



19TH INTERNATIONAL SYMPOSIUM ON
BLOOD SUBSTITUTES
2024

TENTATIVE SCHEDULE
(subject to change v41 10/14/24)
* Session title or speaker is not confirmed

Thursday November 14, 2024			
3:00 pm - 7:00 pm Gaylord Hotel Check In, On-site ISBS Registration Desk – pick up conference badge & materials - Riverview Ballroom Foyer			
6:00 pm - 8:00 pm Welcome Reception - RiverView Ballroom Foyer			
Friday November 15, 2024			
7:30 am - 10:30 am Exhibitor Setup			
8:30 am - 9:00 am Welcome & Introductions Jonathan Jahr, MD, PhD Professor Emeritus of Anesthesiology and Perioperative Medicine, David Geffen School of Medicine at UCLA Allan Doctor, MD Professor of Pediatrics and Bioengineering, Director, Center of Blood Oxygen Transport and Hemostasis, University of Maryland; CSO, Kalocyte			
9:00 am - 10:00 am Track Introductions Oxygen Carriers Andre Palmer, PhD Professor of Chemical & Biomolecular Engineering, Ohio Eminent Scholar, The Ohio State University Plasma Shibani Pati, MD, PhD Director Center for Research in Transfusion Med and Cell Therapies Vice Chair and Professor UCSF Platelets Anirban Sen Gupta, PhD Professor of Engineering, Biomedical Engineering, Case Western Reserve University, CTO, Haima Therapeutics			
10:00 am - 10:30 am Opening Session Blood Substitute has Led to Successes in Artificial Cell Development; Is It Now Time for It's Own Success as Blood Substitutes? Session Chair — ISBS Honorary President, Thomas MS Chang, MD, PhD Emeritus Professor of Physiology, Medicine and Bioengineering McGill University Director, Artificial Cells and Organs Research Centre			
10:30 am - 10:50 am Professor Chengmin Yang Former Director of the Institute of Blood Transfusion, Peking Union Medical College, Chinese Academy of Medical Sciences Scientific Advisor of the International Society for Artificial Cell Blood Substitutes and Biotechnology Honorary President of Blood Substitute Branch of Chinese Biomedical Engineering Society (immediate past co-President ISBS 2019)			
10:50 am - 11:10 am Hiromi Sakai, PhD, Professor of Chemistry, Nara Medical University, Japan (immediate past co-President ISBS 2019)			
11:10 am - 11:25 am Break & Exhibits			
11:25 am - 12:25 pm Presidential Lecture BioSynthetic Blood Components: Use Case and Approaches to Clinical Trial Design Philip Spinella, MD Professor of Surgery and Critical Care Medicine, Co-Director, Trauma and Transfusion Medicine Research Center, University of Pittsburgh			
12:25 pm - 2:00 pm Lunch & Exhibits			
Oxygen Carriers Basic Science		Plasma Basic Science	
Hb and HBOC Biochemistry Leif Bulow, PhD Professor, Pure and Applied Biochemistry Lund University, Sweden		Biomarker Responses to Trauma and Blood Product Resuscitation Jillian Richter, PhD Associate Professor of Surgery at UAB	
Encapsulated HBOCs (Benefits and Risks) Hiromi Sakai, PhD Professor of Chemistry Nara Medical University		Regenerating the Brain and Organs in Trauma with Plasma and Plasma Derived Products Shibani Pati, MD, PhD Director Center for Research in Transfusion Med and Cell Therapies Vice Chair and Professor UCSF	
PolyHb with Novel Recombinant Human Catalase-SOD-Carbonic Anhydrase Jing Ning, MD, PhD Former Senior Biologist/Clinical Evaluator, Health Products and Drug Branch, Health Canada		Platelets-Fibrin-RBC Interactions in Hemostatic Clots Wolfgang Bergmeier, PhD Professor of Biochemistry, University of North Carolina	
