ISMCS 2017
International Society for Mechanical Circulatory Support
24+1= 25th Anniversary Scientific Congress

Congress Title and Theme: Limitations, Controversies and Gaps in Mechanical Circulatory Support: Pathways to Solutions

D²I² = Define, Dissect, Ideate, Innovate

Sunday October 15, 2017
9 – noon   Executive Board Meeting – Rincon Room
1 PM – 5PM  General Board Meeting - Rincon Room
1 PM – 5 PM  Meeting Setup/Registration – East and West Foyer

Monday October 16, 2017
7:00 – 12:00  Congress Registration – East and West Foyer

7:30 – 12:00  Young Investigators Pre-Symposium
Chairs: K. Ammann, USA; S. Gregory, Australia; T. Kaufmann, Germany; V. Merkle, USA; T. Siess, Germany/USA, T. Tsukiya, Japan

Young Investigator Presentations:

7:30 – 7:40  OxLDL Increases Susceptibility to Shear-Mediated Platelet Activation (77)
Shirzad Shir, University of Arizona, Tucson, AZ USA

7:40 – 7:50  Elevated Shear Associated with Mechanical Circulatory Support Devices Alters Membrane Fluidity and Lipid Composition in Exposed Platelets (118)
Alice Sweedo, University of Arizona, Tucson, AZ USA

7:50 – 8:00  Shear-Mediated Platelet Activation is Associated with Increased NOX4 Expression and Reactive Oxygen Species Generation (92)
Michael Dicaro, University of Arizona, Tucson, AZ USA

8:00 – 8:10  Target-Specific Electrospinning: A Tissue Engineering Fabrication Technique for Creating Scaffolds Promoting Differential Vascular Cell Adhesion (119)
Daniel Palomares, University of Arizona, Tucson, AZ USA

8:10 – 8:20  Filling the Gap: The Relative Contribution of Proliferation vs Migration in Vascular Wound Healing (139)
Kaitlyn Ammann, University of Arizona, Tucson, AZ USA

8:20 – 8:30  Galvanotaxis: An Electroceutical Strategy for Improved Endothelialization of Cardiovascular Devices (115)
Kaitlyn Ammann, University of Arizona, Tucson, AZ USA

8:30 – 8:40  The Importance of Angle: Effect of Aorta - VAD Outflow Graft Anastomosis Angle on Platelet Activation (120)
8:40 – 8:50  In-Vitro Assessment of a Novel Polymeric Valve for Transcatheter Aortic Valve Replacement (87)
   Oren Rotman/Jawaad Sheriff, Stony Brook University, Stony Brook, NY USA

8:50 – 9:00  Platelet Activity State Assay of A Heartmate II Patient With Recurrent Thrombosis (133)
   P. Tran, University of Arizona, Tucson, AZ USA

9:00 - 9:05  Acoustic Activation of Platelets: A Mechanism of Mechanical Platelet Activation – Relevant to VADs and Sleep-Disordered Breathing? (Mini-Abs) (141)
   C. Jerman, College of Medicine, University of Arizona, Tucson, AZ USA

9:05 – 9:15  The Six-Minute Walk Test Revisited: Stretchable Electronic Wearables Yield Motion Signatures of Heart Failure Patients (135)
   M. Mazumder, University of Arizona, Tucson, AZ USA

9:15 – 9:25  3D Printing for Pre-Procedural Planning of Ventricular Assist Device Placement in Adults With Congenital Heart Disease (134)
   K. Farooqi, Columbia University, New York, NY USA

9:25 – 9:35  Development of an Open-Source Research Platform to promote International Collaboration within the International Society for Mechanical Circulatory Support (74)
   Jo Pauls, ICETLAB, University of Queensland, Brisbane, Australia

9:35 – 9:45  Break

9:45 – 10:00  Growing an Investigative and Translational Career – S. Gregory, ICETLAB, University of Queensland, Brisbane, Australia

10:00 – 10:15  Opportunities/Career Paths for Young Engineers – V. Merkle, University of Arizona, Tucson, AZ USA

