



ISMCS 2023

International Society for Mechanical Circulatory Support

Scientific Conference

Dallas/Fort Worth, TX, USA

October 30 – November 1, 2023

Closing the Gaps/Challenging
the *Status Quo*

MONDAY October 30, 2023

07:00 – 05:00 Conference Registration

08:00 – 07:00 Posters in the Exhibit Hall

08:30 – 11:30 Young Investigators Pre-Symposium

Chairs: Shaun Gregory (Australia), Steven Jacobs (Belgium)

Mentors: Marvin Slepian (USA), Ulrich Steinseifer (Germany), Thomas Schlöglhofer (Austria), Christopher Hayward (Australia), Carlo Bartoli (USA), Christoph Nix (Germany)

- **Round table (1):** Biocompatibility: what do (and don't) we know? What can (and cannot) be tested? How to improve it?
- **Round table (2):** Artificial Intelligence: what to expect from big data and machine learning in the MCS field?
- **Round table (3):** In silico - in vitro - in vivo: how do we foresee the future pipeline of MCS design, development, and testing? How can we improve it and make it more globally-consistent?
- **Round table (4):** Quality of life of MCS patients: how has it improved in the last decade? What do we need to progress to a "forgettable" device? How do we get there?
- **Round table (5):** Physiological control - Are we getting too complicated (is simple the answer)? What is the right balance between the controller and clinician - who does what?
- **Round table (6):** MCS2050 - If we look to the next decades, what are the biggest challenges and focus areas in this field? What does an MCS device look like in 2050, and how do we get there?

11:30 – 12:00 Coffee Break/Exhibits/Poster Session



MONDAY October 30, 2023

12:00 – 12:45 **Opening Ceremony**

Moderators: *Toru Masuzawa (Japan), Aly El Banayosy (USA), Antonio Loforte (Italy)*

12:00 – 12:10 **Welcome remarks from Conference President**

Aly El Banayosy (USA)

12:10 – 12:20 **ISMCS President**

Toru Masuzawa (Japan)

12:20 – 12:45 **INTEGRIS Health Welcome and Special Lecture**

Title: Reconstructing Health Care Recovery: Navigating the Post COVID-19 Era

Julie Watson, INTEGRIS Health CMO (USA)

12:45 – 01:50 **Scientific Session I: Durable Mechanical Circulatory Support**

Moderators: *James Long (USA), Carlo Bartoli, (USA), Joyce Wald (USA)*

12:45 – 01:05 Lessons from HM3 Trials

Nir Uriel (USA)

01:05 – 01:20 Data Driven optimal patient management: Role of Remote Monitoring

Douglas Horstmanshof (USA)

01:20 – 01:50 **Panel Session** – Durable LVADs: How to Energize the Field

Moderator: *James Long (USA), Robert Kormos (USA)*; **Panelists:** *Pascal Leprince (France), Martin Strueber (USA), Nir Uriel (USA), Douglas Horstmanshof (USA), Scott Silvestry (USA)*

Panel Session addressing the following challenges:

- Late referral
- Marketing
- Single provider
- Fully implantable systems
- Economic aspects

01:50 – 02:20 **KEYNOTE LECTURE (1)**

Title: Magnetic Levitation Technology for MCS

Toru Masuzawa (Japan)



MONDAY October 30, 2023

02:20 – 02:45 **Coffee Break/Exhibits/Poster Session**

02:45 – 03:45 **Helmut Reul Young Investigator Award Session (8 min + 2 min Q&A)**

Moderators: *Ulrich Steinseifer (Germany), Marvin Slepian (USA), Antonio Loforte (Italy)*

02:45 – 02:55 Design and Optimization of a Fontan Assist Device

Andreas Escher (Austria)

03:55 – 03:05 The Impossible Journey: From Heart Failure to Heart Function

Jake Kieserman (USA)

03:05 – 03:15 Mechanical Characterization of Anchoring Devices for Preventing
Trauma and Driveline Infection in Patients with Left Ventricular Assist
Device

Johanna Schachl (Austria)

03:15 – 03:25 Deciphering Myocardial Recovery – Proposing a Novel Index for the
Assessment of Recovery in LVAD Patients

