgery: An International Approach
Co-Chairs: Gerson Rosenberg, PhD, (Hershey, PA) and Ulrich Steinseifer, PhD (Aachen, Germany)

Penn State Hershey - International Center for Pediatric Cardiovascular Research
Akif Ündar, PhD (Hershey, PA)

Miniaturization of ECMO Systems: Engineering challenges and Methods (15 min)
Ulrich Steinseifer, PhD (Aachen, Germany)

Pediatric Assist Device Development in Brazil (15 min)
Adolfo A. Leirner, MD (San Paulo, Brazil)

Microdevices for Measuring Systemic Inflammation
Jeffrey D. Zahn, PhD (Pistacaway, NJ)

Towards Quantitative Hemodynamic Prediction in Challenging Single-ventricle Circuits: Surgical Pathway Designs, pVADs and Adult Fontans (15 min)
Kerem Pekkan, PhD (Pittsburgh, PA)

Quantitative Monitoring of Gaseous Microemboli with the EDAC(R) Quantifier (15 min)
Ted Lynch, PhD (Hampton, VA)

Optimizing the circuit design of a pulsatile ECLS in terms of EEP and SHE (15 min)
Kyung Sun, MD, PhD, MBA (Seoul, Korea)
Choon Hak Lim, MD (Seoul, Korea)
3:00pm – 3:45pm  Exhibits, Posters & Refreshments

3:45pm – 6:15pm  Regular Slide Presentations #2 – CPB and Bioengineering

Co-Chairs: Giovanni Battista Luciani, MD, (Verona, Italy), Amy Throckmorton, PhD (Richmond, VA, USA), and Elizabeth L. Carney, DVM (Hershey, PA, USA)

14 presentations – 10 minutes each (7 min. presentation and 3 min. discussion)

Moderator: Giovanni Battista Luciani, MD, (Verona, Italy)

The Benefits of High-flow Management in Children with Pulmonary Atresia with/without Major Atriopulmonary Collateral Arteries
Yasuhiro Fujii, MD, Yasuhiro Kotani, MD, Takuya Kawabata, MD, Shinya Ugaki, MD, Shigeru Sakurai, MD, Hironori Ebishima, MD, Hideshi Itoh, CCP, Mahito Nakakura, Sadahiko Arai, MD, Shingo Kasahara, MD, Shunji Sano, MD, Tatsuo Iwasaki, MD*, and Yuichiro Toda, MD***
Department of Cardiovascular Surgery and Department of Anesthesiology and Resuscitology*, Okayama University Hospital, Okayama, JAPAN

The Re-warming Index Formula for Pediatric Cardiopulmonary Perfusion
Hideshi Itoh, CCP, Shingo Kasahara, MD, Yasuhiro Fujii, MD, Yasuhiro Kotani, MD, Sadahiko Arai, MD, Shunji Sano, MD
Departments of Cardiovascular Surgery, Okayama University Hospital, Okayama, JAPAN

Segmental Differences of Impaired Diastolic Relaxation Following Cardiopulmonary Bypass Surgery in Children – A Tissue Doppler Study
Linda B. Pauliks, MD, Akif Ündar, PhD, J. Brian Clark, MD, John L. Myers, MD
Departments of Pediatrics, Surgery, and Bioengineering, Penn State College of Medicine, Penn State Children’s Hospital, Hershey, Pennsylvania, USA

Transcranial Doppler Ultrasonography: a Reliable Method of Monitoring Pulsatile Flow During Cardiopulmonary Bypass in Infants and Young Children
Ashley Rogerson, BS, Yulong Guan, MD, Stephen J Kimatian, MD, Allen Kunselman, MA, J. Brian Clark, MD, John L Myers, MD, Akif Ündar, PhD
Pediatric Cardiac Research Laboratories, Departments of Pediatrics, Surgery, Bioengineering, and Health Evaluation Sciences, Penn State College of Medicine, Penn State Children’s Hospital, Hershey, Pennsylvania, USA

Comparison of Bidirectional Glenn Procedure with and without CPB
Department of cardiopulmonary surgery, Okayama University, Okayama, Japan
Mechanical Aortic Valve Replacement in Children and Adolescents after Previous Repair of Congenital Heart Disease
Popov AF, Coskun KO, Tirilomis T, Schmitto JD, Ruschewski W
Department of Thoracic, Cardiac and Vascular Surgery, University of Goettingen, Germany

