Course Description

The 5th Annual UC San Diego Essentials and Advances in Apheresis will build on the great success of the first four conferences. The 2½-day multidisciplinary program is designed to appeal to first time attendees and to returning participants. Expert reviews of the essentials will be augmented with selected new topics and discussions of advances and innovations.

• Nationally and internationally recognized leaders will present didactic sessions and conduct interactive discussions.
• Fundamentals will include in-depth reviews of basic principles, procedures, prescribing, clinical management and care of special populations.
• Updates on selected disease indications will be supplemented by case studies and new clinical science.
• Symposia will review plasma exchange, cell apheresis modalities, technology innovations, billing practices and program management.
• The popular concurrent sessions on Frontiers in Apheresis Science and Expertise in Apheresis Practice will continue with updated topics.
• Breakfast with the Experts is offered for two days. Each session will focus on a different area of interest and will provide opportunities to answer specific questions and detailed discussions.
• Participants will be offered hands-on workshops, led by experienced practitioners, with small-group demonstrations of various techniques and machines used in therapeutic apheresis.
• New this year, there will be an expert panel discussion on selected challenging cases submitted by attendees.

Target Audience

The target audience for this initiative includes physicians and allied health professionals interested in therapeutic apheresis, including both established practitioners and those embarking on a new apheresis service. The content is aimed at nephrologists, hematologists, clinical pathologists, blood bankers and nurses.

Overall Program Objectives

After completing the didactic sessions, participants should be able to:

• Define the spectrum of therapeutic apheresis modalities and equipment.
• Review current clinical indications for therapeutic plasmapheresis, photopheresis and other cytapheresis procedures, per ASFA guidelines.
• Discuss options for vascular access, anticoagulation, and prescription for the various apheresis techniques and their associated complications.
• Describe the differences between centrifugal and membrane plasma separation and the use of selective secondary plasma processing.
• Identify the use of apheresis in pediatrics, pregnancy, and emerging indications.
• Discuss apheresis program management issues, including reimbursement.
• Recognize recent developments and the future of apheresis medicine.

Workshop Learning Objectives

For each workshop session completed, the participant should be able to:

• Distinguish the apheresis modalities that can be performed by different types of apheresis equipment, such as centrifugal machines, membrane separators, secondary plasma purification, and cell processing systems.
• Describe the blood pathway configuration of each machine studied and the operator-controlled adjustments that are typically needed.
• Discuss the typical blood flow rate, anticoagulation and vascular access requirements of each machine studied.
**Needs Assessment**

Apheresis is the process where whole blood is removed from a patient and dispensed into an instrument that is able to separate blood components. The goal behind this particular therapy is to remove the components of the blood associated with disease while retaining the remaining components back to the patient. This may or may not include replacing the removed component (Sanford & Balogun, 2011; Shelat, 2010). Conventional apheresis procedures utilize centrifugation and membrane filtration. Plasmapheresis is considered a manual method and is still used in pediatrics but not otherwise; currently, therapeutic plasmapheresis and therapeutic plasma exchange (TPE) are fully performed using machines. If replacement factor is utilized, fresh frozen plasma (FFP), 5% albumin or colloidal solution, or one’s own plasma following purification are the factors of choice (Ward, 2011).

Patients who are critically ill with autoimmune diseases are often selected for therapeutic apheresis. According to Shelat (2010), the American Society for Apheresis has categorized the indications for therapeutic apheresis into 4 categories according to illness and its supposed risk: benefit ratio. The benefits of apheresis include the “ability to rapidly, safely and isovolemically reduce the concentration of a pathologic factor or a component of blood” (Shelat, 2010, p. 778), while the risk of adverse events occurring from apheresis are less than 5%. According to Mokrzycki and Balogun (2011), there are four specific factors that can impact the occurrence of adverse events: anticoagulation type, replacement fluid type and volume, vascular access type, and the underlying disease state. Replacement factors may adversely affect certain patients, especially if FFP is used; thus, while TPE can be highly effective in reducing disease-causing factor in the plasma (Mokrzycki & Balogun, 2011), it is imperative that clinicians utilizing this type of therapy be highly trained and educated on possible side effects and when best to utilize this procedure. Although apheresis therapies are now an established and important part of treatment for many serious illnesses, utilization of apheresis is often delayed or not offered to many patients who would benefit. Thus, providing continued medical education in the form of an activity such as this will be useful for practicing clinicians to ensure they understand when to incorporate apheresis into treatment programs and how to manage any potential adverse effects.