Laurence Boss (Australia)

03:25 – 03:35 Interatrial Shunt Device vs HeartMate 3 for HFpEF Patients: An In Vitro
Study

Nina Langer (Australia)

03:35 – 03:45 Analyzing the Impact of Heart Rate and Arrhythmias on in-depth Pump
Parameters using the Novel HeartMate 3 Snoopy Technology

Theodor Abart (Austria)

03:45 – 04:15 **KEYNOTE LECTURE (2)**

Title: Medical, Legal and Societal Implications of MCS Field Consolidation

Marvin Slepian (USA)

04:15 – 04:40 **Coffee Break/Exhibits/Poster Session**



MONDAY October 30, 2023

04:40 – 05:50 **Scientific Session II: Acute Circulatory Support/Heart Failure Cardiogenic Shock**

Moderators: *Christian Bermudez (USA), Eduardo Rame (USA), Scott Silvestry (USA)*

04:40 – 04:55 Multidisciplinary, Multicenter Approach for Myocardial Recovery
Stavros Drakos (USA)

04:55 – 05:10 Myocardial Remission in Heart Failure Cardiogenic Shock: A Paradigm Shift in Management?
Roberta Bogaev-Chapman (USA)

05:10 – 05:25 Acute Circulatory Support When and What *Christian Bermudez (USA)*

05:25 – 05:40 Stepping towards recovery: best practice for weaning in Heart Failure Cardiogenic Shock Patients
Eduardo Rame (USA)

05:40 – 05:50 **Panel Discussion:** *Stavros Drakos (USA), Roberta Bogaev-Chapman (USA), Eduardo Rame (USA), Koichi Toda (Japan)*

05:50 – 06:50 **Scientific Session III: Acute Circulatory Support**

Moderators: *Minoru Ono (Japan), Vakhtang Tchantchaleishvili (USA), Christoph Nix (Germany)*

05:50 – 06:05 New engineering solutions for ECMO: How the Technology can be innovated?
Shaun Gregory (Australia)

06:05 – 06:20 Novel ECMO device in Japan *Tomohiro Nishinaka (Japan)*

06:20 – 06:35 Clinical presentation *Takashi Nishimura (Japan)*

06:35 – 06:47 Abstract Presentation: A histological analysis of the potential efficacy of bend relief modifications in reducing the risk of extrinsic graft obstructions (10 min + 2 min Q&A)
Balakrishnan Sivaraman

Soccer Game – Venue, TBD



TUESDAY October 31, 2023

07:00 – 05:00 **Conference Registration**

07:00 – 08:00 **Breakfast**

07:00 – 08:00 **Sunrise Symposium: Surgical Challenges**

Moderator: *Scott Silvestry (USA)*

07:00 – 07:10 Adoption of Aeson TAH in Europe *Pascal Leprince (France)*

07:10 – 08:00 **Panel Session – Moderator:** *Scott Silvestry (USA)*; **Panelists:** *James Long (USA), Georg Wieselthaler (USA), Dan Meyer (USA), Pascal Leprince (France), Daniel Zimpfer (Austria), Antonio Loforte (Italy), Robert Dowling (USA)*

Panel Session addressing the following challenges:

- Less invasive approach
- Tricks and tips: Pump change
- Outflow graft stenosis prevention
- 3D printer
- Valve consideration
- Surgical vs. Percutaneous RVADs

08:00 – 07:00 **Posters in the Exhibit Hall**

08:00 – 10:00 **Scientific Session IV: Acute Circulatory Support**

Moderators: *Christoph Nix (Germany), Joyce Wald (USA), Georg Wieselthaler (USA)*

08:00 – 08:15 Catheter mounted pumps; Engineering perspectives *Thorsten Siess (Germany)*

08:15 – 08:30 Short-term pumps *Steven Jacobs (Belgium)*

08:30 – 08:45 Staging of CS patients: What's still missing? *Eduardo Rame (USA)*

08:45 – 09:00 Hemodynamics in CS patients: Revisited *Joyce Wald (USA)*

09:00 – 09:15 **Panel Discussion:** *Thorsten Siess (Germany), Steven Jacobs (Belgium), Eduardo Rame (USA), Akira Shiose, (Japan), Aly El Banayosy (USA)*