**Moderator: Amy Throckmorton, PhD (Richmond, VA, USA)**

Intravascular Mechanical Cavopulmonary Assistance for Patients with Failing Fontan Physiology
Sonya Bhavsar BS¹, Jugal Kapadia BS¹, Steven Chopski BS¹, and Amy Throckmorton PhD¹
Mechanical Engineering¹, Virginia Commonwealth University, Richmond, VA, USA

A Microfluidic Immunosensor to Monitor Systemic Inflammation During CPB
Lawrence A. Sasso¹, Akif Ündar², Jeffrey D. Zahn³
¹Department of Biomedical Engineering, Rutgers University, Piscataway, NJ
²Departments of Pediatrics, Surgery, and Bioengineering, Penn State Hershey College of Medicine, Penn State Children’s Hospital, Hershey, PA

Comparative Finite-element Model Analysis of Ascending Aortic Flow in Bicuspid and Tricuspid Aortic Valve
Francesca Viscardi, Christian Vergara¹, Luca Antiga², Sabrina Merelli², Alessandro Veneziani³, Giovanni Puppini, Giuseppe Faggian, Alessandro Mazzucco, Giovanni Battista Luciani³
Div. of Cardiac Surgery Univ. of Verona, Italy; ¹Mario Negri Institute Ranica (BG) Italy, ²Dept. of Information Technology, Univ. of Bergamo, Italy, ³Dept. of Mathematics, Emory Univ., USA

Performance Validation in Arterial Cannula Representation - A special focus on Three Pediatric Cannulae
Kimberly A. Griffith, Branka Lukic, MS, Shigang Wang, MD, William Weiss, PhD, Gerson Rosenberg, PhD, John L. Myers, MD, Akif Ündar, PhD
Pediatric Cardiac Research Laboratory, Departments of Pediatrics, Surgery, and Bioengineering, Penn State College of Medicine, Penn State Children’s Hospital, Hershey, Pennsylvania, USA

Effects of the Pulsatile Flow Settings on Pulsatile Waveforms and Hemodynamic Energy in a PediVASTM Centrifugal Pump
Shigang Wang, MD, Alan R. Rider, Allen R. Kunselman, MA, J. Scott Richardson, Kurt A. Dasse, PhD, Akif Ündar, PhD
Pediatric Cardiac Research Laboratory, Departments of Pediatrics, Surgery, and Bioengineering, Penn State College of Medicine, Penn State Children’s Hospital, Hershey, Pennsylvania, USA

**Moderator: Elizabeth L. Carney, DVM (Hershey, PA, USA)**

The Aachen MiniHLM– First Results in a Small Animal Model
Effect of the Miniaturized Cardiopulmonary Bypass System on the Inflammatory Response and Cardiac Function in Neonatal Piglets
Ko Yoshizumi¹, MD, Kozo Ishino², MD, Hironori Ebishima¹, MD, Shinya Ugaki¹, MD, Yasuhiro Kotani¹, MD, Shingo Kasahara¹, MD, Shunji Sano¹, MD
¹Department of Cardiovascular Surgery, Okayama University, Okayama, Japan
²Department of Cardiovascular Surgery, Showa University Northern Yokohama Hospital, Kanagawa, Japan

Hemodynamic Changes in a Model of Chronic Heart Failure Induced by Multiple Sequential Coronary Microembolization in Sheep
Schmitto JD¹, Coskun KO¹, Coskun ST², Ortmann P¹, Sossalla S³, Vorkamp T¹, Heidrich F¹, Popov AF¹, Heuer J⁴, Hinz J⁴, Quintel M⁴, Schöndube FA¹
¹Department of Thoracic, Cardiac and Vascular Surgery, University of Goettingen, Germany, ²Department of Cardiac Surgery, Heart and Diabetes Centre, Bad Oeynhausen, ³Department of Cardiology, University of Goettingen, ⁴Department of Anesthesiology, University of Goettingen

Poster Presentations - CPB/CFD/Bioengineering
Posters will be available for viewing from 8:00am – 7:00pm

Clinical study of artificial colloid in cardiopulmonary bypass
Jinxiao Hu, Long Cun
Department of Extracorporeal Circulation, Fuwai Hospital, CAMS & PUMC, Beijing, China