**References**


**Accreditation Statement**

The University of California, San Diego School of Medicine is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

**AMA:** The University of California, San Diego School of Medicine designates this live activity for a maximum of **19.25 AMA PRA Category 1 Credits™**. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Please note the maximum number of credits available for participation in the following session(s):

- General Session (Thursday, Friday, Saturday): A maximum of **17.75 AMA PRA Category 1 Credits™** available.
- Breakfast with the Experts (Friday) and General Session (Thursday, Friday, Saturday): A maximum of **18.5 AMA PRA Category 1 Credits™** available.
- Breakfast with the Experts (Saturday) and General Session (Thursday, Friday, Saturday): A maximum of **18.5 AMA PRA Category 1 Credits™** available.
- Breakfast with the Experts (Friday & Saturday) and General Session (Thursday, Friday, Saturday): A maximum of **19.25 AMA PRA Category 1 Credits™** available.

**AAPA:** AAPA accepts certificates of participation for educational activities certified for **AMA PRA Category 1 Credit™** from organizations accredited by ACCME or a recognized state medical society. Physician assistants may receive a maximum of **19.25** hours of Category 1 credit for completing this program.

**Nurses:** For the purpose of recertification, the American Nurses Credentialing Center accepts **AMA PRA Category 1 Credits™** issued by organizations accredited by the ACCME. For the purpose of relicensure, the California Board of Registered Nursing accepts **AMA PRA Category 1 Credits™** (report up to **19.25** hours of credit and list CME Category 1" as the provider number).

**Cultural and Linguistic Competency:** This activity is in compliance with California Assembly Bill 1 195 which requires continuing medical education activities with patient care components to include curriculum in the subjects of cultural and linguistic competency. Cultural competency is defined as a set of integrated attitudes, knowledge, and skills that enables health care professionals or organizations to care effectively for patients from diverse cultures, groups, and communities. Linguistic competency is defined as the ability of a physician or surgeon to provide patients who do not speak English or who have limited ability to speak English, direct communication in the patient’s primary language. Cultural and linguistic competency was incorporated into the planning of this activity. Additional resources can be found on the [UC San Diego CME website](#).
FACULTY LIST

Course Organizing Committee

David M. Ward, MD, FRCP, HP (ASCP)
Professor, Department of Medicine
Medical Director, Apheresis Program
Associate Medical Director, Kidney Transplantation
University of California, San Diego

Amber P. Sanchez, MD
Associate Professor
Department of Medicine
Associate Medical Director, Apheresis Program
University of California, San Diego

Eileen Lischer, MA, BSN, RN, CNN
Administrative Nurse Manager IV, Apheresis Program
University of California, San Diego

Isagani I. Marquez, Jr., RN, MSN
Administrative Nurse Manager II, Apheresis Program
University of California, San Diego

UC San Diego Faculty

Lousany Abero, BSN, RN*
Clinical Nurse, Apheresis Program

Sherlita Aguilar, BSN, RN, ONC, QIA*
Clinical Nurse
Apheresis Program

Linda Awdishu, PharmD, MAS
Associate Professor
Skaggs School of Pharmacy and Pharmaceutical Sciences

Richard Bandejas, BSN, RN*
Clinical Nurse, Apheresis Program

Nadine M. Benador, MD
Professor, Department of Pediatrics
Medical Director, Pediatric Dialysis and Apheresis
UC San Diego and Rady Children’s Hospital, San Diego

Janel Cisneros, LVN
Patient, University of California, San Diego

Robyn Cunard, MD
Associate Professor, Department of Medicine
Division of Nephrology and Hypertension

Andrew Gayap, RN*
Clinical Nurse, Apheresis Program

Su Han, BSN*
Clinical Nurse, Apheresis Program

Andrew D. Hull, MD, FRCPG, FACOG
Professor, Department of Reproductive Medicine
Director, Maternal-Fetal Medicine Fellowship
Director, UC San Diego Center for Maternal-Fetal Care and Genetics

Dan S. Kaufman, MD, PhD
Professor, Division of Regenerative Medicine
Department of Medicine
Director, Cell Therapy Program

