AN EDUCATIONAL AND NETWORKING FORUM FOR PROFESSIONALS IN THE FIELD OF APHERESIS MEDICINE
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WELCOME FROM THE PRESIDENT

As the 2015-2016 ASFA President and representative of the Board of Directors, it is my honor to welcome you to the 37th Annual Meeting at the Westin Mission Hills Golf Resort and Spa in beautiful Palm Springs, California for the premier educational and scientific event in apheresis medicine. The Organizing Committee, chaired by Bruce Sachais, President-Elect, has produced an outstanding program this year with a comprehensive and diverse selection of topics, reaffirming ASFA's commitment to the field of apheresis medicine.

Please take advantage of the numerous networking opportunities to meet with your old and new colleagues, to strengthen bonds and exchange thoughts and ideas. New this year, is the exciting opportunity to vote for the People’s Choice Poster Abstract Award among the displayed posters at the Poster Networking Evening in the Exhibit Hall!

I encourage you to chat with members of the Board of Directors, committee chairs and the ASFA Head Office staff to learn more about our society and how to become actively involved. Also, be sure to visit and interact with our corporate sponsors and exhibitors who have come prepared to share their most current platforms, information and tools. Please feel welcome to provide your thoughts and suggestions, as they serve to enhance the society.

Finally, thank you for taking time out of your busy schedules to attend the ASFA Annual Meeting and please accept my warmest welcome!

EILEEN GALVIN KARR
RN, BSN, HP(ASCP)
President, American Society for Apheresis 2015-2016
WELCOME FROM THE CONFERENCE CHAIR

On behalf of the 2016 Annual Meeting Organizing Committee and the ASFA Board of Directors, I would like to extend a very warm welcome to our 37th Annual Meeting which is being held at the Westin Mission Hills Golf Resort and Spa in Palm Springs, CA. This spacious resort property is a wonderful venue for our meeting and presents some unique opportunities for learning and networking. Palm Springs is a sun drenched desert oasis vacation destination which is a central gathering spot for modern architectural design aficionados, musicians and artists drawn by nature’s inspiration. As such, it provides an ideal location to both learn and relax with colleagues, new and old in the field of apheresis medicine.

The Organizing Committee has been working hard since the close of the 2015 meeting to create an exciting and innovative program for all of our delegates in Palm Springs. It is thanks to the energy, ideas and enthusiasm of this fantastic group of colleagues that we have a fantastic program in store for you.

Much of the meeting format will be familiar to you: we continue to offer our apheresis review session, scientific and educational sessions, breakfast with the experts, abstract sessions, and poster networking session. Our corporate program includes a large exhibit hall, as well as lunch and dinner symposia. Our social and networking programs includes the familiar welcome reception, breakfast with the experts and poster networking evening.

I am excited to introduce several new features of the annual meeting this year, which include:

• Qualification In Apheresis (QIA) – we will be offering a room so that you can take this exam during the meeting. We plan to offer two sessions.

• A special Education Session focused on International Apheresis, which has been put together by our International Affairs Committee

• A joint Educational Session with AABB on new and emerging blood products

• A new award, the People's Choice Poster Abstract Award, where delegates will vote for the best poster presented at the meeting (ballots and instructions are available at registration)

• An outdoor setting for our Breakfast with the Experts

• A 5K run which will support the Ree Wynn Foundation

The ASFA Annual Business Meeting will take place on Friday, May 6th, immediately after lunch; coffee and dessert will be served. I encourage all ASFA members to attend so that you are informed about our society and participate in updates to the bylaws and election of ASFA leadership.

Throughout the meeting, please make an effort to visit and interact with our corporate sponsors and exhibitors who have come prepared to share their most current platforms, information and tools. This includes participation in sponsored symposia.

Thank you for attending the ASFA Annual Meeting this year and on behalf of the Organizing Committee, the ASFA Board of Directors and I, welcome to beautiful Palm Springs.

BRUCE SACHAIS, MD, PhD
Conference Chair, President-Elect, American Society for Apheresis
GENERAL INFORMATION

MEETING LOCATION
The ASFA 2016 Annual Meeting events will take place at the Westin Mission Hills Golf Resort & Spa in Palm Springs, California. Please consult this program to determine the exact room or location of each event.

INCLUDED IN YOUR REGISTRATION FEE

Full-conference registered attendees receive:
• Access to the Welcome Reception
• Access to all Scientific and Education Sessions
• Access to all Abstract Sessions
• Access to Posters and Exhibits
• Access to the Poster Networking Evening
• Conference Meals
• Annual Meeting Materials
• Final Program
• Digital Access to the Abstract Issue of the Journal of Clinical Apheresis
• Delegate Bag

Exhibit-only attendees receive:
• Access to the Exhibit Hall
• Conference Meals Served in the Exhibit Hall

Registered guests receive:
• Access to the Welcome Reception and the Poster Networking Evening

ASFA 2016 MOBILE APP

ASFA is excited to present an Annual Meeting mobile app for those who use smart devices. This free interactive tool is designed to enhance attendees’ meeting experience and can be downloaded from the Apple App Store or the Google Play Store under ASFA. Use this app to review the conference program, schedule sessions, and learn more about our speakers and conference supporters.

REGISTRATION

The Registration Desk is located in the Celebrity Foyer.

Registration hours are as follows:
• Tuesday, May 3, 2016 – 3:00PM – 6:00PM
• Wednesday, May 4, 2016 – 7:00AM – 6:00PM
• Thursday, May 5, 2016 – 7:00AM – 6:00PM
• Friday, May 6, 2016 – 7:00AM – 5:30PM
• Saturday, May 7, 2016 – 7:00AM – 12:30PM

SPEAKER SERVICES CENTER

The Speaker Services Center, located in Polo, is equipped with laptop PC computers, for all faculty members to review their presentations before their sessions. To better serve you, your presentation should be uploaded at least 24 hours prior to your session, and can be previewed up to 3 hours prior to your session.

The Speaker Services Center hours are as follows:
• Tuesday, May 3, 2016 – 3:00PM – 6:00PM
• Wednesday, May 4, 2016 – 7:00AM – 6:00PM
• Thursday, May 5, 2016 – 7:00AM – 6:00PM
• Friday, May 6, 2016 – 7:00AM – 5:30PM
• Saturday, May 7, 2016 – 7:00AM – 12:30PM

SHUTTLE SERVICE

ASFA is pleased to offer Annual Meeting delegates complimentary shuttle service from the hotel on Thursday and Friday evening!

The shuttle will pick up delegates near Registration in the Celebrity Foyer.

Thursday – 6:00PM – 10:00PM
• Service to Downtown Palm Springs for Villagefest

Friday – 6:00PM – 10:00PM
• Service to Downtown Palm Springs and The River at Rancho Mirage
CONTINUING EDUCATION CREDIT INFORMATION

ACCREDITATION AND CREDIT DESIGNATION

TARGET AUDIENCE

This activity has been designed to meet the educational needs of physicians, allied health professionals and medical students involved with donor and therapeutic apheresis. The specialties involved include, but are not exclusive of, pathology, hematology, immunology, nephrology, pediatrics, and rheumatology.

STATEMENT OF NEED/PROGRAM OVERVIEW

The ASFA Annual Meeting is the only one of its kind that offers a focus on apheresis medicine in both the donor and patient settings. It is a key educational and networking event for physicians, scientists, and allied health professionals in the field of apheresis.

The ASFA 2016 Annual Meeting will be the Society’s 37th Conference. Each year, ASFA takes the feedback it receives from attendees to build a relevant program for the next year. The need for the ASFA 2016 Annual Meeting was determined through an analysis of the evaluations from the ASFA 2015 Annual Meeting as well as through ongoing feedback from the Society’s over 700 members. The results of these evaluations clearly illustrate that attendees find the program useful and necessary for their professional development. The Organizing Committee used these results, as well as new developments in research, technology, and clinical experience, to plan the program for the 2016 Annual Meeting.

ASFA expects to attract over 400 apheresis professionals to the 2016 Annual Meeting, including MD and/or PhD clinicians and scientists, as well as allied health professionals who are involved in the field of apheresis medicine.

EDUCATIONAL OBJECTIVES

After completing this activity, the participant should be better able to:

- Explain the principles of evidence-based knowledge as they apply to therapeutic apheresis
- Describe the latest scientific, clinical, and technological advances in donor and therapeutic apheresis
- Describe the general practice of apheresis medicine and its role in the donor and patient setting

CEU

ASFA is approved by the California Board of Registered Nursing, Provider Number 14122, as a provider of continuing nursing education programs. ASFA designates this event for a maximum of 22.25 contact hours.