10:15 – 10:30  Unmet Needs, Opportunities, and Innovation – M. Slepiian, University of Arizona, Tucson, AZ USA

10:30 – 10:45  Engineering and Medicine – Insights for Career Development from Industry and Academia: Mid-Career Perspectives – J. Barton, University of Arizona, Tucson, AZ USA

10:45 – 11:00  Academic Medicine and Research and the Clinical-Industry Interface “The Longview”– H. Eisen, Drexel University, Philadelphia, PA USA

11:00 – 11:15  A Career in Surgery, MCS, Insights for the Next generation – O. Howard “Bud” Frazier, Baylor/Texas Heart Institute, Houston, Texas USA

11:15 – 11:30  Going to the Dark Side: Pivoting from Academia to Industry – Bruce R. Rosengard, Johnson and Johnson Medical Devices, Boston, MA

11:30 – 11:45  Panel Discussion/Town Hall

11:45  Break
12:00 - 12:45 Opening Ceremony
Moderators: M. Ono (J) – President, M. Slepian (USA) – Conference Chair

Welcome – M. Ono
Conference Strategy, Tactics and Details – M. Slepian
  Limitations, Controversies and Gaps Theme
  Innovation Methodology – approach to the meeting. – the “meeting mindset”
  Writing Goal and other features
Dean’s Welcome – Charles Cairns MD– Dean, University of Arizona College of Medicine

12:45 – 1:15 KEYNOTE 1 LECTURE  Where is Advanced HF today and MCS?
Jeff Teuteberg – Stanford University, Stanford, CA USA

1:15 - 2:25 Scientific Session I
Controversy/Gap I - Advanced HF Issues /Patient selection
Moderators: A. El Banayosy (USA), S. Halleran (USA) and M. Ono (Japan)
1:15 – 1:30 Stepwise technology progression or definitive pump therapy – EP + PUMP vs PUMP?
  S. Halleran, Integris Health, Oklahoma City, OK USA
1:30 – 1:45 Technology advancement in cardiac resynchronization therapy for patients
  progressing to end-stage heart failure – P. Ryu, Abbott, Burlington, MA USA
1:45 – 2:00 Patient selection/Issue of the Less Sick Patient – INTERMACS IV-VII
  D. Horstmanshof, Integris Health, Oklahoma City, OK USA

2:00 – 2:15 HF Assessment and Scoring Systems
Moderators: A. El Banayosy (USA), M. Slepian (USA) and N. Uriel (USA)
2:00 -2:15 HF and MCS Assessment and Scoring Systems – A. El Banayosy,
  Integris Health, Oklahoma City, OK USA

Rapid Fire Abs
The Utility of Controlling Nutritional Status Score as A Prognostic Index In Patients With Left
Ventricular Assist Device (25)
Akihito Saito, University of Tokyo, Japan

  E. Rame, N. Sweitzer

2:30 – 2:45 Coffee Break/Exhibits

2:45 – 3:55 Helmut Reul Young Investigator Awards
Moderators: H. Schima (Austria) and M. Slepian (USA)
Platelet Lysis, Hemolysis, and Thrombin Generation under Ventricular Assist Device-
Associated Hypershear Conditions (85)
  Jawaad Sheriff, Stony Brook University, Stony Brook, NY USA
Normoxic But Not Hypoxic Extracorporeal Circulatory Support of The Fetus In An Artificial
Womb Allows Normal Cardiac Development (95)
  Carlo Bartoli, University of Pennsylvania, Philadelphia, PA USA
Update on Ghost Cells: From a Validated Principle to an Applicable Measurement Technique (111)
Malte Schops, Aachen University, Aachen, Germany

Coaxial Electrospun Scaffolds Seeded with Adipose-Derived Stem Cells for Cardiovascular Applications (123)
Valerie Merkle, University of Arizona, Tucson, Arizona USA

Development and In-Vivo Testing of a Novel Passive Right Heart Assist System (28)
Tim Kaufmann, Enmodes GmbH, Aachen, Germany