Perioperative Monitoring of TEG on Haemostatic Function for Cyanotic Infants Undergoing Complexed Cardiac Surgery
Yongli Cui¹, M.D, Cun Long¹, M.D, Zhengyi Feng¹, M.D, Ju Zhao¹, M.D, Fuxia Yan²,² M.D, Yuhong Wang², M.D, Jinping Liu¹, M.D E-mail: cuiyongli@hotmail.com¹
¹Department of Cardiopulmonary Bypass, ²Department of Anesthesiology, Cardiovascular Institute and Fuwai Hospital, CAMS and PUMS, Beijing, China

Continuous Hemodiafiltration in Children after Cardiac Surgery
Kenichi Watanabe, MD, Yasuyuki Suzuki, MD, Takeshi Goto, CE, Sanae Yamauchi, MD, Kazuyuki Daitoku, MD, Kozo Fukui, MD, Ikou Fukuda, MD
Department of Thoracic and Cardiovascular Surgery, Hirosaki University School of Medicine, Hirosaki, Aomori, Japan
Use of ECMO, surfactant, and HFOV for the management of intra-operative acute pulmonary hemorrhage post palliation of Tetralogy of Fallot with hypoplastic branch pulmonary arteries and anomalous coronary crossing RVOT
Meena Nathan MD, Meena Kalyanaraman MD, Jonathan Blank MD, Joel Hardin MD, Joanne Starr MD
Children’s Heart Center, Children’s Hospital of New Jersey, NBIMC, Newark.

Coronary Arterio-Venous Fistula: Surgical Indication in Childhood, Treatment and Results
Alkan T., Akcevin A., Türköğlu H, Paker T, Aytaç A.²
V.K.V. American Hospital, Dept. of Cardiovascular Surgery, Istanbul, TURKEY³

Left Ventricular Contractility after Cardiac Procedures in Neonatal Piglets
Theodor Tirilomis, Oliver J. Liakopoulos, Lars Nolte, K. Oguz Coskun, Aron-Frederik Popov, Friedrich A. Schoendube⁴
Department for Thoracic, Cardiac, and Vascular Surgery, University of⁴
Goettingen, Goettingen, Germany⁵

The Impact of Pump Settings on the Quality of Pulsatility
Alan R. Rider, Noel M. Ressler, MPH, Allen R. Kunselman, MA, Shigang Wang, MD, Akif Ündar, PhD
Pediatric Cardiac Research Laboratory, Departments of Pediatrics, Surgery, Bioengineering, and Health Evaluation Sciences, Penn State College of Medicine, Penn State Children’s Hospital, Hershey, Pennsylvania, USA

Comparison of Pumps and Oxygenators with Pulsatile and Nonpulsatile Modes in an Infant Cardiopulmonary Bypass Model
Nikkole Haines, BS, Shigang Wang, MD, John L. Myers, MD, Akif Ündar, PhD
Pediatric Cardiac Research Laboratory, Departments of Pediatrics, Surgery, Bioengineering, and Health Evaluation Sciences, Penn State College of Medicine, Penn State Children’s Hospital, Hershey, Pennsylvania, USA

Impact of the Post-Pump Resistance on Pressure-Flow Waveform and Hemodynamic Energy Level in a Neonatal Pulsatile Centrifugal Pump
Shigang Wang, MD, Nikkole Haines, BS, Scott Richardson, Kurt A. Dasse, Ph.D., Akif Ündar, PhD Pediatric Cardiac Research Laboratory, Departments of Pediatrics, Surgery, and Bioengineering, Penn State College of Medicine, Penn State Children’s Hospital, Hershey, Pennsylvania, USA

Endothelium NO release during cardiac surgery: comparison between continuous and pulsatile flow cardiopulmonary bypass.
G. Faggian¹, E. Lanzarone²-³, F. Gelmini⁴, A.C. De Prati⁵, M. Tessari⁶, T. Menon⁷, H. Suzuki⁶, M. Carini⁴, R. Fumero⁶, G.B. Luciani⁶, M.L. Costantino²⁰
Div. of Cardiac Surgery, Univ. of Verona¹; Dept. Structural Engineering² and Bioengineering³, Politecnico Milan; Chemical-Pharmaceutical Institute, Univ. of Milan⁶; Dept. Morphological and Biomedical Sciences, Univ. of Verona⁵; Italy.²
Challenges in International Heart Surgery: Massive Air Embolism of Unusual Origin and Requirement for Modification of Standard Algorithms and Procedural Checks