CMLE

This continuing medical laboratory education activity is recognized by the American Society for Clinical Pathology (ASCP) as meeting the criteria for 22.25 of CMLE credit. ASCP CMLE credit hours are acceptable to meet the continuing education requirement for the ASCP Board of Registry Certification Maintenance Program.

ACKNOWLEDGEMENT

The American Society for Apheresis wishes to recognize and thank the following companies for their ongoing support through educational grants: Terumo BCT, Mallinckrodt Pharmaceuticals Inc., Fresenius Kabi USA, LLC, and Baxter Healthcare Corporation.

INSTRUCTIONS FOR CREDIT

Continuing education credits are offered for the Apheresis Review Session, Scientific Symposia, Education Sessions, the Francis S. Morrison, MD Memorial Lecture and Plenary Abstract Session.

In order to receive credit, participants must attend at least one session and complete the electronic evaluation and record of attendance. Certificates will be emailed within 6-8 weeks of the program.
CONTINUING MEDICAL EDUCATION CREDIT INFORMATION

ACCREDITATION

This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of the American College of Surgeons and the American Society for Apheresis. The American College of Surgeons is accredited by the ACCME to provide continuing medical education for physicians.

2016 Annual Meeting

AMA PRA Category 1 Credits™

The American College of Surgeons designates this live activity for a maximum of **15.25 AMA PRA Category 1 Credits™**. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Preconference Workshop: Apheresis Review Session

AMA PRA Category 1 Credits™

The American College of Surgeons designates this live activity for a maximum of **7.0 AMA PRA Category 1 Credits™**. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

DISCLOSURE INFORMATION

In accordance with the ACCME Accreditation Criteria, the American College of Surgeons, as the accredited provider of this activity, must ensure that anyone in a position to control the content of the educational activity has disclosed all relevant financial relationships with any commercial interest. Therefore, it is mandatory that both the program planning committee and speakers complete disclosure forms. Members of the program committee were required to disclose all financial relationships and speakers were required to disclose any financial relationship as it pertains to the content of the presentations. The ACCME defines a ‘commercial interest’ as “any entity producing, marketing, re-selling, or distributing health care goods or services consumed by, or used on, patients”. It does not consider providers of clinical service directly to patients to be commercial interests. The ACCME considers “relevant” financial relationships as financial transactions (in any amount) that may create a conflict of interest and occur within the 12 months preceding the time that the individual is being asked to assume a role controlling content of the educational activity.

ACS is also required, through our joint providership partners, to manage any reported conflict and eliminate the potential for bias during the activity. All program committee members and speakers were contacted and the conflicts listed below have been managed to our satisfaction. However, if you perceive a bias during a session, please report the circumstances on the session evaluation form.

Please note we have advised the speakers that it is their responsibility to disclose at the start of their presentation if they will be describing the use of a device, product, or drug that is not FDA approved or the off-label use of an approved device, product, or drug or unapproved usage.

The requirement for disclosure is not intended to imply any impropriety of such relationships, but simply to identify such relationships through full disclosure and to allow the audience to form its own judgments regarding the presentation.
AWARDS

FRANCIS S. MORRISON, MD MEMORIAL LECTURE AWARD

The Francis S. Morrison, MD Memorial Lecture is an annual keynote lecture at the ASFA Annual Meeting. The lecture has been created to keep alive and honour the memory of Francis S. Morrison, MD, a true pioneer in apheresis medicine and a leading apheresis professional. The first lecture was held at the ASFA Meeting in 2002. The Francis S. Morrison, MD Memorial Lecture award is bestowed upon a member of the Society who has made major contributions to the field of apheresis medicine and an apheresis professional who has made a lasting difference in the field, preferably at the national level.

MARK E. BRECHER, MD
Laboratory Corporation of America
Chapel Hill, North Carolina

SOCIETY AWARDS

LECTURER AWARD

The Lecturer Award of the American Society for Apheresis is bestowed upon a member of the Society who has consistently contributed to the Society as a speaker, teacher, or mentor.

LAURA COOLING, MD, MS
University of Michigan Hospitals and Clinics
Ann Arbor, Michigan

PRESIDENTIAL AWARD

The Presidential Award of the American Society for Apheresis is bestowed upon a member of the Society who has consistently made major contributions to, and performed outstanding service for the Society over a number of years.

EDWARD WONG, MD
Children's National Medical Center
Washington, District of Columbia

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SHS AWARD

The Society for Hemapheresis Specialists was the first national organization in the United States which provided a forum for the professional development of technical specialists in the field of apheresis. In the ensuing decades since the founding of SHS, its members contributed to the maturation of apheresis as a medical specialty and to the growth of the American Society for Apheresis in to the principal platform for organized apheresis activities in North America. This award commemorates the pioneering efforts of SHS which have culminated in the high standards and sophistication which characterize the field of American apheresis. Its recipient is a hemapheresis specialist who has demonstrated sincere commitment to apheresis and who has emerged as a leader and role model in the field.

REGINA ROHE, RN, BS, HP(ASCP)
Fresenius Medical Care, NA
San Francisco, California

BEST ABSTRACT AWARDS
ALLIED HEALTH ABSTRACT AWARD

This award is given to the primary author of an outstanding abstract submitted by an allied health professional who is a member of ASFA. This year’s recipient abstract is:

“Impact of a Data-Driven Prediction Algorithm for Blood Volume Processing in Peripheral Blood Stem Cell Collection”

PATRICIA FREDRICH, RN, BSN
Blood Center of Wisconsin
Milwaukee, Wisconsin

BEST ABSTRACT AWARDS

These awards are given to the primary authors of two outstanding abstracts. This year’s recipient abstracts are:

“Paired Comparison of Therapeutic Plasma Exchange using the Fenwal Amicus vs. Terumo BCT Spectra Optia”

EDWIN A. BURGSTALER, MT, HP(ASCP)
Mayo Clinic
Rochester, Minnesota

“Tandem Procedures Associated with Therapeutic Apheresis: A Multidisciplinary Approach at a High Volume Pediatric Center”

RACHEL SIRIGNANO, MD
Emory University School of Medicine and Children’s Healthcare of Atlanta
Atlanta, Georgia

JUNIOR INVESTIGATOR ABSTRACT AWARD

This award is given to the primary author of an outstanding abstract submitted by a junior investigator who is a member of ASFA. This year’s recipient abstract is:

“Impact of Platelet Count on CD34 Mobilization and Response to Plerixafor in Lymphoma Patients Undergoing Autologous Peripheral Blood Stem Cell Collection”

KRISTINA ANNAH DAVIS, MD
University of Michigan
Ann Arbor, Michigan

PEOPLE’S CHOICE POSTER ABSTRACT AWARD

The ASFA Abstracts Committee is pleased to announce the launch for the People’s Choice Poster Abstract Award!

All posters submitted and presented at the conference are eligible to receive this award. All ASFA Annual Meeting delegates will be given a ballot to vote for the poster they believe to be the best poster at the ASFA 2016 Annual Meeting.

Join us during the Poster Networking Evening in the Exhibit Hall on Thursday, May 5th to cast your vote! Voting closes at 8:00pm on Thursday, May 5th and the winner will be announced during the ASFA 2016 Annual Business Meeting.
### PROGRAM AT A GLANCE

#### TUESDAY, MAY 3, 2016

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<tbody>
<tr>
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<td>Meeting Registration</td>
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#### WEDNESDAY, MAY 4, 2016