Microfluidic Devices For Evaluating VAD-Specific Anti-Thrombotic Drug Efficacy Under Shear (36)
Annalisa Dimasi, Politecnico di Milano, Milan, Italy

Procoagulant Surface Exposure: A Promising “Early Bird” Marker of Shear-Mediated Platelet Activation Induced by Mechanical Circulatory Support (113)
Yana Roka-Moiiia, University of Arizona, Tucson, Arizona USA

3:55 – 4:05 The Honorable Jonathan Rothschild, Mayor of Tucson
– City Welcome and Opportunities

4:05 – 4:30 KEYNOTE 2 LECTURE MCS of the Future – Biological Approaches
Doris Taylor, Texas Heart Institute, Houston, Texas USA

4:30 – 4:40 Coffee Break/Exhibits

4:40 – 5:40 Scientific Session II

Controversy/Gap Issue II - Acute Support – Intermacs I
Temp Support to VAD vs. Direct VAD? Criteria to go from Acute to Long Term VAD?
Moderators: P. LePrince (F), S. Nathan (USA), and A. Shiose (Japan) [Add B. Meyns/Aly El Banayosy]
4:40 – 4:45 Framing the Issues/Key Questions - A. El Banayosy, Integris Health, Oklahoma City, OK USA
4:45 – 5:00 Clinical Perspective I – B. Meyns, University Hospitals Leuven, Belgium
5:00 – 5:15 Clinical Perspective II – P. LePrince, H Pitié Salpêtrière, Paris, France [WEB VIDEO]
5:15 – 5:30 Engineering Response – T. Siess – Abiomed, Danvers, MA USA

5:40 – 7:00 Scientific Session III

Bleeding and Hemolysis
Moderators: A. Redaelli (Italy), M. Slepian (USA) and G. Wieselthaler (USA)
5:40 – 5:55 Bleeding – The range of mechanisms – Carlo Bartoli, University of Pennsylvania, Philadelphia, PA USA
5:55 – 6:10 Bleeding and Angiogenesis – N. Uriel, University of Chicago, Chicago, IL USA
6:10 - 6:25 Hemolysis – U. Jorde/O. Saeed, Montefiore Medical Center, New York, NY USA

6:25 – 7:00 Rapid Fire Abs

Aspirin is associated with bleeding but does not modulate platelet function in patients with continuous-flow Left Ventricular Assist Device (69)
Federico Pappalardo, Universita Vita Salute, Milan, Italy
Significance of Cerebral Microbleeds in Patients with Continuous-flow LVAD (83)
Koichi Toda, Osaka University, Sumiyoshi-Ku, Osaka, Japan

Shear-Responsive Blood Coagulation Factors Related to Inhibition of Thrombosis (91)
Osamu Maruyama, AIST, Ibaraki Japan

Intensity of Hemolysis is Associated with Ischemic Stroke during Venous Arterial Extracorporeal Membrane Oxygenation Support (40)
Omar Saeed, Montefiore Medical Center, New York, NY USA

Energy-based Hemolysis Model on a Continuous Flow Pump using Large Eddy Simulation (45)
Choon-sik Jun, Penn State College of Medicine, State College, PA USA

A New Hemolysis Prediction Model in Turbulent Blood Flow Based on Energy Dissipation around Cells (54)
Jinjing Ji, Tsinghua University, Beijing, China

Large eddy simulation and hemolysis estimation of the FDA blood pump (108)
Peng Wu, Soochow University, Suzhou City, China

Soccer Game – Scrimmage with University of Arizona Soccer – “under the lights” at William David Sitton Field at University of Arizona Campus (Bus departs at 5:15pm for players)