Anita Ihasz-Davis*
Apheresis Program Coordinator

Joachim H. Ix, MD, MAS, FASN
Professor of Medicine
Chief, Division of Nephrology

Patricia Kopko, MD
Professor, Department of Pathology
Director, Transfusion Medicine
Associate Director, Immunogenetics and Transplantation Laboratory

Jerel Malong, RN*
Clinical Nurse, Apheresis Program

Robert K. Naviaux, MD, PhD
Professor, Departments of Medicine, Pediatrics, and Pathology
Co-Director, The Mitochondrial and Metabolic Disease Center (MMDC)

Mita M. Shah, MD
Associate Professor, Department of Medicine
Division of Nephrology and Hypertension

Grace Testerman, RN*
Clinical Nurse, Apheresis Program

Thuan Tran, BSN, RN, CNN*
Clinical Nurse, Apheresis Program

Yun Yang, RN*
Clinical Nurse, Apheresis Program
Visiting Faculty

Jill Adamski, MD, PhD
Associate Professor
Department of Laboratory Medicine and Pathology
Transfusion Medicine
Mayo Clinic Hospital
Phoenix, Arizona

Christina Anderson, RN, BSN, HP (ASCP)
Associate Director, bluebird bio
Cambridge, Massachusetts

Rasheed A. Balogun, MBBS, FACP, FASN, HP (ASCP)
Professor of Medicine
Medical Director, Renal Unit and Extracorporeal Therapies (Apheresis) Program
Division of Nephrology
University of Virginia
Charlottesville, Virginia

Keith Berman, MPH, MBA
Health Industry Consultant
Health Research Associates
Altadena, California

Larry Cowgill, DVM, PhD
Professor, Department of Medicine and Epidemiology
University of California, Davis School of Veterinary Medicine
Associate Dean, Southern California Clinical Programs
Director, University of California Veterinary Medical Center-San Diego
Davis, California

Jan C. Hofmann, MD, MPH, MSc
Associate Medical Director
Apheresis Services, FMC-NA
Department of Medicine
California Pacific Medical Center
Co-Director
Apheresis Education
BCP-UCSF Transfusion Medicine Program
UCSF School of Medicine
San Francisco, California

Judy Kauffman, DNP(c), MSN, RN, CNN
Manager
Acute Renal/Apheresis
University of Virginia Medical Center
Charlottesville, Virginia

Marcelo Matiello, MD
Clinical Fellow in Neurology
Massachusetts General Hospital
Boston, Massachusetts

Steffen Mitzner, MD
Professor and Chairman
Division of Nephrology
Department of Medicine
Universitätsmedizin Rostock
Rostock, Germany

Lindsay Palomo, RN, BSN, HP
Nurse Manager, Apheresis
Seattle Cancer Care Alliance
Seattle, Washington

Jeffrey Rosenfeld, MD, PhD, FAAN
Professor and Associate Chairman
Department of Neurology
Director, Neuromuscular ALS/MND Program
Director, The Center for Restorative Neurology
Loma Linda University School of Medicine
Loma Linda, California

Sheri Ross, DVM, PhD, Dipl. ACVIM
University of California, Davis School of Veterinary Medicine
Davis, California

Bruce Sachais, MD, PhD
Executive Medical Director
New York Blood Center (NYBC)
Head
Laboratory of Platelet Research Laboratory
Associate Member
Lindsley F. Kimball Research Institute
New York, New York

Geoffrey L. Sheean, MBBS, MD
Adjunct Professor
Department of Neurosciences
UC San Diego
Consultant Neurologist, Scripps Health
San Diego, California

Ravi I. Thadhani, MD, MPH
Professor of Medicine
Harvard Medical School
Chief
Division of Nephrology
Massachusetts General Hospital
Boston, Massachusetts

*These individuals will be leading the workshops and/or Breakfast with the Expert session and will not be presenting during the general didactic sessions.
DISCLOSURE SUMMARY

5th Annual UC San Diego Essentials & Advances in Apheresis Therapies
February 23-25, 2017

It is the policy of the University of California, San Diego School of Medicine to ensure balance, independence, objectivity and scientific rigor. All persons involved in the selection, development and presentation of content are required to disclose any real or apparent conflicts of interest. All conflicts of interest will be resolved prior to an educational activity being delivered to learners through one of the following mechanisms 1) altering the financial relationship with the commercial interest, 2) altering the individual’s control over CME content about the products or services of the commercial interest, and/or 3) validating the activity content through independent peer review. All persons are also required to disclose any discussions of off label/unapproved uses of drugs or devices. Persons who refuse or fail to disclose are disqualified from participating in the CME activity. Participants will be asked to evaluate whether the speaker’s outside interests reflect a possible bias in the planning or presentation of the activity. This information is used to plan future activities.