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<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>7:00AM – 6:00PM</td>
<td>Meeting Registration</td>
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<tr>
<td>7:00AM – 5:00PM</td>
<td><strong>PRECONFERENCE WORKSHOP: APHERESIS REVIEW SESSION</strong>&lt;br&gt;(PRE-REGISTRATION WITH ASFA AND ADDITIONAL REGISTRATION FEES REQUIRED)</td>
</tr>
<tr>
<td>7:00AM – 5:00PM</td>
<td><strong>FACT CELLULAR THERAPY COLLECTION WORKSHOP</strong>&lt;br&gt;(PRE-REGISTRATION WITH FACT AND ADDITIONAL REGISTRATION FEES REQUIRED)</td>
</tr>
<tr>
<td>8:00AM – 3:00PM</td>
<td><strong>ASFA BOARD OF DIRECTORS MEETING</strong>&lt;br&gt;(BY INVITATION ONLY)</td>
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<tr>
<td>8:00AM – 4:30PM</td>
<td>Exhibit Hall Move In</td>
</tr>
<tr>
<td>3:00PM – 5:00PM</td>
<td><strong>JOURNAL OF CLINICAL APHERESIS EDITORIAL BOARD MEETING</strong>&lt;br&gt;(BY INVITATION ONLY)</td>
</tr>
<tr>
<td>3:15PM – 4:00PM</td>
<td><strong>COMMITTEE CHAIRS MEETING WITH THE PRESIDENTS</strong>&lt;br&gt;(BY INVITATION ONLY)</td>
</tr>
<tr>
<td>4:00PM – 5:30PM</td>
<td><strong>QUALIFICATION IN APHERESIS INFORMATION SESSION</strong></td>
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<tr>
<td>4:30PM – 5:30PM</td>
<td>Poster Move In</td>
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<tr>
<td>5:00PM – 6:00PM</td>
<td><strong>ASFA BOARD OF DIRECTORS AND SPONSORS MEETING</strong>&lt;br&gt;(BY INVITATION ONLY)</td>
</tr>
<tr>
<td>5:30PM – 6:00PM</td>
<td><strong>NEW MEMBER AND FIRST TIME ATTENDEE MEET AND GREET</strong></td>
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<tr>
<td>6:00PM – 8:00PM</td>
<td><strong>WELCOME RECEPTION IN EXHIBIT HALL</strong>&lt;br&gt;Please join us for a drink, hors d’oeuvres, and to network with your colleagues!</td>
</tr>
<tr>
<td>8:00PM – 10:00PM</td>
<td><strong>ASFA PAST PRESIDENTS’ DINNER</strong>&lt;br&gt;(BY INVITATION ONLY)</td>
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#### THURSDAY, MAY 5, 2016

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<tr>
<th>Time</th>
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<tbody>
<tr>
<td>7:00AM – 6:00PM</td>
<td>Meeting Registration</td>
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<tr>
<td>7:00AM – 8:15AM</td>
<td>Continental Breakfast</td>
</tr>
<tr>
<td>7:00AM – 8:15AM</td>
<td><strong>BREAKFAST WITH THE EXPERT I</strong>&lt;br&gt;(FIRST-COME, FIRST-SERVED – ARRIVE EARLY FOR YOUR FAVORITE TOPIC!)&lt;br&gt;Join us for roundtable discussions with experts in the field.</td>
</tr>
<tr>
<td>8:30AM – 12:15PM</td>
<td><strong>OPENING COMBINED SYMPOSIUM: SOLID ORGAN AND HEMATOPOIETIC STEM CELL TRANSPLANT</strong></td>
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<tr>
<td>10:00AM – 8:00PM</td>
<td>Exhibit Hall Open</td>
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<tr>
<td>12:30PM – 1:30PM</td>
<td><strong>EXCLUSIVE CORPORATE SYMPOSIUM</strong>&lt;br&gt;(OPEN TO ALL REGISTERED DELEGATES)</td>
</tr>
<tr>
<td>12:45PM – 1:30PM</td>
<td>Lunch in Exhibit Hall</td>
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<tr>
<td>1:45PM – 2:30PM</td>
<td><strong>FRANCIS S. MORRISON, MD MEMORIAL LECTURE</strong></td>
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<tr>
<td>2:45PM – 5:15PM</td>
<td><strong>PLENARY ABSTRACT SESSION</strong></td>
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<tr>
<td>2:45PM – 3:45PM</td>
<td><strong>EDUCATION SESSION I: BASIC DONOR APHERESIS</strong></td>
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<tr>
<td>3:45PM – 4:15PM</td>
<td>Break in Exhibit Hall</td>
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**THURSDAY, MAY 5, 2016**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>4:15PM – 5:15PM</td>
<td>EDUCATION SESSION II: ADVANCED THERAPEUTIC APHERESIS</td>
</tr>
<tr>
<td>5:30PM – 6:15PM</td>
<td>COMMITTEE MEETINGS</td>
</tr>
<tr>
<td>6:00PM – 8:00PM</td>
<td>POSTER NETWORKING EVENING IN EXHIBIT HALL</td>
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<tr>
<td>7:30PM – 9:30PM</td>
<td>CORPORATE SYMPOSIUM (OPEN TO ALL REGISTERED DELEGATES)</td>
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**FRIDAY, MAY 6, 2016**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>6:00AM – 7:00AM</td>
<td>5K FUN RUN (PRE-REGISTRATION WITH ASFA AND ADDITIONAL REGISTRATION FEES REQUIRED)</td>
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<td></td>
<td>Get your blood flowing and join your colleagues for a fun run through the beautiful Westin Mission Hills property.</td>
</tr>
<tr>
<td>7:00AM – 5:30PM</td>
<td>Meeting Registration</td>
</tr>
<tr>
<td>7:00AM – 8:30AM</td>
<td>BFK WITH THE EXPERT II (FIRST-COME, FIRST-SERVED – ARRIVE EARLY FOR YOUR FAVORITE TOPIC!)</td>
</tr>
<tr>
<td>7:00AM – 9:00AM</td>
<td>QUALIFICATION IN APHERESIS (QIA) EXAM (PRE-REGISTRATION WITH ASFA REQUIRED)</td>
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<tr>
<td></td>
<td>Bring your laptop and write the QIA exam with the support of your colleagues!</td>
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<tr>
<td></td>
<td>*Note: Computers are not provided; please bring your own laptop. In addition, you must have applied for and met the eligibility requirements in advance of sitting the exam.</td>
</tr>
<tr>
<td>8:45AM – 12:15PM</td>
<td>SCIENTIFIC SYMPOSIUM: CURING DISEASE WITH CELLULAR THERAPY</td>
</tr>
<tr>
<td>10:00AM – 4:30PM</td>
<td>Exhibit Hall Open</td>
</tr>
<tr>
<td>10:15AM – 10:45AM</td>
<td>Break in Exhibit Hall</td>
</tr>
<tr>
<td>9:15AM – 10:15AM</td>
<td>EDUCATION SESSION III: BASIC THERAPEUTIC APHERESIS</td>
</tr>
<tr>
<td>10:45AM – 12:15PM</td>
<td>EDUCATION SESSION IV: INTERNATIONAL APHERESIS</td>
</tr>
<tr>
<td>12:30PM – 1:30PM</td>
<td>CORPORATE SYMPOSIUM (OPEN TO ALL REGISTERED DELEGATES)</td>
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<tr>
<td>12:30PM – 1:30PM</td>
<td>CORPORATE SYMPOSIUM (OPEN TO ALL REGISTERED DELEGATES)</td>
</tr>
<tr>
<td>12:45PM – 1:30PM</td>
<td>Lunch in Exhibit Hall</td>
</tr>
<tr>
<td>1:45PM – 2:30PM</td>
<td>ASFA ANNUAL GENERAL MEETING AND SWEETS (ASFA MEMBERS ONLY)</td>
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<tr>
<td></td>
<td>Members – please join us for coffee and dessert and to learn more about ASFA’s activities, financials and leadership.</td>
</tr>
<tr>
<td>2:30PM – 4:30PM</td>
<td>QUALIFICATION IN APHERESIS (QIA) EXAM (PRE-REGISTRATION WITH ASFA REQUIRED)</td>
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<td>Bring your laptop and write the QIA exam with the support of your colleagues!</td>
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<td>*Note: Computers are not provided; please bring your own laptop. In addition, you must have applied for and met the eligibility requirements in advance of sitting the exam.</td>
</tr>
<tr>
<td>2:45PM – 5:15PM</td>
<td>ABSTRACT SESSION I: THERAPEUTIC APHERESIS</td>
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<tr>
<td>Time</td>
<td>Event</td>
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<tr>
<td><strong>FRIDAY, MAY 6, 2016</strong></td>
<td></td>
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<tr>
<td>2:45PM – 3:45PM</td>
<td><strong>EDUCATION SESSION V: PHOTOPHERESIS</strong></td>
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<tr>
<td>3:45PM – 4:15PM</td>
<td>Break in Exhibit Hall</td>
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<tr>
<td>4:15PM – 5:15PM</td>
<td><strong>EDUCATION SESSION VI: PEDIATRIC APHERESIS</strong></td>
</tr>
<tr>
<td>4:30PM – 5:30PM</td>
<td>Poster Move Out</td>
</tr>
<tr>
<td>4:30PM – 8:00PM</td>
<td>Exhibit Hall Move Out</td>
</tr>
<tr>
<td>5:15PM – 6:00PM</td>
<td><strong>COMMITTEE MEETINGS</strong></td>
</tr>
<tr>
<td></td>
<td><em>New members welcome!</em></td>
</tr>
<tr>
<td><strong>SATURDAY, MAY 7, 2016</strong></td>
<td></td>
</tr>
<tr>
<td>7:00AM – 12:30PM</td>
<td>Meeting Registration</td>
</tr>
<tr>
<td>7:00AM – 8:30AM</td>
<td>Continental Breakfast</td>
</tr>
<tr>
<td>8:45AM – 12:15PM</td>
<td><strong>CLOSING SYMPOSIUM: EMERGING INDICATIONS AND ALTERNATIVE THERAPIES</strong></td>
</tr>
<tr>
<td>8:45AM – 10:15AM</td>
<td><strong>EDUCATION SESSION VII: ASFA &amp; AABB JOINT SESSION - EMERGING BLOOD PRODUCTS TO SUPPORT FUTURE TRANSFUSION SERVICES</strong></td>
</tr>
<tr>
<td>10:15AM – 10:45AM</td>
<td>Break in Foyer</td>
</tr>
<tr>
<td>10:45AM – 12:15PM</td>
<td><strong>EDUCATION SESSION VIII : CELLULAR THERAPY</strong></td>
</tr>
<tr>
<td>12:15PM – 1:30PM</td>
<td><strong>POST-CONFERENCE ASFA BOARD OF DIRECTORS MEETING (BY INVITATION ONLY)</strong></td>
</tr>
</tbody>
</table>
## PRECONFERENCE: TUESDAY, MAY 3, 2016