7:00 Mixer/Hors d’oeuvres – Bill’s Grill Patio - Loews Ventana Canyon Resort

TUESDAY October 17, 2017

7:00 – 8:00 Sunrise Mini-Symposia – Surgical Issues
Moderators: D. Bull (USA), J. Long (USA), and S. Silvestry (USA)
7:00 – 7:10 Less-invasive approaches – G. Wieselthaler, UCSF, San Francisco, CA USA
7:10 – 7:20 Robotics – Z. Khalpey, University of Arizona, Tucson, Arizona USA
7:20 – 7:30 Valve considerations – Aortic, Mitral Tricuspid – W. Dembitsky, Sharp, San Diego, CA USA
7:30 – 7:40 Alternative Vascular Access for Acute MCS – A. Kaki, Wayne State, Detroit, MI
7:40 – 7:50 Message from Surgeon to Engineers – S. Silvestry, Florida Hospital, Orlando, FL USA

8 AM – 12 noon Nursing/VAD Coordinator Symposium (K. Nelson (USA) and D. Christensen (USA)) – Parallel Session – Santa Rita Room

8:00 – 10:00 Scientific Session IV Acute/Short Term Support – Catheter vs Pumps – Efficacy/AEs
Issues: Catheters - Hemolysis, No RH support, Limited flow; Pumps - LV unloading, tubing, access
Moderators: C. Bermudez (USA), B. Meyns (Belgium) and S. Nathan (USA)
8:00 – 8:15 Catheter support –S. Nathan, University of Chicago, Chicago, IL USA
8:15 – 8:25 Engineering perspective I – comments on catheters - P. Muller – PHP, Abbott
8:25 – 8:35 Engineering perspective II – comments on catheters - T. Siess, Abiomed
8:35 – 8:50  Pumps/ECMO – C. Bermudez, University of Pennsylvania, Philadelphia, PA USA
9:00 – 9:10  Engineering Insights - Pumps – B. Sivaraman, Abbott

9:20 – 10 AM Rapid Fire abstracts

The Comparison of Bridge to Bridge Strategy Using Paracorporeal VAD with Primary Continuous-flow LVAD Implantation (14)
Daisuke Nitta, University of Tokyo, Tokyo Japan

Partial versus full cavopulmonary support for the acute failing Fontan circulation in sheep (41)
Van Puyvelde, University Hospitals Leuven, Lueven, Belgium

Development of accurate quantification method of aortic insufficiency during LVAD by thermodilution technique (53)
Daichi Akiyama, National Cerebral and Cardiovascular Center Research Institute, Osaka, Japan

Effect of discharge angle on the pump properties of a monopivot centrifugal blood pump (52)
Daiki Goto, Yokohama National University, Yokohama, Japan

Initial bench top and animal testing with the pediatric TORVAD confirms low-shear pumping and synchronization (48)
Erik Larson, Windmill Cardiovascular Systems, Inc., Austin, TX USA

9:45  MODERATED POSTER Session 1 – Ballroom A
Moderators: S. Airhart, K. Fukamachi, D. Horstmanshof, A. Sweedo

10:00 – 10:15 Coffee Break/Exhibits

10:15 – 10:45 KEYNOTE 3  Durable MCS - Methods of Propulsion/Pump Design –
R. Wampler, Oregon Health and Sciences University, Portland, OR USA

10:45 - 12:15 Scientific Session V  Engineering, Biology and Medicine of Pump Flow
Issues:  Best Propulsion Means, Stick with Continuous Flow vs Pulsatile, CF vs Centrifugal, Alternatives
Moderators:  T. Masuzawa (Japan), M. Slaughter (USA) and U. Steinseifer (Germany)
10:45 – 11:00  Consequences of continuous flow – N. Moazami, NYU, New York, NY USA
11:00 – 11:15  Hemorheology of Blood Flow — U. Steinseifer, RWTH Aachen University, Aachen, Germany
11:15 – 11:30  Hemodynamics of MCS – D. Burkhoff, Columbia University, New York, NY USA

11:30 – 12:15 Rapid Fire Abstracts

The generic, parameterized model of the left ventricle – A novel approach to simulating the flow in individual hearts (4)
Kristen Hugenroth, Aachen University, Aachen, Germany

The risk of left ventricular thrombosis with speed modulated rotary blood pump (8)
Sam Liao, The Prince Charles, Hospital, Chermside, Australia

Fluid dynamics quantification in blood-processing devices through 4D-flow MR imaging (34)
Alberto Redaelli, Politecnico di Milano, Milan, Italy