Freeze Dried RBC's Brett Janis, PhD Co-Founder and Chief Executive Officer, DesiCorp Inc		The Therapeutic Potential of Plasma Extracellular Vesicles Philip Norris, MD VP Research Vitalant Research Institute/UCSF	
Cell Damage Contribution to Platelet Activation: From Inflammatory Bleeding to Thrombo-Inflammation Julie Rayes, PhD Associate Professor of Cardiovascular Sciences University of Birmingham		What Goes Around Comes Around: Blood and Modern Resuscitative Medicine Joseph Rappold, MD (CAPT Ret.) US Navy Professor of Surgery Maine Medical Center, Tufts University	
3:20 pm - 3:30 pm Moderator: Andre Palmer		3:20 pm - 3:30 pm Moderator: Shibani Pati	
3:20 pm - 3:30 pm Moderator: Cedric Ghaevert		3:20 pm - 3:30 pm Moderator: Cedric Ghaevert	
3:30 pm - 3:45 pm Break & Exhibits			
Oxygen Carriers Technical Formulation Approaches		Plasma Technical Formulation Approaches	
Platelets Technical Formulation Approaches		Platelets Technical Formulation Approaches	
Metal-Organic Framework-Based Oxygen Carriers Leticia Hosta-Rigau, PhD Associate Professor, Health, Cell and Drug Technologies, Technical University of Denmark		Challenges in Producing a Lyophilized Plasma Product Adam Gerber, MD, PhD Scientific and Medical Director, Critical Care, Octapharma	
HBOC Design Using Protein Engineering Leif Bulow, PhD Professor, Pure and Applied Biochemistry Lund University, Sweden		Strengthening Platelet Supply Resilience: Innovative Technology Solutions Shaping the Future Pampee Young, MD, PhD Chief Medical Officer, Biomedical Services American Red Cross, Nashville	
On-Demand RBCs Janice Moser, PhD Lead Biologist, Sciperio, Inc.		Regulatory Challenges for Dried Blood Components Toby Silverman, MD, MPH Former Deputy Associate Director for Medical Affairs FDA, Office of Blood Research and Review	
Pathogen Reduction for Novel Blood Product Development Alison Nair, MD Associate Professor, Pediatric Critical Care Medicine University of California, San Francisco		Apheresis Platelet Product Functional Variability Susan Shea, PhD Assistant Professor of Surgery and Bioengineering University of Pittsburgh	
Platelets from Stem Cells Cedric Ghaevert, MD PhD FRCP FRCPATH Senior Lecturer in Transfusion Medicine University of Cambridge		4:25 pm - 4:45 pm	
Bio-Tetramers from β-Subunit-Specific Azido Acyl Methyl Phosphate Cross-Linking of Hb Followed by Azide-Alkyne Coupling Deliver O₂ and Avoid NO Ronald Kluger, PhD Professor of Organic and Biological Chemistry University of Toronto		Technical Formulations of Plasma Anthony Pusateri, PhD Chief Scientist Leidos and Naval Medical Research Unit	
Characterization of Freeze-Dried Platelet Hemostatic (FPH) and Cryopreserved Platelets (CPP) Mike Fitzpatrick, PhD Chief Scientific Officer, Celphire Therapeutics, Inc		4:45 pm - 5:05 pm	
5:05 pm - 5:15 pm Moderator: Andre Palmer		5:05 pm - 5:15 pm Moderator: Shibani Pati	
5:05 pm - 5:15 pm Moderator: Anirban Sen Gupta		5:05 pm - 5:15 pm Moderator: Anirban Sen Gupta	
5:15 pm - 6:00 pm Reception - Poster Presentation & Exhibits			
6:00 pm - 7:30 pm Dinner on Own			