**3:00PM – 6:00PM**  
Meeting Registration  
Celebrity Foyer

## PRECONFERENCE: WEDNESDAY, MAY 4, 2016

**7:00AM – 6:00PM**  
Meeting Registration  
Celebrity Foyer

### PRECONFERENCE WORKSHOP: APHERESIS REVIEW SESSION

**Celebrity ABCD**  
(PRE-REGISTRATION WITH ASFA AND ADDITIONAL REGISTRATION FEES REQUIRED)

The Apheresis Review Session will provide a basic overview of the theory and applications of apheresis medicine. Experts in the field will provide a broad overview of each of the topics and participants will have an opportunity to work with case studies. The Review Session is an appropriate preparatory course for the Qualification in Apheresis (QIA) Exam, offered by ASCP.

**Morning Chairs:** Debbie Ferrell, MSN, RN, HP(ASCP) & Margaret Hannan, LPN, AT (ASCP)  
**Afternoon Chairs:** Bryan Prentice, RN, MSN & Alicia Garcia, RN, HP(ASCP)

**7:00AM – 7:30AM**  
Continental Breakfast

**7:30AM – 7:45AM**  
Welcome  
**Christina Anderson, RN, BSN, HP(ASCP)**

**7:45AM – 8:15AM**  
Introduction to ASCP Qualification in Apheresis (QIA) Exam  
**Hans Vrielink, MD**

**8:15AM – 9:00AM**  
Basic Science in Apheresis  
**Jeffrey L. Winters, MD**

**9:00AM – 10:00AM**  
Clinical Applications: Therapeutics  
**Jay S. Raval, MD**

**10:00AM – 10:30AM**  
Break

**10:30AM – 11:30AM**  
Clinical Applications: Donor and Cellular Therapy  
**Edwin A. Burgstaler, MT, HP(ASCP)**

**11:30AM – 12:15PM**  
Apheresis Instrumentation  
**Leah L. Irwin, RN, MSN, CRNP**

**12:15PM – 1:15PM**  
Lunch and Equipment Fair  
**Rancho Mirage Foyer**

**1:15PM – 2:45PM**  
Donor and Patient Care  
**Dariene Cloutier, MT, HP**

**2:45PM – 3:30PM**  
Apheresis Program Essentials  
**Theresa C. Stec, BA, MT(ASCP)**

**3:30PM – 3:45PM**  
Break

**3:45PM – 4:30PM**  
Standards, Guidelines, and Regulations  
**Alicia Garcia, RN, HP(ASCP)**

**4:30PM – 5:00PM**  
Wrap Up

### FACT CELLULAR THERAPY COLLECTION WORKSHOP

(PRE-REGISTRATION WITH FACT AND ADDITIONAL REGISTRATION FEES REQUIRED)  
**Rancho**

**8:00AM – 3:00PM**  
ASFA BOARD OF DIRECTORS MEETING  
**Mission Hills**

**8:00AM – 4:30PM**  
Exhibit Hall Move In  
**Celebrity EFGH**

**3:00PM – 5:00PM**  
JOURNAL OF CLINICAL APHERESIS EDITORIAL BOARD MEETING  
**Mission Hills**

**3:15PM – 4:00PM**  
COMMITTEE CHAIRS MEETING WITH THE PRESIDENTS  
**Mission Hills**

**4:00PM – 5:30PM**  
QUALIFICATION IN APHERESIS INFORMATION SESSION  
Join us for coffee and tea and to learn more about the new Qualification in Apheresis (QIA) exam offered through ASCP.  
**Moroccan**

**4:30PM – 5:30PM**  
Poster Move In  
**Celebrity EFGH & Foyer**
### PRECONFERENCE: WEDNESDAY, MAY 4, 2016

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>5:00PM – 6:00PM</td>
<td>ASFA BOARD OF DIRECTORS AND SPONSORS MEETING</td>
<td>Mission Hills</td>
</tr>
<tr>
<td>5:30PM – 6:00PM</td>
<td>NEW MEMBER AND FIRST TIME ATTENDEE MEET AND GREET</td>
<td>Oasis</td>
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<tr>
<td>6:00PM – 8:00PM</td>
<td>Exhibit Hall Open</td>
<td>Celebrity EFGH</td>
</tr>
<tr>
<td>6:00PM – 8:00PM</td>
<td>WELCOME RECEPTION IN EXHIBIT HALL</td>
<td>Celebrity EFGH &amp; Foyer</td>
</tr>
<tr>
<td>8:00PM – 10:00PM</td>
<td>ASFA PAST PRESIDENTS’ DINNER (BY INVITATION ONLY)</td>
<td>Offsite</td>
</tr>
</tbody>
</table>

### CONFERENCE DAY 1: THURSDAY, MAY 5, 2016

#### 7:00AM – 6:00PM
- Meeting Registration
- Continental Breakfast

#### 7:00AM – 8:15AM
- **BREAKFAST WITH THE EXPERT I**<br>First-Come, First-Served – Arrive Early For Your Favorite Topic!
  - Chair: Theresa C. Stec, BA, MT(ASCP)
  - Anticipating and Preventing Complications During and After Therapeutic Apheresis Procedures<br>Marisa B. Marques, MD
  - IV Access<br>Leah L. Irwin, RN, MSN, CRNP
  - HPC/MNC Collection<br>Una O’Doherty, MD
  - Photopheresis<br>Lindsay Palomino, RN, BSN
  - Online Documentation<br>Darlene Cloutier, MT, HP
  - Apheresis Platelet Demand Planning<br>Tanya Ferber, MSN, RN
  - Tandem Procedures<br>Christina Gallagher, RN
  - Cellular Therapy (Spanish)<br>Christine Fernandez, RN, MSN
  - Pediatric Apheresis<br>Christina Anderson, RN, BSN, HP(ASCP)
  - Staff Training and Competency Assessment<br>Jennifer Wintz, BSN
  - Graduate Medical Education: How to Manage an Apheresis Consult that Doesn’t Fit the Textbook?<br>Joseph Schwartz, MD, MPH & Sarita Joshi, MBBS, MD
  - ASFA Leadership – How YOU Can Become Involved<br>ASFA Presidents

#### 8:30AM – 12:15PM
- OPENING COMBINED SYMPOSIUM: SOLID ORGAN AND HEMATOPOIETIC STEM CELL TRANSPLANT<br>Chairs: Laura Collins, RN, BSN, HP(ASCP) & Joseph Schwartz, MD, MPH
  - Chairs: Laura Collins, RN, BSN, HP(ASCP) & Joseph Schwartz, MD, MPH
  - 8:30AM – 8:45AM: Opening Remarks<br>Eileen Galvin Karr, RN, BSN, HP(ASCP) & Bruce Sachais, MD, PhD
  - 8:45AM – 9:30AM: Therapeutic Plasma Exchange Facilitates Successful Solid Organ Transplantation: HLA Desensitization and Antibody Mediated Rejection<br>Theresa Kinard, MD
  - 9:30AM – 10:15AM: Apheresis Medicine in ABO Incompatible Kidney Transplantation: Strategies for Successful Outcomes<br>Lance Williams, MD
  - 10:15AM – 10:45AM: Break in Exhibit Hall<br>Celebrity EFGH & Foyer
### CONFERENCE DAY 1: THURSDAY, MAY 5, 2016