Synchronous counterpulse support preserves aortic valve flow and maintains Frank-Starling autoregulation (37)
Jeff Gohean, Windmill Cardiovascular Systems, Austin, TX USA

Automatic response of pulsatile circulatory assist using heart rate, rhythm, and differential pump pressure (49)
Richard Smalling, University of Texas Health Science Center at Houston, Houston, TX USA

A novel toroidal-flow LVAD demonstrates significantly improved hemocompatibility versus the heartmate ii: implications for the design of next-generation LVADS (94)
Carlo Bartoli, University of Pennsylvania, Philadelphia, PA USA

Low velocity areas in the left ventricle during mechanical circulatory support (102)
Phillipp Aigner, Medical University of Vienna, Vienna, Austria

12:15 – 1:15 Lunch Symposium
Part 1. HeartWare/Medtronic – “Integration of Technologies; Medtronic MCS and Cardiac Rhythm Management” - Daniel Tamez, Medtronic
Part 2. Medical Device Translation – Now and In the Future – Getting Products to Market, Bruce R. Rosengard, Johnson and Johnson Medical Devices, Boston, MA
Part 3. How Does MCS Grow ( Appropriately) with a Hesitant Cardiology Community

1:30 – 5:10 MCS Academy – “Basics and the Latest – Building and Enhancing an MCS Program” – Parallel Session – see separate sheet

1:15 – 3:00 Scientific Session VI Modeling in MCS Design – Better Systems, Pumps, and Blood
Issues: Abnormal Flows, Shear Stress loads
Moderators: D. Bluestein (USA), K. Bourque (USA), and E. Taskin (USA)
1:15 – 1:30 Virchow’s Triad, MCS and Device Thrombogenicity Emulation (DTE) – M. Slepian, University of Arizona, Tucson, AZ USA
1:30 – 1:45 DTE expanded and Multiscale Modeling – D. Bluestein, Stony Brook University, Stony Brook, NY USA
1:45 – 1:55 CFD evaluation of LVAD inflow positioning - E Taskin, Medtronic, Miami Lakes USA
1:55 - 2:10 Modeling of Oxygenators/Fiber-based Devices – A. Redaelli, Politecnico di Milano, Milan, Italy
2:25 – 2:40 Modeling and Device Regulation – T. Morrison, FDA, Silver Spring, MD USA
2:50 – 3:30 Rapid Fire Abstracts

Using Computational Fluid Dynamics to Gain Insight into Impeller Refinements that Can Reduce the Potential for Thrombus Formation (35)
Mark Goodin, SimuTech Group, Northglenn, CO USA

Development of a Validated CFD Model for Centrifugal Rotary Blood Pumps (44)
Clayton Semenzin, Prince Charles Hospital, Queensland, Australia

Evaluation of turbulent flow in a rotary blood pump with a validated, hybrid computational fluid dynamics model (63)
Jinjing Ji, Tsinghua University, Beijing, China

Static and dynamic characterization of four rotary blood pumps (67)
Stefan Boes, Group Zurich, Zurich, Switzerland

In Vivo Validation of the Device Thrombogenicity Emulation Methodology (88)
Chiu, Wei-Che, Stony Brook University, Stony Brook, NY USA

Can we predict and mitigate post-implant thrombotic risk in patients with Left Ventricular Assist Device? (70)
Federico Pappalardo, Universita Vita Salute, Milan, Italy

3:15 MODERATED POSTER Session 2 – Ballroom A
Moderators: C. Bermudez, M. Ono, D. Timms, S. Zawada

3:30 – 3:45 Coffee Break/Exhibits

3:45 – 5:00 Scientific Session VII  The Land of the RV
Moderators: W. Dembitsky (USA), B. Meyns (Belgium), M. Sherwood (USA)
3:15 – 3:30 RV Failure - Who will Get it – E. Rame, U of Pennsylvania, Philadelphia, PA USA
3:30 – 3:40 RV Failure – Where are we? M. Sherwood, Baylor-Dallas, Dallas, Texas USA
3:40 – 3:55 Look at in the mirror - Not who will get it Who will recover? – S. Silvestry, Florida Hospital, Orlando, FL USA
3:55 – 4:05 RV Failure - Acute support – N. Kapur, Tufts, Boston, MA USA
4:05 - 4:15 RV Pumps – Jim Long/Ryan Stanfield, Integris Health, Oklahoma City, OK USA