7:30 pm - 7:55 pm Evening Seminar: Updates on Bio-Synthetic Blood Components PEGylated Bovine Hemoglobin: Manufacturing and Characterization Shaunak Pandya, PhD Director, CMC R&D, Kashiv BioSciences LLC			
7:55 pm - 8:20 pm Recombinant Hbs with Enhanced Oxidative Stability Brandon Reeder, PhD Senior Lecturer, University of Essex			
8:20 pm - 8:45 pm Fractionated Polymerized Hbs Andre Palmer, PhD Professor of Chemical & Biomolecular Engineering, Ohio Eminent Scholar, The Ohio State University			
8:45 pm - 9:10 pm Plasma Derived Biotherapies for Critical Illness Shibani Pati, MD, PhD Director Center for Research in Transfusion Med and Cell Therapies Vice Chair and Professor UCSF			
9:10 pm - 9:35 pm Freeze Dried Plasma - State of the Science Anthony Pusateri, PhD Chief Scientist, Leidos and Naval Medical Research Unit			
9:10 pm - 9:35 pm Moderator: Allan Doctor			



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Saturday November 16, 2024			
Plenary Lectures			
8:00 am - 8:40 am	Multifunctional Bio-Synthetic Resuscitation Fluids Alan Doctor, MD Professor of Pediatrics and Bioengineering, Director, Center of Blood Oxygen Transport and Hemostasis, University of Maryland, CSO, KaloCyte		
8:40 am - 9:20 am	Overview of HBOC Toxic Effects and Some Molecular Control Solutions Abdu I Alayash, PhD, DSc Chief, Laboratory of Biochemistry and Vascular Biology, OBRR, FDA/CBER		
9:20 am - 10:00 am	Personalized Assessment of Hemostatic Deficits to Guide Precision Transfusion Mitchell Cohen, MD Professor and Associate Vice Chair of Basic and Translational Research, University of Colorado Moderator: Jonathan Jahr		
Break & Exhibits			
10:00 am - 10:15 am	Oral Abstracts Artificial Oxygen Carriers/ HBOC		Oral Abstracts Plasma, Hemostasis, Transfusion Medicine
10:15 am - 12:15 pm	• (Selected) Oral Abstracts		• (Selected) Oral Abstracts
	Moderators: Janice Moser and Stephen Rogers		Moderators: Cedric Ghevaert and Alison Nair
Lunch & Exhibits			
12:15 pm - 1:45 pm	Oxygen Carriers Translational Science	Plasma Translational Science	Platelets Translational Science
1:45 pm - 2:05 pm	Microvascular Response to HBOCs Pedro Cabrales, PhD Professor of Bioengineering University of California, San Diego	Prothrombin Complex Concentrate as a Therapeutic in Trauma Martin A. Schreiber, MD FACS FCCM COL, MC, USA Adjunct Professor of Surgery Uniformed Services University of the Health Sciences	SynthoPlate-Platelet Inspired Design and Evaluation Christa Pawlowski, PhD Co-Founder, Chief Operating Officer Halma Therapeutics
2:05 pm - 2:25 pm	Safety Biomarkers for Exploratory Toxicology Studies Felice D'Agnillo, PhD Principal Investigator, Office of Blood Research & Review (OBRR), Center for Biologics Evaluation and Research (CBER)	Regenerative Properties of Plasma in Burns Jeff Schupp, MD Professor of Surgery, Plastic Surgery, Biochemistry, Cellular & Molecular Biology, Georgetown University	Platelet Mimicry for Biomechanical Function Ashley Brown, PhD Associate Professor of Biomedical Engineering, NC State/UNC Chapel Hill, Co-founder, Selslym Biotech