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30AM</td>
<td>10:45AM – 11:30AM New Strategies for HPC Mobilization and Stem Cell</td>
<td>Jeffrey L. Winters, MD</td>
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<tr>
<td></td>
<td>Collection: Effect of Content on Outcomes</td>
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<tr>
<td>11:30AM</td>
<td>12:15PM Hematopoietic Progenitor Cell Products</td>
<td>Rona Singer Weinberg, PhD</td>
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<tr>
<td>10:00AM</td>
<td>Exhibit Hall Open</td>
<td>Celebrity EFGH &amp; Foyer</td>
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<tr>
<td>12:30PM</td>
<td>EXCLUSIVE CORPORATE SYMPOSIUM (OPEN TO ALL REGISTERED DELEGATES)</td>
<td>Ambassador Ballroom</td>
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<tr>
<td>12:45PM</td>
<td>Lunch in Exhibit Hall</td>
<td>Celebrity EFGH &amp; Foyer</td>
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<tr>
<td>1:45PM</td>
<td>FRANCIS S. MORRISON, MD MEMORIAL LECTURE</td>
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<td>Chair: Marisa Marques, MD</td>
<td>Mark E. Brecher, MD</td>
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<tr>
<td></td>
<td>30+ Years in Apheresis and Transfusion Medicine</td>
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<tr>
<td>2:45PM –</td>
<td>PLENARY ABSTRACT SESSION</td>
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<tr>
<td>2:45PM –</td>
<td>3:00PM The Journal of Clinical Apheresis Special Issue Committee Report</td>
<td>Joseph Schwartz, MD, MPH</td>
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<td>3:00PM</td>
<td>on the 7th Edition (2016)</td>
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<tr>
<td>3:00PM –</td>
<td>3:15PM Extracorporeal Photopheresis Practice Patterns: An International</td>
<td>Nancy Dunbar, MD</td>
</tr>
<tr>
<td>3:15PM</td>
<td>Survey by the ASFA ECP Donor Subcommittee</td>
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<tr>
<td>3:15PM –</td>
<td>3:30PM Paired Comparison of Therapeutic Plasma Exchange Using the Fenwal</td>
<td>Edwin A. Burgstaler, MT, HP (ASCP)</td>
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<tr>
<td>3:30PM</td>
<td>Amicus vs. Terumo BCT Spectra Optia</td>
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<tr>
<td>3:15PM –</td>
<td>3:45PM Impact of Platelet Count on CD34 Mobilization and Response to</td>
<td>Kristina Annah Davis, MD</td>
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<tr>
<td>3:30PM</td>
<td>Plerixafor in Lymphoma Patients Undergoing Autologous Peripheral Blood</td>
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<tr>
<td>2:45PM –</td>
<td>Stem Cell Collection</td>
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<tr>
<td>3:45PM</td>
<td>Break in Exhibit Hall</td>
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<tr>
<td>4:15PM</td>
<td>Novel Biomarkers of Acquired Thrombotic Thromboctopenic Purpura Disease</td>
<td>Jay S. Raval, MD</td>
</tr>
<tr>
<td>4:15PM</td>
<td>Activity Identified by Metabolomic Profiling</td>
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<tr>
<td>4:30PM</td>
<td>Platelet Count and Serum Creatinine Do Not Help to Differentiate</td>
<td>Manasa S. Reddy, MD</td>
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<tr>
<td>4:30PM</td>
<td>Thrombotic Thromboctopenic Purpura from Other Thrombotic Microangiopathies</td>
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<tr>
<td>4:45PM</td>
<td>Iatrogenic Iron Deficiency Associated with Automated Red Blood Cell</td>
<td>Shih-Hon Li, MD, PhD</td>
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<tr>
<td>4:45PM</td>
<td>Exchange in Sickle Cell Disease</td>
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<tr>
<td>5:00PM</td>
<td>More Efficient Exchange of Sickle Red Blood Cells Compared to Normal</td>
<td>Suzanne Thibodeaux, MD, PhD</td>
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<td>5:00PM</td>
<td>Red Blood Cells can be Achieved by Setting Exchange Parameters to Collect</td>
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<tr>
<td>3:45PM –</td>
<td>and Replace the Densest Red Blood Cells</td>
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<tr>
<td>4:15PM</td>
<td>EDUCATION SESSION I: BASIC DONOR APERATURE</td>
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<tr>
<td>3:45PM</td>
<td>Chairs: Lee F. Clough, RN, BSN, HP(ASCP) &amp; Tanya Ferber, MSN, RN</td>
<td>Rancho Mirage</td>
</tr>
<tr>
<td>2:45PM –</td>
<td>3:05PM Optimizing the Blood Donor in Center and on Mobile Blood</td>
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<tr>
<td>3:05PM</td>
<td>Drives</td>
<td>Antonio Hagen-Coonradt</td>
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<tr>
<td>3:25PM</td>
<td>Iron Balance and Blood Donation</td>
<td>Anne Eder, MD, PhD</td>
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<td>3:25PM</td>
<td>Donor Math</td>
<td>Marleen Neyrinck, RN</td>
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<td>3:45PM</td>
<td>Break in Exhibit Hall</td>
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<td>4:15PM</td>
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## CONFERENCE DAY 1: THURSDAY, MAY 5, 2016

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>4:15PM – 5:15PM</td>
<td>Concurrent Session</td>
<td>Rancho Mirage</td>
</tr>
<tr>
<td>4:15PM – 4:45PM</td>
<td>Pharmacology                                                            YanYun Wu, MD, PhD</td>
<td></td>
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<tr>
<td>4:45PM – 5:15PM</td>
<td>Tiny Tandems: The Ins and Outs of Therapeutic Tandem Procedures        Christina Gallagher, RN</td>
<td></td>
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<tr>
<td>5:30PM – 6:15PM</td>
<td>COMMITTEE MEETINGS <em>New members welcome!</em></td>
<td></td>
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<tr>
<td>6:00PM – 8:00PM</td>
<td>POSTER NETWORKING EVENING IN EXHIBIT HALL                             Celebrity EFGH &amp; Foyer</td>
<td></td>
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<tr>
<td>7:30PM – 9:30PM</td>
<td>CORPORATE SYMPOSIUM (OPEN TO ALL REGISTERED DELEGATES)               Oasis</td>
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## CONFERENCE DAY 2: FRIDAY, MAY 6, 2016

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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</table>
| 6:00AM – 7:00AM | 5K FUN RUN *(PRE-REGISTRATION WITH ASFA AND ADDITIONAL REGISTRATION FEES REQUIRED)*  
Get your blood flowing and join your colleagues for a fun run through the beautiful Westin Mission Hills property.  
Oasis Courtyard |
| 7:00AM – 8:30AM | BREAKFAST WITH THE EXPERT II *

*FIRST-COME, FIRST-SERVED – ARRIVE EARLY FOR YOUR FAVORITE TOPIC!*  
Join us for roundtable discussions with experts in the field on the topics below. Masters Plaza |
| 7:00AM – 8:30AM | Concurrent Session  
Red Cell Exchange  
Pediatric IV Access  
ASFA Mentorship  
Therapeutic Apheresis (Spanish)  
Validation  
Implementation of Pathogen Inactivation  
Mobile Apheresis Challenges  
Cellular Collections and Mobilization  
Lipoprotein Apheresis  
Credentialing for Apheresis Medicine Physicians & Practitioners  
Renal Indications for Therapeutic Apheresis  
Graduate Medical Education: How to Assess Physician Competency and Fulfill OPPE for Apheresis? Chester Andrzejewski, MD, PhD, FCAP |
| 7:00AM – 5:30PM | Meeting Registration  
Celebrity Foyer |
| 7:00AM – 8:30AM | Continental Breakfast  
Celebrity Foyer |
| 7:00AM – 8:30AM | – Concurrent Session  
Shannon Kelly, MD  
Leon Su, MD  
Lee F. Clough, RN, BSN, HP(ASCP)  
Marisa B. Marques, MD  
Theresa C. Stec, BA, MT(ASCP)  
Margaret Hannan, LPN, AT(ASCP)  
Bryan Prentice, RN, MSN  
Biljana Horn, MD  
Robin Willis, RN, HP, BSN  
Rasheed Balogun, MD, FCAP, FASN, HP(ASCP)  
Walter Linz, MD, MBA |
## CONFERENCE DAY 2: FRIDAY, MAY 6, 2016