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<th>Nature of Relevant Relationship</th>
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<td>Kaneka Pharma America TerumoBCT</td>
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<td>Consultant / Research Funding</td>
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<td>Isagani Marquez</td>
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<td>Ravi Thadhani</td>
<td>Aggamin LLC Kaneka LLC Roche Diagnostics ThermoFisher</td>
<td>Scientific Advisor Grant Recipient Consultant Consultant Patents in Diagnostics for Preeclampsia</td>
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<tr>
<td>David Ward</td>
<td>Aethlon Medical Inc. Alexion Pharmaceuticals Fresenius-Kabi TerumoBCT Therakos (Mallinckrodt)</td>
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- Jill Adamski
- Sherlita Aguilar
- Christina Anderson
- Linda Awdishu
- Rasheed Balogun
- Richard Bandejas
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- Larry Cowgill
- Robyn Cunard
- Andrew Gayap
- Su Han
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# PROGRAM AGENDA

## Thursday, February 23, 2017

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>7:00 am</td>
<td>Continental Breakfast</td>
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<tr>
<td></td>
<td><strong>Plenary Session 8:00 am – 2:45 pm</strong></td>
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<tr>
<td>8:00</td>
<td>Welcome and Introduction, David M. Ward, MD</td>
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<tr>
<td>8:10</td>
<td><strong>ESSENTIALS AND UPDATES (Session 1)</strong></td>
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<tr>
<td>8:10</td>
<td>Apheresis Therapies: Principles and Prescribing, David M. Ward, MD</td>
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<td>8:50</td>
<td>Vascular Access Experiences and New Approaches, Amber P. Sanchez, MD</td>
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<tr>
<td>9:20</td>
<td>Top Ten Secrets of Trouble-Free Procedures, Rasheed A. Balogun, MBBS</td>
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<td>9:45</td>
<td>Q&amp;A</td>
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<td>10:00</td>
<td>Refreshment Break</td>
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<tr>
<td>10:30</td>
<td><strong>ESSENTIALS AND UPDATES (Session 2)</strong></td>
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<tr>
<td>10:30</td>
<td>Therapeutic Cytapheresis: RBC Exchange and WBC Depletion, Jan C. Hofmann, MD</td>
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<td>10:55</td>
<td>Updates in Transfusion Medicine, Patricia Kopko, MD</td>
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<tr>
<td>11:20</td>
<td>Apheresis in Pediatric Practice, Nadine M. Benador, MD</td>
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<td>11:45</td>
<td>Q&amp;A</td>
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<tr>
<td>12:00 pm</td>
<td>Lunch Break</td>
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<tr>
<td>1:15</td>
<td><strong>ESSENTIALS AND UPDATES (Session 3)</strong></td>
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<tr>
<td>1:15</td>
<td>Apheresis Insights from the Pharmacologist, Linda Awdishu, PharmD</td>
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<td>1:40</td>
<td>Centrifuges, Circuits and Columns, David M. Ward, MD</td>
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<tr>
<td>2:05</td>
<td>Real-Time Presentation of Dynamic Apheresis Circuits, Larry Cowgill, DVM, Sheri Ross, DVM, PhD, and Isagani I. Marquez, Jr., RN, MSN</td>
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<tr>
<td>2:30</td>
<td>Q&amp;A</td>
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<td>2:45</td>
<td>Refreshment Break</td>
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<td><strong>Rotating Workshops 3:15 pm – 5:15 pm</strong></td>
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<td>These small group workshops will offer attendees a unique hands-on opportunity to study various techniques and machines used in therapeutic apheresis and learn about modalities that can be performed by different types of apheresis equipment, such as centrifugal machines, membrane separators, and selective plasma processing methods including photopheresis systems. All attendees will rotate through three 40-minute workshop sessions and will be provided with opportunities to address specific questions and practicalities. <strong>Workshop Session Topics:</strong></td>
</tr>
<tr>
<td></td>
<td>• <strong>Centrifugal TPE and Cell Apheresis</strong> – Christina Anderson, RN, BSN and Richard Bandejas, BSN, RN</td>
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<td>• <strong>Selective Apheresis and Photopheresis (ECP)</strong> – Lousany Abero, BSN, RN, Jerel Malong, RN, and Andrew Gayap, RN</td>
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<td>• <strong>Membrane Systems</strong> – Rasheed A. Balogun, MBBS and Judy Kauffman, DNP(c), MSN</td>
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<tr>
<td>5:15</td>
<td>Adjourn for the Day</td>
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<tr>
<td>5:45 pm</td>
<td>Workshop Open Session <em>(Non-Accredited)</em></td>
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Friday, February 24, 2017