2:25 pm - 2:45 pm	Animal Models for Preclinical HBOC Down Selection Paul Buehler, PharmD, PhD Professor of Pathology & Pediatrics, Principle Investigator, Center for Blood Oxygen Transport and Hemostasis University of Maryland	Plasma Derived Pathogen Reduced Cryoprecipitate in Trauma Rosemary Kozar, MD, PhD Professor of Surgery, Co-Director, Surgery, Trauma and Anesthesiology Research Center, University of Maryland	Genetic Modification of Transfusable Donor Platelets using mRNA Therapy Mitch Dyer, MD Principal Investigator Versiti / Medical College of Wisconsin
2:45 pm - 3:05 pm	Innovative Pre-Clinical Models to Prepare Products for FDA Review Bjorn Song, PhD CEO, Song Biotechnologies	Whole Blood vs Components Martin A. Schreiber, MD FACS FCCM COL, MC, USA Adjunct Professor of Surgery Uniformed Services University of the Health Sciences	Regenerating the Injured Brain with Platelet-Derived Biologics Shibani Pati, MD, PhD Director Center for Research in Transfusion Med and Cell Therapies Vice Chair and Professor UCSF
3:05 pm - 3:15 pm	Moderator: Paul Buehler	Moderator: Jeff Schupp	Moderator: Julie Rayes
Break & Exhibits			
3:15 pm - 3:30 pm	Oxygen Carriers Potency	Plasma Potency	Platelets Potency
3:30 pm - 3:50 pm	In Vitro Models of HBOC Potency Stephen Rogers, PhD Assistant Professor of Pediatrics, Center for Blood Oxygen Transport and Hemostasis, University of Maryland	Regulatory Aspects of Developing Novel Plasma and Platelets Products: Thoughts on Potency Measures Tody Silverman, MD, MPH Former Deputy Associate Director for Medical Affairs FDA Office of Blood Research and Review	Detecting Platelet Heterogeneity John Hua, MD, PhD Professor of Cardiovascular Medicine Co-Director Yale Cooperative Center of Excellence in Hematology, CT
3:50 pm - 4:10 pm	HBOC Impact Upon Vasoactive Effectors, Rheology and Blood Flow Dany Kim-Shapiro, PhD Professor and Chairman, Department of Physics, Wake Forest University	Measuring Dynamic Changes in Fibrinolysis During Blood Product Resuscitation Hunter Moore, MD Transplant Surgeon AdventHealth Transplantant Institution at Porter Hospital, Denver	Trauma-Induced Platelet Dysfunction Paul Villalmy, MD Senior Clinical Lecturer Trauma Sciences, Bizard Institute, Queen Mary University of London
4:10 pm - 4:30 pm	Blinded, Randomized, Controlled Trials of HEMOPURE Jerrold Levy, MD Professor of Anesthesiology and Critical Care Professor of Surgery (Cardiothoracic) Duke University School of Medicine Vice Chair, Scientific Subcommittees of the ISTH		Platelets in TBI: Fact, Fiction, and Function Michael Goodman, MD Professor of Surgery, University of Cincinnati
4:30 pm - 4:50 pm	Expanded Access when Blood Not an Option: Use of Hemopure and Sanguinate Jonathan Waters, MD Professor of Anesthesiology and Perioperative Medicine and Bioengineering, Director of Blood Management Program, University of Pittsburgh Medical Center	Plasma versus Factor Concentrates Beth Shaz, MD Professor and Deputy Director of Marcus Center for Cellular Cures Duke University	Cold Stored Platelets: Clinical Efficacy and Safety Phil Spinella, MD Professor of Surgery and Critical Care Medicine, Co-Director, Trauma and Transfusion Medicine Research Center, University of Pittsburgh
4:35 pm - 5:00 pm	Moderator: Stephen Rogers	Moderator: Rosemary Kozar	Moderator: Susan Shea
5:00 pm - 6:15 pm	Reception - Poster Presentation & Exhibits		
6:15 pm - 7:30 pm	Dinner on Own		