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Location</th>
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<tbody>
<tr>
<td>7:00AM – 9:00AM</td>
<td>QUALIFICATION IN APHERESIS (QIA) EXAM</td>
<td>Oasis</td>
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<td>(PRE-REGISTRATION WITH ASFA REQUIRED)</td>
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<td>Bring your laptop and write the QIA exam with the support of your colleagues!</td>
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<td>10:00AM – 4:30PM</td>
<td>Exhibit Hall Open</td>
<td>Celebrity EFGH &amp; Foyer</td>
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<tr>
<td>8:45AM – 12:15PM</td>
<td>SCIENTIFIC SYMPOSIUM: CURING DISEASE WITH CELLULAR THERAPY</td>
<td>Celebrity ABCD</td>
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<td>Chairs: Jill Adamski, MD, PhD &amp; Nicole Aqui, MD</td>
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<td>8:45AM – 9:30AM Cellular Therapy Overview</td>
<td>Nicole Aqui, MD</td>
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<td>9:30AM – 10:15AM Building Synthetic Immunity to Cancer Using Chimeric Immunoreceptors</td>
<td>Michael C. Milone, MD, PhD</td>
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<td>10:15AM – 10:45AM Break in Exhibit Hall</td>
<td>Celebrity EFGH &amp; Foyer</td>
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<tr>
<td></td>
<td>10:45AM – 11:30AM Familial Haploidentical Allogeneic Stem Cell Transplantation in Patients with High-Risk Sickle Cell Disease (SCD)</td>
<td>Mitchell S. Cairo, MD</td>
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<tr>
<td></td>
<td>11:30AM – 12:15PM Unravelling the Saga of MSCs</td>
<td>Edwin M. Horwitz, MD, PhD</td>
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<tr>
<td>9:15AM – 10:15AM</td>
<td>EDUCATION SESSION III: BASIC THERAPEUTIC APHERESIS</td>
<td>Rancho Mirage</td>
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<tr>
<td></td>
<td>Chairs: Jay S. Raval, MD &amp; Antonia Hagen-Coonrad</td>
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<td>9:15AM – 9:45AM Red Cell Exchange</td>
<td>Sonja Vozniak, RN, BSN</td>
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<td>9:45AM – 10:15AM Mobile Therapeutic Apheresis</td>
<td>Melinda Caltabiano, BA, MPA</td>
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<tr>
<td>10:15AM – 10:45AM</td>
<td>Break in Exhibit Hall</td>
<td>Celebrity EFGH &amp; Foyer</td>
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<tr>
<td>10:45AM – 12:15PM</td>
<td>EDUCATION SESSION IV: INTERNATIONAL APHERESIS</td>
<td>Rancho Mirage</td>
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<tr>
<td></td>
<td>Chairs: Christine Fernandez, RN, MSN &amp; Quentin Eichbaum, MD, PhD, MPH, MFA, FCAP, FASCP</td>
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<td>10:45AM – 11:05AM Plasma Exchange Around the World - A Perspective from Africa</td>
<td>Colwyn Poole, MBChB</td>
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<tr>
<td></td>
<td>11:05AM – 11:25AM Red Blood Cell Exchange Around the World - A Perspective from Africa</td>
<td>Colwyn Poole, MBChB</td>
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<td></td>
<td>11:25AM – 11:45AM Extracorporeal Photochemotherapy (ECP) Around the World</td>
<td>Paolo Perseghin, MD</td>
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<td>11:45AM – 12:05AM The International Approach to Marginal Groups (Pediatrics and Geriatrics)</td>
<td>Volker Witt, MD</td>
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<tr>
<td>12:05PM – 12:15PM</td>
<td>Discussion</td>
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<td>12:30PM – 1:30PM</td>
<td>CORPORATE SYMPOSIUM (OPEN TO ALL REGISTERED DELEGATES)</td>
<td>Oasis</td>
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<tr>
<td>12:30PM – 1:30PM</td>
<td>CORPORATE SYMPOSIUM (OPEN TO ALL REGISTERED DELEGATES)</td>
<td>Ambassador Ballroom</td>
</tr>
<tr>
<td>12:45PM – 1:30PM</td>
<td>Lunch in Exhibit Hall</td>
<td>Celebrity EFGH &amp; Foyer</td>
</tr>
<tr>
<td>1:45PM – 2:30PM</td>
<td>ASFA ANNUAL GENERAL MEETING AND SWEETS (ASFA MEMBERS ONLY)</td>
<td>Celebrity ABCD</td>
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<tr>
<td></td>
<td>Members – please join us for coffee and dessert and to learn more about ASFA’s activities, financials and leadership.</td>
<td></td>
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<tr>
<td>2:30PM – 4:30PM</td>
<td>QUALIFICATION IN APHERESIS (QIA) EXAM</td>
<td>Oasis</td>
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<tr>
<td></td>
<td>(PRE-REGISTRATION WITH ASFA REQUIRED)</td>
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<tr>
<td></td>
<td>Bring your laptop and write the QIA exam with the support of your colleagues!</td>
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<td>*Note: Computers are not provided; please bring your own laptop. In addition, you must have applied for and met the eligibility requirements in advance of sitting the exam.</td>
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</table>
## ABSTRACT SESSION I: THERAPEUTIC Apheresis

### Chairs: Christine Fernandez, RN, MSN & Yara Park, MD

### 2:45PM – 5:15PM

#### ABSTRACT SESSION I: THERAPEUTIC Apheresis

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:45PM – 3:00PM</td>
<td>Total and Low-Volume Plasma Exchange in Alzheimer's Disease: Interim Data on Safety, Tolerability and Feasibility from the Ambar Trial</td>
<td>Antonio Páez, MD</td>
</tr>
<tr>
<td>3:00PM – 3:15PM</td>
<td>Tandem Procedures Associated with Therapeutic Apheresis: A Multidisciplinary Approach at a High Volume Pediatric Center</td>
<td>Rachel M. Sirignano, MD</td>
</tr>
<tr>
<td>3:15PM – 3:30PM</td>
<td>Plasmapheresis for Intractable Itch in Chronic Cholestatic Liver Disease</td>
<td>Ourania Varsou, BSc, MBCHB, PhD</td>
</tr>
<tr>
<td>3:30PM – 3:45PM</td>
<td>Comparison of Norfolk Sport Port and Angiodynamtic Vortex Ports for Therapeutic Plasma Exchange</td>
<td>Rebecca Dill, RN</td>
</tr>
<tr>
<td>3:45PM – 4:15PM</td>
<td>Break in Exhibit Hall</td>
<td></td>
</tr>
<tr>
<td>4:15PM – 4:30PM</td>
<td>Therapeutic Plasma Exchange in Patients with Hypertriglyceridemic Pancreatitis: When is it Indicated?</td>
<td>Jan C. Hofmann, MD, MPH</td>
</tr>
<tr>
<td>4:30PM – 4:45PM</td>
<td>Clinical Factors Associated with Cardiac Allograft Recovery in Response to Therapeutic Plasma Exchange</td>
<td>Oluwatoyosi Onwuemene, MD</td>
</tr>
<tr>
<td>4:45PM – 5:00PM</td>
<td>Hemoglobin S Change in Patients with Sickle Cell Disease Undergoing Chronic Red Cell Exchange for Stroke Prevention</td>
<td>Rance C. Siniard, MD</td>
</tr>
<tr>
<td>5:00PM – 5:15PM</td>
<td>Surveillance of Post-Procedure Red Cell Gain/Loss Following Red Cell Exchange Procedures with and Without Depletion in Pediatric Sickle Cell Patients: A Single Institution Experience</td>
<td>Leon Su, MD</td>
</tr>
</tbody>
</table>

#### ABSTRACT SESSION II: DONOR Apheresis

### Chairs: Wanda Koetz, RN, HP(ASCP) & Shanna Morgan, MD

### 2:45PM – 5:15PM

#### ABSTRACT SESSION II: DONOR Apheresis

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Speaker(s)</th>
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<tbody>
<tr>
<td>2:45PM – 3:00PM</td>
<td>CD34 Collection Efficiency in the Allogeneic, Unrelated PBSC Donor – Insights for Optimizing Collections</td>
<td>Wanda B. Koetz, RN, BA, HP(ASCP)</td>
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<tr>
<td>3:00PM – 3:15PM</td>
<td>Impact of a Data-Driven Prediction Algorithm for Blood Volume Processing in Peripheral Blood Stem Cell Collection</td>
<td>Patricia A. Fredrich, RN</td>
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<tr>
<td>3:15PM – 3:30PM</td>
<td>Proposed Formula for use by National Marrow Donor Program to Predict Volume to Process to Reach Target CD34 Dose</td>
<td>Lohith Bachegowda, MD</td>
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<tr>
<td>3:30PM – 3:45PM</td>
<td>Comparison of the Efficacy on Granulocyte Yield of G-CSF plus Dexamethasone versus G-CSF Alone Mobilization Regiments in Granulocytapheresis Donors Over 20 Years</td>
<td>Hong Hong, MD</td>
</tr>
<tr>
<td>3:45PM – 4:15PM</td>
<td>Break in Exhibit Hall</td>
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<tr>
<td>4:15PM – 4:30PM</td>
<td>Microparticle Concentrations in Donor Blood, Apheresis Platelet Concentrates and their Potential Importance for Recipients</td>
<td>Daniel Millar</td>
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### CONFERENCE DAY 2: FRIDAY, MAY 6, 2016