4:15 – 5:00 Scientific Session VIII  MCS Around the World
Moderator: P. LePrince (France), J. Long (USA) and C. Sivathasan (S) Add B. Meyns
4:15 – 4:25 EuroMACS/IMACS – P. LePrince, B. Meyns; P. Mohacsi – (via Video TBD)
4:25 – 4:35 MCS in Turkey – S. Küçükaksu
4:35 – 4:45 MCS SE Asia/Singapore – C. Sivathasan
4:45 – 4:55 J-MACS in Japan – M. Ono
4:55 – 5:05 MCS in India – J. Long

5:05 – 6:00 ISRBP General Assembly

6:00 – 7:00 Pre-Dinner Break
7:00 – 9:30  Gala Dinner, Program and Entertainment – Loews Kiva Ballroom
Special Dinner Speakers:
Entertainment Program – University of Arizona String Quartet; Mariachi and Native American Dance – Viva Dance Ensemble

**WEDNESDAY October 18, 2017**

7:00 – 8:00 Sunrise Session – New Pumps and Technologies
*Moderators: M. Ono (Japan), R. Smith (USA) and U. Steinsheiffer (Germany)*

Development of an Implantable Ultracompact Fully Magnetically Suspended Centrifugal Blood Pump
Frank Lin, CH Biomedical, Torrance CA USA

**CCF TAH**
Kiyotaka Fukamachi, The Cleveland Clinic Foundation, Cleveland, Ohio USA

**SynCardia 50**
SynCardia Systems, Tucson, Arizona USA

**RealHeart**
Ina Laura Pieper, Scandinavian Real Heart AB, Västerås, Sweden

**CoreWave**
Carl Botterbusch, CorWave, Paris, France

**Reinheart**
Uli Steinsheiffer, RWTH Aachen University, Aachen, Germany

**TorVad (Windmill)**
Jeff Gohean, Windmill Cardiovascular Systems, Austin, TX USA

**EvaHeart**
Tadashi Motomura, Evaheart Inc., Houston, TX USA

**BerlinHeart**
Robert Kroslowitz, Berlin Heart Inc., The Woodlands, TX USA

**Procyrion**
Jace Heuring, Procyrion, Houston, TX USA

**A novel ECC System for ECLS and ECMO applications (103)**
Oliver Marseille, Hemovent GmbH, Aachen, Germany

8:00 – 10:00  Scientific Session IX  Physiologic Control
*Moderators: T. Masuzawa (Japan), F. Moscato (Austria), and M. Slaughter (USA)*
8:00 – 8:15  Do we need them? – M. Slaughter, University of Louisville, Louisville, KY USA
8:15 – 8:25  What can we learn from the data that exists already – F. Moscato, Medical University of Vienna, Vienna, Austria
8:25 – 8:35  How to design systems – H. Schima, Medical University of Vienna, Vienna, Austria
8:35 – 8:45  New sensors – T. Siess, Abiomed, Abiomed, Danvers, MA USA
8:45 – 8:55  Potential of Dynamic H/Q for Next Generation Closed Loop Control- C. Reyes, Medtronic, Miami Lakes, USA
8:55 – 9:05  New Sensors/Monitoring – F. Pagani, University of Michigan, Ann Arbor, MI USA
9:15 – 10:00  Rapid Fire Abstracts

Development of a cannula tip with integrated volume sensor for control of continuous flow left ventricular assist devices (3)
Joshua Cysyk, Penn State College of Medicine, State College, PA

A multi-objective physiological control system for left ventricular assist devices (17)
Anastasios Petrou, Group Zurich, Zurich, Germany