TUESDAY October 31, 2023

09:15 – 10:00 Mini Orals (4 min + 2 min Q&A)

- 09:15 – 09:21 Potential use of plasma Oncostatin M (pOSM) as a predictive biomarker for the outcome of V-A ECMO support *Ahmed El Banayosy (USA)*
- 09:21 – 09:27 Single Center Experience with Impella RP Flex *Ioana Dumitru (USA)*
- 09:27 – 09:33 Single Center Experience with Second Generation Impella 5.5 as Temporary MCS *Ioana Dumitru (USA)*
- 09:33 – 09:39 Immediate Hemodynamic and Echocardiographic Changes after Impella 5.5 Support *Joyce Wald (USA)*
- 09:39 – 09:45 Research progress of an implantable continuous flow pediatric VAD with ultra-compact maglev motor *Masahiro Osa (Japan)*
- 09:45 – 09:51 Current Status of Mechanical Circulatory Support for AHF in Japan *Takashi Nishimura (Japan)*
- 09:51 – 09:57 A Promising Short-Term Mechanical Circulatory Support (MCS) Approach for Acute Heart Failure (AHF) and Cardiogenic Shock (CS): Evaluating the Efficacy and Safety of MoyoAssist® Extra-VAD System in the First Clinical Trial in China *I-fan Yen (China)*

10:00 – 10:30 Coffee Break/Exhibits/Poster Session

10:30 – 11:00 KEYNOTE LECTURE (3)

Title: Fueling Progress: Keeping the Field in Motion *James Long (USA)*

11:00 – 12:40 Scientific Session V: MCS Around the Globe

Moderators: *Minoru Ono (Japan), Carlo Bartoli (USA), Steven Jacobs (Belgium)*

11:00 – 11:10 Australia *Christopher Hayward (Australia)*

11:10 – 11:20 China *Po-Lin Hsu (China)*



TUESDAY October 31, 2023

11:20 – 11:30 Japan *Koichi Toda (Japan)*

11:30 – 11:40 Middle East (Recorded) *Riyad Al Tarazi (Kuwait)*

11:40 – 11:50 South America *Leonardo Salazar (Columbia)*

11:50 – 12:00 Turkiye *Deniz Suha Kucukaksu (Turkiye)*

12:00 – 12:10 **Panel Discussion:** *Kenji Yamazaki (Japan), Koichi Toda (Japan), Christopher Hayward (Australia), Deniz Suha Kucukaksu (Turkiye), Leonardo Salazar (Columbia), Po-Lin Hsu (China)*

12:10 – 12:40 Mini Orals (4 min + 2 min Q&A)

12:10 – 12:16 Higher plasma TGF- β 1 levels are associated with bleeding events in a subset of heart failure patients one week-post left ventricular assist device (LVAD) implantation *Ahmed El Banayosy (USA)*

12:16 – 12:22 Enhancing the implant geometry of the InvivoPower link in a transcutaneous energy transfer system for mechanical circulatory support *Bengt Bern (Sweden)*

12:22 – 12:28 Development and pre-clinical testing of a novel long-term implantable counter-pulsatile circulatory assist device: The 3R VIGOR System *Steven Tsui (UK)*

12:28 – 12:34 In-vitro haemolysis evaluation of a prototype intra-ventricular balloon pump as short-term mechanical circulatory support *Taylor Sing (Australia)*

12:34 – 12:40 Intelligent MagLev VAD with a function of self-detection of thrombus *Wataru Hijikata (Japan)*

TUESDAY October 31, 2023

12:40 – 01:40 Lunch Symposium provided by Abiomed

“Charting the Course: How Impella is hanging the direction of therapeutic strategy”

Moderator: *Scott Silvestry (USA)*

Guest Speakers: *Aasim Afzal (USA), Aly El Banayosy (USA), Koichi Toda (Japan)*

01:40 – 03:10 Scientific Session VI: Evolution of MCS

Moderators: *Kevin Bourque (USA), Jamshid Karimov (USA), Robert Dowling (USA)*

02:10 – 02:25 History and Evolution of D-MCS *Antonio Loforte (Italy)*

01:55 – 02:10 Impact of continuous-flow mechanical circulatory support on cerebrospinal fluid motility *Vakhtang Tchantchaleishvili (USA)*