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>2:45PM – 5:15PM</td>
<td>Concurrent Session</td>
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<tr>
<td>4:45PM – 5:00PM</td>
<td>Extended Performance and Patency of Femoral Lines in Pediatric Patients Undergoing Autologous Peripheral Blood Stem Cell Collection</td>
<td>Laura Cooling, MD, MS</td>
</tr>
<tr>
<td>5:00PM – 5:15PM</td>
<td>Frequent Occurrence of Procedure-Associated Thrombocytopenia in Older, Related Allogeneic Peripheral Blood Stem Cell Donors: A Donor Safety Pilot Study by the ASFA HPC Subcommittee</td>
<td>Laura Cooling, MD, MS</td>
</tr>
</tbody>
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**EDUCATION SESSION V: PHOTOPHERESIS**

- **Chairs:** Jill Adamski, MD, PhD & Alicia Garcia, RN, HP(ASCP)
- **Ambassador Ballroom**

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<tr>
<td>2:45PM – 3:15PM</td>
<td>Technical Challenges</td>
<td>Lindsay Palomino, RN, BSN, HP</td>
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<tr>
<td>3:15PM – 3:45PM</td>
<td>Quality</td>
<td>Joanna Wigfield, DO</td>
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<tr>
<td>3:45PM – 4:15PM</td>
<td>Break in Exhibit Hall</td>
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<td>4:15PM – 5:15PM</td>
<td>Concurrent Session</td>
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<td>4:15PM – 4:35PM</td>
<td>Case Study 1: Red Cell Exchange</td>
<td>Leon Su, MD</td>
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<tr>
<td>4:35PM – 4:55PM</td>
<td>Case Study 2: Leukoreduction</td>
<td>Alicia Garcia, RN, HP(ASCP)</td>
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<tr>
<td>4:55PM – 5:15PM</td>
<td>Case Study 3: Pediatric Plasma Exchange</td>
<td>Robin Willis, RN, HP, BSN</td>
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<td>4:30PM – 5:30PM</td>
<td>Poster Move Out</td>
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<td>4:30PM – 8:00PM</td>
<td>Exhibit Hall Move Out</td>
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**EDUCATION SESSION VI: PEDIATRIC APHERESIS**

- **Chairs:** Keith Quirolo, MD & Patricia Fredrich, RN, BSN
- **Ambassador Ballroom**

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<tr>
<td>5:15PM – 6:00PM</td>
<td>COMMITTEE MEETINGS ‘New members welcome!’</td>
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<tr>
<td>7:00AM – 12:30PM</td>
<td>Meeting Registration</td>
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<tr>
<td>7:00AM – 8:30AM</td>
<td>Continental Breakfast</td>
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### CONFERENCE DAY 3: SATURDAY, MAY 7, 2016

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<thead>
<tr>
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<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>7:00AM – 12:30PM</td>
<td>Meeting Registration</td>
<td>Celebrity Foyer</td>
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<tr>
<td>7:00AM – 8:30AM</td>
<td>Continental Breakfast</td>
<td>Celebrity Foyer</td>
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<tr>
<td>7:00AM – 8:30AM</td>
<td>BREAKFAST WITH THE EXPERT III (FIRST-COME, FIRST-SERVED = ARRIVE EARLY FOR YOUR FAVORITE TOPIC!)</td>
<td>Masters Plaza</td>
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<tr>
<td>7:00AM – 8:30AM</td>
<td>Quality Connection Forum</td>
<td>Patricia Fredrich, RN, BSN</td>
</tr>
<tr>
<td>7:00AM – 8:30AM</td>
<td>Therapeutic Plasma Exchange – Intensity and Duration of Treatment</td>
<td>David Ward, MD</td>
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<tr>
<td>7:00AM – 8:30AM</td>
<td>Immunotherapy and Collection of the Unstimulated Donor</td>
<td>John Manis, MD</td>
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<tr>
<td>7:00AM – 8:30AM</td>
<td>Emerging Indications for Therapeutic Apheresis</td>
<td>Jill Adamski, MD</td>
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| 7:00AM – 8:30AM | **Pediatric Apheresis** Alicia Garcia, RN, HP(ASCP)  
**Pediatric Photopheresis** Leon Su, MD  
**Advancing Apheresis Practice through Research, Case Studies, Publications** Robert Weinstein, MD  
**Red Cell Exchange** Jay S. Raval, MD  
**Atypical HUS** Tina Ipe, MD, MPH  
**Expanding and Maintaining Your Donor Pool** Jeannie Gardener, RN, HP  
**Meet the JCA Editor** Jeffrey L. Winters, MD  
**Graduate Medical Education: The Physician Perspective of Mobile Apheresis Units** Beth Shaz, MD & Jan C. Hofmann, MD, MPH |
| 8:45AM – 12:15PM | **CLOSING SYMPOSIUM: EMERGING INDICATIONS AND ALTERNATIVE THERAPIES**  
Chairs: Bruce Sachais, MD, PhD & Jill Adamski, MD, PhD  
**Emerging Indications in Apheresis from the JCA 2016 Special Issue** Anand Padmanabhan, MD, PhD  
**LDL Apheresis as a New Treatment for FSGS** David Ward, MD  
**Break in Foyer** Celebrity Foyer  
**Novel Extracorporeal Therapies Targeting Critically Ill** Ayan Sen, MD  
**Column Therapy** Volker Witt, MD |
| 8:45AM – 10:15AM | **EDUCATION SESSION VII: ASFA & AABB JOINT SESSION - EMERGING BLOOD PRODUCTS TO SUPPORT FUTURE TRANSFUSION SERVICES**  
Chairs: Margaret Hannan, LPN, AT (ASCP) & Claudia Cohn, MD, PhD  
**Introduction and Platelets** Beth Shaz, MD  
**Plasma and Red Blood Cells** Claudia Cohn, MD, PhD  
**Question and Answer Period** Celebrity Foyer |
| 10:15AM – 10:45AM | **Break in Foyer** Celebrity Foyer |
| 10:45AM – 12:15PM | **EDUCATION SESSION VIII : CELLULAR THERAPY**  
Chairs: Hien Liu, MD & Debbie Ferrell MSN, RN, HP(ASCP)  
**CAR-T Cells** Una O’Doherty, MD  
**Technical Challenges with the Unmobilized Patient** Christine Fernandez, RN, MSN  
**Peripheral Blood Stem Cell Collections in the Age of Gene Therapy** John Manis, MD |
| 12:15PM – 1:30PM | **POST-CONFERENCE ASFA BOARD OF DIRECTORS MEETING**  
(by invitation only) Mission Hills |
SPEAKERS

APHERESIS REVIEW SESSION SPEAKERS
Christina Anderson, RN, BSN, HP(ASCP)
Hans Vrielink, MD
Jeffrey L. Winters, MD
Jay S. Raval, MD
Edwin A. Burgstaler, MT, HP(ASCP)
Leah L. Irwin, RN, MSN, CRNP
Darlene Cloutier, MT, HP
Theresa C. Stec, BA, MT(ASCP)
Alicia Garcia, RN, HP(ASCP)

EDUCATION SESSION SPEAKERS
Antonia Hagen-Coonradt
Anne Eder, MD, PhD
Marleen Neyrinck, RN
YanYun Wu, MD, PhD
Christina Gallagher, RN
Sonja Voziak, RN, BSN
Melinda Caltabiano, BA, MPA
Colwyn Poole, MBchB
Paolo Perseghin, MD
Volker Witt, MD
Lindsay Palomino, RN, BSN, HP
Joanna Wigfield, DO
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Leon Su, MD
Beth Shaz, MD
Claudia Cohn, MD, PhD
Una O’Doherty, MD
Christine Fernandez, RN, MSN
John Manis, MD

OPENING COMBINED SYMPOSIUM SPEAKERS
Theresa Kinard, MD
Lance Williams, MD
Jeffrey L. Winters, MD
Rona Singer Weinberg, PhD