Electrocardiogram-Synchronized Rotational Speed Modulation System can reduce the recirculation due to aortic insufficiency in LVAD support (19)
Kei Iizuka, National Cerebral and Cardiovascular Center Research Institute, Osaka, Japan

Going Beyond the Heart! Importance of Analyzing HVAD Logfiles for Patient Management (30)
Liviu Klein, University of California, San Francisco, CA

Numerical Comparison of Inflow Cannulation Site with a Pulsatile Rotary Blood Pump: Cardiorespiratory Effect during Rest and Exercise (58)
Eric Wu, ICETLAB, Queensland, Australia

Suction prevalence and related arrhythmia in left ventricular assist device recipients (62)
Christoph Gross, Medical University of Vienna, Vienna, Austria

Alarm Algorithms for Early Detection of Pump Thrombosis (104)
Martin Maw, University of Vienna, Vienna Austria

Evaluation of Periodic VAD-Speed changes on Intraventricular Flow Dynamics Using Numerical Simulation (121)
Moigan Ghodrati, University of Vienna, Vienna, Austria

9:45  MODERATED POSTER Session 3 – Ballroom A
Moderators: R. Avery, K. Breathett, R. Smith, P. Tran

10 – 10:15 Coffee Break/Exhibits

10:15 – 10:30  Special Lecture  Arrhythmias in Patients with LVADS: ICDs, CRTs, and All That… Alan Cheng, Medtronic, Mounds View, MN USA

10:30 – 11:00  KEYNOTE 4 Adverse Events: What do they really mean?? Establishing Standards and Developing Testing Modalities (15 min)
Robert Kormos, University of Pittsburgh, Pittsburgh, PA USA

**Moderators and Discussants (15 min):** J. Kirklin University of Alabama, Birmingham, AL USA (will also provide an Intermacs update) J. Long Integris Health, Oklahoma City, OK USA

**11:00 – 12:15 Scientific Session X Peripherals and Monitoring**

*Moderator: S. Airhart (USA), M. Ono (Japan) and H. Schima (Austria)*

11:00 – 11:15 Clinical Limitations – T. Elliott, Medstar, Washington, DC USA
11:00 – 11:15 Remote monitoring/Bluetooth – J. Sims, Medtronic, Framingham MA USA
11:15 – 11:30 Batteries and Power – E. Takeuchi, Stony Brook University, Stony Brook, NY USA
11:30 – 11:45 Web interactive systems – D. Christensen, Innovative Program Solutions, Pine Grove PA USA

11:45 – 12:15 **Rapid Fire Abstracts**

**Wireless Power System for Fully Implanted LVAD (11)**
Greg Aber, EverHeart Systems, Webster, Texas USA

**What precipitates driveline infection? (5)**
Cumara Sivathasan, National Heart Center, Singapore

**High Efficiency Fully Implanted LVAS (10)**
Greg Aber, EverHeart Systems, Webster, Texas USA

Liviu Klein, UCSF, San Francisco, CA USA

**Daily activity of patients after left ventricular assist device implantation and during hospital readmissions (61)**
Cristoph Gross, Medical University of Vienna, Vienna Austria

**12:15 – 1:15 Lunch Symposium**


**1:15 -3:00 Scientific Session XI Thrombosis, Shear and Pulsatility**

**Moderators:** D. Bluestein (USA), T. Siess (Germany/USA) and V. Turitto (USA)

1:15 – 1:30 Shear-Mediated Platelet Activation/Anti-thrombotics – Evolving Mechanisms M. Slepian, University of Arizona, Tucson, AZ USA
1:30 – 1:40 Can we build devices without shear – K. Bourque, Abbott, Burlington, MA USA
1:40 – 2:10 Can we invoke real pulsatility – J. Cysyk, Penn State, Hershey PA USA
2:25 – 3:00 **Rapid Fire Abstracts**
In vitro characterization of endothelial cell-platelet pro-thrombotic interaction mechanisms associated with left ventricular assist device therapy (68)
Alice Apostoli/Annalisa Dimasi, Politecnico di Milano, Milan, Italy