7:00 am  Continental Breakfast

7:00 - 7:45  BREAKFAST WITH THE EXPERTS
Optional Session [0.75 credits will be awarded for this session]
- Experts: David M. Ward, MD and Bruce Sachais, MD, PhD – Intensity and Duration of Plasma Exchange Therapy
- Experts: Amber P. Sanchez, MD and Nadine M. Benador, MD – Pediatric and Adult Applications Including Nephrology and Neurology
- Experts: Patricia Kopko, MD and Jill Adamski, MD, PhD – Hematology, Cell Apheresis and Blood Bank Issues
- Experts: Rasheed A. Balogun, MBBS, Jan C. Hofmann, MD and Judy Kauffman, DNP(c), MSN – Medical Director and Management of Hospital-Based and Mobile Apheresis Programs
- Experts: Yun Yang, RN, Su Han, BSN and Lindsay Palomino, BSN, RN – Accessing Patients for Procedures and Clinical Issues (Patient and Machine Issues)
- Experts: Christina Anderson, RN, BSN, Grace Testerman, RN and Sherlita Aguilar, BSN, RN – Clinical Aspects of Therapeutic Apheresis (Preparation and Managing Patients - Pre & Post Care)

Plenary Session 8:00 am – 12:00 pm

8:00  Announcements, David M. Ward, MD

ADVANCES (Session 1) – SPECIAL AND UPDATED APPLICATIONS

8:05  Indications and Advances in Extracorporeal Photopheresis (ECP), Jill Adamski, MD, PhD
8:35  LDL-Apheresis, Bruce Sachais, MD, PhD
9:10  ASFA Guidelines: The Updates, Rasheed A. Balogun, MBBS
9:45  Q&A
10:00  Refreshment Break

ADVANCES (Session 2) – PLASMA EXCHANGE IN PREGNANCY

10:30  Pre-Eclampsia: Pathogenesis and Plasmapheresis, Ravi I. Thadhani, MD, MPH
11:00  TTP and HELLP in Pregnancy, Jill Adamski, MD, PhD
11:25  Successful Management of Iso-Immunization Cases, Andrew D. Hull, MD
11:50  Q&A
12:00 pm  Lunch Break

Concurrent Sessions 1:15 pm – 3:30 pm

<table>
<thead>
<tr>
<th>FRONTIERS IN APHERESIS SCIENCE</th>
<th>EXPERTISE IN APHERESIS PRACTICE</th>
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<tr>
<td>Chair: David M. Ward, MD</td>
<td>Chair: Isagani I. Marquez, Jr., RN, MSN</td>
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<tr>
<td>1:15  Apheresis Research: Challenges and Opportunities, Bruce Sachais, MD, PhD</td>
<td>1:15  Handling Apheresis Patients (Stem Cell, RBC, TPE), Christina Anderson, RN, BSN</td>
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<td>1:45  Selective Removal of C-Reactive Protein (CRP): Clinical Advances, Steffen Mitzner, MD</td>
<td>1:45  Quality Improvements in Apheresis, Lindsay Palomino, RN, BSN</td>
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</tbody>
</table>
FRONTIERS IN APHERESIS SCIENCE
Chair: David M. Ward, MD