01:40 – 01:55 Artificial Intelligence: Utility, benefits, and risks – a medicine and society prospective *Marvin Slepian (USA)*

02:25 – 02:40 **Panel Discussion:** *Marvin Slepian (USA), Vakhtang Tchantchaleishvili (USA), Antonio Loforte (Italy), Minoru Ono (Japan)*

02:40 – 03:10 Mini Orals (4 min + 2 min Q&A)

02:40 – 02:46 RostockTestCase – Open Access Geometry and High-Fidelity Flow Simulation Results of a Ventricular Assist Device for Numerical Validation *Benjamin Torner (Germany)*

02:46 – 02:52 A Generational Reduction in Haemolysis in a Positive-Displacement Total Artificial Heart: A Numerical Study *Joe Bornoff (UK)*

02:52 – 02:58 Hydraulic Characterization of the BiVACOR TAH during pre-clinical studies *Anna Davis (USA)*

02:58 – 03:04 Automated assessment of cardiac function by MagLev VAD with artificial intelligence *Wataru Hijikata (Japan)*

03:04 – 03:10 Design and optimization of neonatal maglev blood pump based on CFD *Xuhui Hua (China)*



TUESDAY October 31, 2023

03:10 – 03:40 **Coffee Break/Exhibits/Poster Session**

03:40 – 05:05 **Scientific Session VII: Simulation and Modelling**

Moderators: *Sebastian Jansen (Germany), Dirk Donker (Netherlands), Thomas Schlöghofer (Austria)*

03:40 – 03:55 Virtual implantations to replace animal testing

Simon Sonntag (Germany)

03:55 – 04:10 Anatomical and Functional Optimization of a Hybrid Simulator to Support Medical Device Testing

Maria Rocchi (Belgium)

04:10 – 04:25 Intra-ventricular flow fields and hemodynamics during LVAD support

Philipp Aigner (Austria)

04:25 – 04:40 Blood preservation strategies: Simulation of hematopoiesis on temporary MCS

Miriam Freundt (USA)

04:40 – 04:52 Abstract Presentation: Improved Hemocompatibility in a New Totally Magnetically Suspended VAD (10 min + 2 min Q&A)

Phillip Coghill (USA)

04:52 – 05:04 Abstract Presentation: Preclinical Studies of the Pulsatile, Adaptive-Flow CorWave LVAD (10 min + 2 min Q&A)

Trevor Snyder (France)

05:05 – 05:30 **Coffee Break/Exhibits/Poster Session**

05:30 – 06:30 **ISMCS General Assembly**

07:00 – 09:30 **Gala Dinner/Awardee Announcements**

WEDNESDAY November 1, 2023

7:00 – 8:00 Breakfast

7:00 – 8:00 Sunrise Session – Acute Circulatory Support

Moderators: *Christoph Nix (Germany), Robert Dowling (USA), Minoru Ono (Japan)*

7:00 – 7:15 Acute MCS in Cardiogenic Shock *Christoph Vandenbriele (Belgium)*

7:15 – 7:30 What is new in 2023 ISHLT adult MCS guidelines
Diyar Saeed (Germany)

7:30 – 7:45 VA ECMO: Insights from a high-fidelity cardiopulmonary simulator (Recorded)
Libera Fresiello (Netherlands)

7:45 – 7:57 Abstract Presentation: Virtual Fitting Studies of Primo-Ventricular Assist Device in Pediatric Patients (10 min + 2 min Q&A) *Chihiro Miyagi (USA)*

08:00 – 06:00 Posters in the Exhibit Hall

8:00 – 10:00 Scientific Session VIII: Emerging Concepts and Unmet Demands

Moderators: *Toru Masuzawa (Japan), Katrin Lunze (Germany), Masahiro Ono (USA)*

8:00 – 8:15 Synchronized Pulsatility *Trevor Snyder (France)*

8:15 – 8:30 Universal VAD *Jamshid Karimov (USA)*

8:30 – 8:45 Technical challenges in RBP design for low flow
Sebastian Jansen (Germany)