Evening Seminar: Novel Engineering for Bio / Synthetic Blood Components			
7:30 pm - 7:55 pm	Perfluorocarbon-based Artificial Oxygen Carriers for Ex Vivo Organ Perfusion Katja Bettina Ferenz, PhD Professor of Physiology, University Duisburg-Essen		
7:55 pm - 8:20 pm	Non-hemoglobin Engineered Protein Oxygen Carriers Emin Maltepe, MD Professor Department of Pediatrics and Neonatology UCSF		
8:20 pm - 8:45 pm	Biochemically Encoded Wetware for Context Responsive Oxygen Carriers Alan Doctor, MD Professor of Pediatrics and Bioengineering, Director, Center of Blood Oxygen Transport and Hemostasis, University of Maryland, CSO, KaloCyte		
8:45 pm - 9:05 pm	Polymerized Albumin to Stabilize Colloid Oncotic Pressure and Functional Capillary Density During Resuscitation Andre Palmer, PhD Professor of Chemical & Biomolecular Engineering, Ohio Eminent Scholar, The Ohio State University		
9:05 pm - 9:30 pm	Functionalizing Platelet Mimetics for Targeted Activities Anirban Sen Gupta, PhD Professor of Engineering, Biomedical Engineering, Case Western Reserve University, CTO, Halma Therapeutics Moderator: Leif Bulow		



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Sunday November 17, 2024			
7:45 am - 8:45 am	Sunrise Seminar: Octapharma Industry Spotlight		
	Plenary Lecture		
9:00 am - 9:40 am	Microcirculatory Physiology of Bio-Synthetic Blood Components Pedro Cabrales, PhD Professor of Bioengineering, University of California, San Diego		
9:40 am - 10:00 am	Microcirculation Forum Panelists: Bjorn Song, Felice D'Agnillo, Brandon Reeder, Ashley Brown, Michael Goodman Moderator: Allan Doctor		
10:00 am - 10:15 am	Break & Exhibits		
10:15 am - 12:30 pm	Oxygen Carriers Cardiac Effects & Solutions	Oral Abstracts Plasma, Hemostasis, Transfusion Medicine	
10:15 am - 10:40 pm	There Are Different Types of HBOCs, Some Have No Adverse Cardiac Effects Thomas MS Chang, MD, PhD Emeritus Professor of Physiology, Medicine and Bioengineering Director, Artificial Cells and Organs Research Centre, McGill University	• (Selected) Oral Abstracts	
10:40 am - 11:05 pm	Hemoglobin Based Oxygen Carriers, Oxidative Stress & Myocardial Infarction Tim Estep, PhD President, Chart Biotech Consulting LLC, Former VP Hemoglobin Therapeutics, Baxter		
11:05 am - 11:30 pm	Cardiac Safety and Troponin Findings in a Phase 2b Trial with MP4OX for Treatment of Severe Hemorrhagic Shock Peter Keipert, PhD President, KEIPERT Corp. Consulting, Formerly VP Clinical Development, Sangart		
11:30 am - 11:55 pm	Cardiac Responses to Polymerized Hemoglobin in Guinea Pigs Felice D'Agnillo, PhD Principal Investigator, Office of Blood Research & Review (OBR), Center for Biologics Evaluation and Research (CBER)		
11:55 am - 12:30 pm	Panel Discussion Felice D'Agnillo, Abdu Ayalash, Paul Buehler, Toby Silverman, Jonathan Jahr, Palmer, Allan Doctor		
	Moderators: Thomas Chang, Tim Estep	Moderators: Anirban Sen Gupta	
12:30 pm - 1:30 pm	Lunch On Own (Exhibit Tear-down)		
	Bio-Synthetic Blood Components in Active Human Trials		
1:30 pm - 1:45 pm	Framing: Lessons Learned and Future Directions Jonathan Jahr, MD, PhD Professor Emeritus of Anesthesiology and Perioperative Medicine, David Geffen School of Medicine at UCLA		
1:45 pm - 2:10 pm	HbV Hiromi Sakai, PhD Professor of Chemistry, Nara Medical University, Japan		