Joseph Borondy, Peter Allen, Qasim Simmons, Carmen Giacomuzzi, Victor Carcioppolo, Scott Snider, Tom Pezzella, Dan Woodward, Karl Welke, A. Marath, St. Francis Heart Hospital, Indianapolis, IN

Force Reflecting Teleoperation for a Robotized Laparoscopic Gripper System

Jaesoon Choi, PhD, Jun Woo Park, PhD, Du Jin Bach, MS, Duck Hee Lee, MS, Jung Joo Lee, PhD, Kyung Sun, MD, PhD, MBA

Korea Artificial Organ Center, College of Medicine, Korea University, Seoul, Korea Biomedical Engineering Branch, Research Institute, National Cancer Center, Gyeonggi, Korea

Hemodynamics of Sequential Coronary Bypass Grafting Configurations via Sketch-Based Surgical Planning Tool

Onur Dur, Sinan Tolga Coskun, Kasim Oguz Coskun, Levent B. Kara, Kerem Pekkan

Departments of Biomedical and Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA, Department of Thoracic Cardiovascular Surgery, University of Bochum, Bad Oeynhausen, Germany, Department of Thoracic Cardiovascular Surgery, University of Göttingen, Göttingen, Germany
Saturday, May 30

7:00am – 8:00am  Speaker Ready Room Open/ Breakfast

8:00am – 10:00am  PLENARY SESSION #4: National Heart, Lung, and Blood Institute Pediatric Grants Awardees:

Co-Chairs: Tim Baldwin, PhD, Elizabeth D. Blume MD (Boston, MA) and William Pierce, MD (Hershey, PA)

The Penn State Pediatric VAD: Five Year Development Status (15 min)
William J. Weiss, PhD (Hershey, PA)

In vivo Evaluation of the PediaFlow™ Pediatric Ventricular Assist Device
Harvey S. Borovetz, PhD (Pittsburgh, PA) (15 min)

Development progress of the Ension pediatric cardiopulmonary assist system (pCAS) (15 min)
Mark Gartner, PhD (Pittsburgh, PA)

Summary at Completion of the Jarvik 2000 NIH Pediatric Development Program (15 min)
Robert Jarvik, MD (New York, NY)

The PediPump: A Versatile, Implantable Pediatric Ventricular Assist Device—Update IV (15 min)
Brian Duncan, MD (Cleveland, OH)

Animal Models for Pediatric Circulatory Support Device Pre-Clinical Testing (15 min)
Elizabeth L. Carney, DVM (Hershey, PA)

FDA's Current Thinking on Clinical Trial Design and Patient Evaluation for Pediatric MCSDs (15 min)
Eric Chen, MS (FDA, Rockville, MD)

Discussion (15 min)

10:00am – 10:45am  Exhibits, Posters & Refreshments

10:45am – 12:45pm  Mini-Symposium: Pediatric Perfusion

Invited Lectures (Five 15-minute talks)
Co-Chairs: Tami Rosenthal, CCP, MBA (Philadelphia, PA) and Richard Gates, MD (Orange, CA)

Optimizing Venous Drainage During ECMO (15 min)
Tami Rosenthal, CCP, MBA (Philadelphia, PA)
The Use of Bivalirudin/Angiomax for Pediatric Anticoagulation in HIT patients (15 min)
Richard Gates, MD (Orange, CA)®

Clinical real-time monitoring of gaseous microemboli in pediatric cardiopulmonary bypass (15 min)
J. Brian Clark, MD (Hershey, PA)®

Pediatric Myocardial Protection and Single Dose Cardioplegia (15 min)
Richard Ginther, Jr., CCP (Dallas, TX)®

Myocardial recovery and retraining of the ventricular with ECMO after arterial switch operation (15 min)
Long Cun, MD, (Beijing, China)

Ecuador Hearts: The Penn State Hershey Medical Center Experience (15 min)
Robert Wise, CCP (Hershey, PA)®

Development of Mechanical Circulatory Support Devices in China (15 min)
Wei Wang, MD, PhD, Deming Zhu, MD, Wenxiang Ding, MD®
Shanghai Children’s Medical Center, Affiliated by Shanghai Jiaotong®
University, School of Medicine®

12:45pm Meeting Adjourns