8:45 – 9:00 MCS devices for Diastolic Heart Failure (HFpEF)
Kiyotaka Fukamachi (USA)

9:00 – 9:15 Pediatric Maglev VAD *Masahiro Osa (Japan)*

9:15 – 10:00 Mini Orals (4min + 2min Q&A)

9:15 – 9:21 In-Silico Replacement of Single-Lumen Cannula Bench Testing According to ISO 18193:2021
Bence Rochlitz (Germany)



WEDNESDAY November 1, 2023

9:21 – 9:27 Future development of the BiVACOR Total Artificial Heart System
Daniel Timms (USA)

9:27 – 9:33 Linear Motor-Driven Four-Chamber Heart Model to Simulate the Human
Cardiovascular System *Sai Susheel Praneeth Kode (USA)*

9:33 – 9:39 Blood Trauma with The BiVACOR Total Artificial Heart May Be Non-
Inferior to The Heartmate 3 *Stephanie Buczkowski (USA)*

9:39 – 9:45 Numerical analysis of hydrodynamic thrust on a hydrodynamically
suspended impeller of BIOFLOAT centrifugal pump
Tomonori Tsukiya (Japan)

9:45 – 9:51 Design and Performance of the BiVACOR Inflow Cuffs and Outflow Grafts
David Carrillo (USA)

9:51 – 9:57 Modification of In Vitro Hemolysis Test Rig to Achieve Full Body
Circulation Testing *Shaikh Faisal Zaman (Sweden)*

10:00 – 10:30 Coffee Break/Exhibits/Poster Session

10:30 – 12:15 Scientific Session IX: Old Problems – Innovative Solutions

Moderators: *Martin Strueber (USA), Marvin Slepian (USA), Vakhtang Tchantchaleishvili (USA)*

10:30 – 10:45 Bacteriophage Therapy for Treatment of LVAD Infection
Rizwan Sohail (USA)

10:45 – 11:00 Cold Atmospheric Plasma for Driveline Infection Treatment
Thomas Schlöglhofer (Austria)

11:00 – 11:15 Hemocompatibility: New Basic Science and Translational Insights
Marvin Slepian (USA)

11:15 – 11:30 Hemocompatibility (Engineering) *Trevor Snyder (France)*

WEDNESDAY November 1, 2023

11:30 – 12:00 Mini Orals (4min + 2min Q&A)

11:30 – 11:36 Hemocompatibility of the BiVACOR Total Artificial Heart

Daniel Timms (USA)

11:36 – 11:42 Haemolytic comparison of two bearing designs for the NeoVAD using coupled 3D-0D computational fluid dynamics-lumped parameter modelling

Katharine Fraser (UK)

11:42 – 11:48 Induced interactions of red blood cells (RBCs) with leukocytes following MCS devices

Kylie Foster (USA)

11:48 – 11:54 A scaling law for haemolysis in rotary blood pumps to enable optimisation of LVAD blades for minimal blood damage

Lee Nissim (UK)

11:54 – 12:00 Flow Simulation of Ventricular Assist Devices in Interaction with Patient-Specific Cardiovascular Systems using a Dynamically Coupling Method

Benjamin Torner (Germany)

12:00 – 12:15 **Panel Discussion:** *Robert Dowling (USA), Rizwan Suhail (USA), Thomas Schlöglhofer (Austria), Trevor Snyder (France), Carlo Bartoli (USA), Miriam Freundt (USA)*

12:15 – 1:15 Lunch Break

1:15 – 1:45 KEYNOTE LECTURE (4)

Title: Xenotransplantation: Breakthroughs, Challenges, and Promising Possibilities
Bartley Griffith (USA)

1:45 – 2:45 Scientific Session X: Technology Updates

Moderators: *Antonio Loforte (Italy), Kiyotaka Fukamachi (USA), Georg Wieselthaler (USA)*

1:45 – 1:52 *SynCardia*

1:52 – 1:59 *Windmill*

1:59 – 2:06 *AdjuCor*

2:06 – 2:13 *CH Biomedical*

2:13 – 2:20 *RealHeart*

2:20 – 2:27 *Berlin Heals*

2:27 – 2:34 *Abbott*

2:34 – 2:41 *MagAssist*