2:10 pm - 2:35 pm	Dry Plasma Jose Cancellas, MD, PhD Member of the Faculty of Medicine, Harvard Medical School, Director Cell Manufacturing, Dana Farber Cancer Institute		
2:35 pm - 3:00 pm	Sanguinate Clinical Trials Ron Jubin, PhD Vice President R&D, Prolong Pharmaceuticals		
3:00 pm - 3:25 pm	Plasma Derived Products (Lyophilized: PCCs, Cryo, Fibrinogen) Joseph Rappold, MD Professor of Surgery, Maine Medical Center / Tufts University		
3:20 pm - 3:45 pm	Thrombosomes Mike Fitzpatrick, PhD Chief Scientific Officer, Cellphire Therapeutics, Inc. Moderators: Toby Silverman and Phil Spinella		
3:45 pm - 4:00 pm	Break & Exhibits		
	Oral Abstracts Artificial Oxygen Carriers/HBOC	Oxygen Carriers Ex Vivo Organ Support	Hemostatic Therapeutics Clinical Efficacy
4:00 pm - 4:30 pm	• (Selected) Oral Abstracts	Hemarina For Organ Preservation Franck Zal, PhD CEO, Hemarina	Cold Stored Platelet Post-Injury: Results of Two Recent Randomized Clinical Trials Jason Sperry, MD, MPH Professor of Surgery and Critical Care, University of Pittsburgh
4:30 pm - 5:00 pm		High Molecular Weight PolyHb For Lung Perfusion Bryan Whitson, MD, PhD Professor of Surgery, Ohio State University	Plasma and Plasma Derived Products in Liver Transplantation Seth Karp, MD Professor and Chair, Department of Surgery, Vanderbilt University
5:00 pm - 5:30 pm		PFCs For Kidney and Heart Perfusion Katja Bettina Ferenz, PhD Professor of Physiology, University Duisburg-Essen	Treatment of Coagulopathy with Canine Freeze-Dried Plasma (cFDP) Robert Buntz Research & Veterinary Medicine, Martel Technologies
5:30 pm - 6:00 pm		HBOCs: Ex Vivo, In Vivo, or Both? Rick Light, PhD Chief Scientific Officer, ViTech Bio	Prehospital Plasma and Whole Blood for Trauma Jason Sperry, MD, MPH Professor of Surgery and Critical Care, University of Pittsburgh
6:00 pm - 6:30 pm		Panel Discussion Franck Zal, Bryan Whitson, Katja Ferenz Moderators: Andre Palmer and Dany Kim Shapiro	Panel Discussion Seth Karp, Jason Sperry, Robert Buntz, Phil Spinella Moderator: Martin Schreiber
6:30 pm - 7:00 pm	Reception		
7:00 pm - 9:30 pm	Banquet Dinner & Award Ceremony (Introduction of ISBS 2026 Presidents)		
Monday November 18, 2024			
	Select Oral Presentations		
7:30 am - 9:30 am	Session Chairs Jonathan Jahr, MD, PhD Allan Doctor, MD Andre Palmer, PhD Shibanu Pati, MD, PhD Anirban Sen Gupta, PhD		
9:30 am - 9:45 am	Break		
9:45 am - 10:45 am	Federal Sponsorship of Biosynthetic Blood Product Development ASPR/BARDA: John Esker, PhD NIH/NHLBI: Andrei Kindzelski, MD, PhD MTEC: Lauren Palestini, PhD USAMMDA: Kendra L Lawrence, PhD, BCE, PMP DARPA: JP Chretien, MD, PhD DoD/CDC: CAPT Travis Polk, MD		
10:45 am - 11:45 am	Government Stakeholder Forum NIH, NSF, DOD/DARPA, BARDA, USAMMDA, MTEC Moderator: Ken Bertram		
11:45 am - 12:15 pm	Break		
12:15 pm - 1:00 pm	Regulatory Update (FDA/CBER) Victor Baum, MD Lead Physician, Division of Blood Components and Devices, Office of Blood Research and Review (OBR), CBER, FDA		
1:00 pm - 1:45 pm	Regulatory Forum Panelists: Toby Silverman, Abdu Alayash, Franck Zal, Paul Buehler, Adam Gerber, Felice D'Agnillo, Victor Baum Moderator: Jonathan Jahr		
1:45 pm - 2:00 pm	Closing Remarks: Allan Doctor and Jonathan Jahr		