EXPERTISE IN APHERESIS PRACTICE
Chair: Isagani I. Marquez, Jr., RN, MSN

2:15 Immune-Mediated Postural Orthostatic Tachycardia Syndrome (iPOTS) as a New Indication for Plasmapheresis, Geoffrey L. Sheean, MBBS, MD

2:15 Plasmapheresis Prescription of Modalities and Barriers, Jeffrey Rosenfeld, MD, PhD

2:45 Exosomes and Metabolomics: Diagnostic and Therapeutic Opportunities, Robert K. Naviaux, MD, PhD

2:45 A Patient’s Experience, Janel Cisneros, LVN

3:15 Q&A

3:15 Q&A

3:30 Refreshment Break

3:30 Refreshment Break

Plenary Session 4:00 pm – 5:30 pm

ADVANCES (Session 3) – PLASMA EXCHANGE / REIMBURSEMENT

4:00 Apheresis for Renal Diseases and Vasculitis, Robyn Cunard, MD

4:25 Treating CNS Inflammatory Diseases with TPE, Marcelo Matiello, MD

4:50 Therapeutic Apheresis Coverage and Reimbursement: What’s New in 2017, Keith Berman MPH, MBA

5:15 Q&A

5:30 pm Adjourn for the Day

Saturday, February 25, 2017

7:00 am Continental Breakfast

7:00 - 7:45 BREAKFAST WITH THE EXPERTS
Optional Session [0.75 credits will be awarded for this session]

- Experts: Judy Kauffman, DNP(c), MSN and Lindsay Palomino, BSN, RN – Maintaining Nursing Competencies
- Experts: Christina Anderson, RN, BSN and Thuan Tran, BSN, RN – Techniques of RBC Exchange, WBC Depletion and WBC Collection
- Experts: Amber P. Sanchez, MD and Marcelo Matiello, MD – New and Updated Indications for TPE
- Experts: Jill Adamski, MD, PhD and Bruce Sachais, MD, PhD – Therapeutics Including LDL-Apheresis and Photopheresis
- Experts: Keith Berman MPH, MBA, Jan C. Hofmann, MD, and Anita Ihasz-Davis – Challenges in Reimbursement and Difficult Authorizations

Plenary Session 8:00 am – 12:30 pm

8:00 Announcements, Amber P. Sanchez, MD

ADVANCES (Session 4) – CURRENT UPDATES AND NEW APPLICATIONS

8:05 The Annual Apheresis Literature Review, Jan C. Hofmann, MD

8:35 Experience with TPE for Zika-Related Guillain-Barre Syndrome, Marcelo Matiello, MD

9:05 Q&A
9:15  **Cases for the Experts (Discussion of Attendee Submitted Cases)**  
Chair: Amber P. Sanchez, MD  
Panel: Jill Adamski, MD, PhD, Nadine M. Benador, MD, Jan C. Hofmann, MD, Patricia Kopko, MD, Bruce Sachais, MD, PhD, David M. Ward, MD, and Isagani I. Marquez, Jr., RN, MSN

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<tr>
<th>Time</th>
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<tbody>
<tr>
<td>10:00</td>
<td><strong>Refreshment Break</strong></td>
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</table>
| 10:30 | **Advances (Session 5) – TRENDS AND CONTROVERSIES**  
|       | Advances in Immune Cell Therapies, Dan S. Kaufman, MD, PhD |
| 11:00 | Current Trends in TPE for Organ Transplantation, Mita M. Shah, MD |
| 11:30 | Controversial Issues in Apheresis Practice, Amber P. Sanchez, MD |
| 12:00 | **Q&A**                                    |
| 12:15 | Closing Remarks, Joachim H. Ix, MD, MAS, FASN |
| 12:30 | Final Adjournment                          |
We would like to thank the following companies for their educational grant support. Their financial support has helped make this conference possible.

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We would like to thank the following companies for their in-kind support. Their durable goods equipment support has helped make this conference possible.

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We would like to acknowledge the following companies/organizations for exhibiting at this conference.

- Alexion Pharmaceuticals
- American Society for Apheresis (ASFA)
- Angiodynamics
- Bard Peripheral Vascular
- Fresenius-Kabi
- Mallinckrodt Pharmaceuticals
- NxStage Medical, Inc.
- Octapharma USA
- Sanofi Genzyme
- TerumoBCT
- Therakos, Inc.