Effects of a Left Ventricular Assist Device on Endothelial Function: Comparison between LVAD models (18)
Aya Watanabe, University of Tokyo, Tokyo, Japan

Sensorless Detection of Thrombus Using Real-Time Viscosity Measurement in a Magnetically-Levitated Rotary Blood Pump (22)
Takuro Maruyama

CorWave LVAD Magnetic and Hydraulic Efficiency Study (56)
Pier Paolo Monticone, CorWave SA, Paris, France

CorWave LVAD Optical Visualization (57)
Pier Paolo Monticone, CorWave SA, Paris France

2:45 MODERATED POSTER Session 4 – Ballroom A
Moderators: S. Hankins, C. Sivathasan, U. Steinseifer, P. Tran

3:00 – 3:15 Coffee Break/Exhibits

3:15- 3:45 Scientific Session XII Myocardial Recovery, Tissue Engineering and Biomaterials
Moderators: M. Slepian (USA) and Z. Khalpey (USA)
3:15 – 3:30 Myocardial Recovery – Emma Birks, University of Louisville, Louisville, KY USA
3:30 – 3:45 Electrospinning and Microfibers – Utility for MCS systems - V. Merkle, University of Arizona, Tucson, AZ USA

Rapid Fire Abstracts
Induced Pluripotent Stem Cell Derived Cardiomyocyte Tissue Engineered Graft Improves Left Ventricular Function and Electro-Mechanical Coupling in Rats with Heart Failure (124)
Jordan Lancaster, University of Arizona, Tucson, AZ USA

Ascending aortic dimension is a useful predictor for left ventricular assist device explantation (15)
Masaki Tsuji, University of Tokyo, Tokyo, Japan

3:45 – 4:45 Scientific Session XIII The Total Artificial Heart
Moderators: F. Arabia (USA) and D. Timms (Austria)
3:45 – 4:00 Emerging Clinical Role of the TAH – F. Arabia, Cedars-Sinai, Los Angeles CA USA
4:00 – 4:15 TAH vs Bi VAD – J. Copeland, University of Arizona (Prof. Emeritus), Tucson, AZ USA
4:15 – 4:30 New TAH Designs – D. Timms, BiVACOR, Houston, Texas USA
4:30 - 4:45 Rapid Fire Abstracts

Progress in the Development of a Continuous Patient Monitor for the Cleveland Clinic Continuous Flow Total Artificial Heart (46)
Barry Kuban, Cleveland Clinic, Cleveland, OH USA
TEG Platelet Mapping (TEG PM) Guided Management of Patients with Total Artificial Heart (TAH) (112)
Oksana Volod, Cedars-Sinai, Los Angeles, CA

4:45 – 5:45  Scientific Session XIII  Pumps – Present and Future
Moderators:  J. Copeland (USA), R. Smith (USA) and T. Yamane (Japan)
Rapid Fire Abstracts
In vivo preclinical biocompatibility evaluation of CH-ventricular assist device with totally magnetic suspension rotor in a sheep model (16)
Haibo Chen, State Key Laboratory of Cardiovascular Disease, National Center for Cardiovascular Disease, Peking Union Medical College, Beijing, China

Preclinical evaluation of an extracorporeal ventricular assist device with the Hydrodynamically levitated centrifugal pump (42)
Tomonori Tsukiya, National Cerebral and Cardiovascular Research Center, Osaka, Japan

Multi-Variable Evaluation of Hydraulic Performance in a Minimally Invasive, Partial Support LVAD (43)
Peter Smith, Texas Heart Institute, University of Houston, TX USA

Development of an Implantable Ultracompact Fully Magnetically Suspended Centrifugal Blood Pump (66)
Frank Lin, CH Biomedical, Zurich, Switzerland

First Laboratory Prototype of a Seal-less Rotary Piston Blood Pump (107)
Johannes Wappenschmidt, Aachen University, Aachen Germany

5:45 – 6:15  Innovation Challenge/Hackathon “Results” Presentation

6:15 – 6:30  Closing Remarks