FRANCIS S. MORRISON, MD MEMORIAL LECTURE SPEAKER
Mark E. Brecher, MD

SCIENTIFIC SYMPOSIUM SPEAKERS
Nicole Aqui, MD
Michael C. Milone, MD, PhD
Mitchell S. Cairo, MD
Edwin M. Horwitz, MD, PhD

CLOSING COMBINED SYMPOSIUM SPEAKERS
Anand Padmanabhan, MD, PhD
David Ward, MD
Ayan Sen, MD
Volker Witt, MD

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Claudia Cohn, MD, PhD
Una O’Doherty, MD
Christine Fernandez, RN, MSN
John Manis, MD

PLENARY SPEAKERS
Joseph Schwartz, MD, MPH
Nancy Dunbar, MD
Edwin A. Burgstaler, MT, HP(ASCP)
Kristina Annah Davis, MD
Jay S. Raval, MD
Manasa S. Reddy, MD
Shih-Hon Li, MD, PhD
Suzanne Thibodeaux, MD, PhD

BREAKFAST WITH THE EXPERTS
Patricia Fredrich, RN, BSN
Leah L. Irwin, RN, MSN, CRNP
Una O’Doherty, MD
Lindsay Palomino, RN, BSN
Darlene Cloutier, MT, HP
Tanya Ferber, MSN, RN
Christina Gallagher, RN
Christine Fernandez, RN, MSN
Christina Anderson, RN, BSN, HP(ASCP)
Jennifer Wintz, BSN
Joseph Schwartz, MD, MPH
Sarita Joshi, MBBS, MD
Shannon Kelly, MD
Leon Su, MD
Jeffrey L. Winters, MD
Marisa B. Marques, MD
Theresa C. Stec, BA, MT(ASCP)
Margaret Hannan, LPN, AT(ASCP)
Bryan Prentice, RN, MSN
Bijana Horne, MD
Robin Willis, RN, HP, BSN

ORAL ABSTRACT PRESENTERS
Antonio Páez, MD
Rachel M. Sirignano, MD
Ourania Varsou, BSc, MBchB, PhD
Rebecca Dill, RN
Jan C. Hofmann, MD, MPH
Oluwatoyosi Onwuemene, MD
Leon Su, MD
Rance C. Siniard, MD
Wanda B. Koetz, RN, BA, HP(ASCP)
Patricia A. Fredrich, RN, BSN
Lohith Bachegowda, MD
Hong Hong, MD
Daniel Millar
Edwin A. Burgstaler, MT, HP(ASCP)
Laura Cooling, MD, MS
SPEAKER PRESENTATION SUMMARIES

APHERESIS REVIEW SESSION

Introduction to ASCP Qualification in Apheresis (QIA) Exam

Christina Anderson, RN, BSN, HP(ASCP)

Topics Covered:
1. Overview of the application and examination process.
2. The various routes of eligibility.
3. Recommendations on preparing for the exam.

ASFA is pleased to offer a Qualification in Apheresis (QIA) in partnership with The Board of Certification (BOC) of the American Society for Clinical Pathology (ASCP). The new credential in apheresis excellence went into effect in December 2015. The review session will cover the steps necessary to apply, test, and become Qualified in Apheresis.

An eligible applicant does not have to be a member of ASFA or ASCP but must satisfy the requirements of at least one of the six routes of eligibility which will be covered in this talk.

Basic Science in Apheresis

Hans Vrielink, MD

Workers in medical health need to be qualified and competent for their job. In apheresis, operators/nurses should not solely know how to perform the apheresis procedure, but also have an understanding of the basics of apheresis medicine including aspects in hematology and physiology. It is important to know the function of the different blood cells (in short erythrocytes for the oxygen transport, platelets for primary hemostasis and leukocytes playing a role in defending the body against pathogens and disease), various proteins in the plasma (amongst others secondary hemostasis), and normal blood counts. In hemostasis, calcium plays an important role. We block in apheresis calcium, and therefore hemostasis, by using citrate. Therefore, it’s also important to have understanding concerning the citrate and calcium metabolism with the influence of parathormone, also in combination with disturbances in the function of the kidneys. Besides the binding of calcium, citrate will also bind magnesium. By having awareness regarding the function of calcium and magnesium on the excitability of neurons and muscles, also citrate side effects on the body can be understood and possibly avoided or tempered.

In some apheresis procedures, a substantial volume of the total blood volume needs to be removed for therapeutic reasons. Various substitution fluids are in use to replace the collected volume. Replacement fluids can be hypo-, iso-, or hypertonic and can have substantial consequences for distribution over the different fluid compartments of the body and therefore the blood pressure. For instance, to compensate the blood pressure after the removal of 1 liter of plasma, infusion of approximately 5 liters of NaCl 0.9% is needed since only 20% of the infused saline will remain intravascular.

For a more complete overview of this material, the interested reader is referred to chapter 1 of the 5th edition of ASFA’s Principles of Apheresis Technology.

Clinical Applications: Therapeutics

Jeffrey L. Winters, MD

This session will review the common hematologic, neurologic, and nephrologic conditions treated with apheresis. Diseases/disorders discussed will include: hyperleukocytosis, thrombocytosis, sickle cell anemia, thrombotic thrombocytopenic purpura, hyperviscosity due to monoclonal paraproteins, acute inflammatory demyelinating polyradiculopathy (Guillain-Barré syndrome), chronic demyelinating polyradiculopathy, myasthenia gravis, multiple sclerosis, anti-basement membrane antibody disease (Goodpasture’s syndrome), and ANCA vasculitis. Therapeutic apheresis procedures discussed will include leukocytapheresis, thrombocytapheresis, red cell exchange, and therapeutic plasma exchange. In addition, the 2013 American Society for Apheresis Guidelines will be discussed, including the ASFA categories and recommendation grades. The previously mentioned diseases will be discussed in the context of these guidelines. The presentation, pathophysiology, and use of apheresis will be presented.
Clinical Applications: Donor and Cellular Therapy

Jay S. Raval, MD

This session will review the utilization of apheresis technology for the collection of traditional blood components (red blood cells, platelets, plasma, and granulocytes) and collections of hematopoietic progenitor cells for stem cell transplantation. Characteristics of traditional blood components, indications for their transfusion, and adverse events that occur during the donation will be described. For hematopoietic progenitor cell collection, clinical indications for collection (autologous versus allogeneic), mobilization agents, specific points relating to apheresis collection, adverse events associated with mobilizing agents and apheresis collection, and a brief discussion of what occurs to the products after collections will be presented.

Apheresis Instrumentation

Edwin A. Burgstaler, MT, HP(ASCP)

Instruments are a part of apheresis. Without instruments, apheresis could not be performed. Early apheresis equipment used centrifuge separators that resembled the cream separator, but those designs have continually evolved into more sophisticated separators. Apheresis employs three principles of operation: 1) draw and separate the blood, 2) remove the desired component, and 3) return or replace the remaining components. This is done using centrifugation, filtration, or a combination of both. Components are separated by size or specific gravity (weight). Apheresis instruments have common features such as pumps, valves, sensors, separators, and microprocessors. Cleaning and maintenance is very important in ensuring the instruments are safe and efficient.

Selective removal therapy allows removal of specific elements in the plasma or blood and the return of the remaining components by means of filtration or adsorption. Extracorporeal photopheresis allows the collection of patient cells, photoactivation, and then return to the patient as treatment. Immunotherapy and bone marrow transplant are rising as a major form of treatment in the future and apheresis instruments are essential in collecting the initial cells, as well as providing hematopoietic progenitor cells for bone marrow transplants. A good team of apheresis instruments and operators provides a valuable resource in the practice of medicine.

Donor and Patient Care

Leah L. Irwin, RN, MSN, CRNP

Topics Covered:
1. Assessment and Monitoring for both Donor and Therapeutic Apheresis
2. Replacement Fluids for TPE and Red Cell Exchange
3. Anticoagulation
4. Medications and Drug Reactions
5. Venous Access
6. Fluid Balance
7. Age-Related Consideration
8. Adverse Reactions

Apheresis Program Essentials

Darlene Cloutier, MT, HP

Management of an apheresis program requires balancing multiple resources and talents in a coordinated effort to support patient care in a highly specialized area of medicine. An effective apheresis program requires a quality plan, the availability of sophisticated medical equipment and highly skilled and qualified apheresis operators. Apheresis operators must possess distinctive qualities acquired through training and experience to perform complex tasks in a systematic fashion and the flexibility to quickly adjust to an ever-changing patient care environment. This presentation will introduce the challenges and essential characteristics of an apheresis program with attention to organizational structure, resources, financial considerations, quality concerns, and regulatory issues.

Standards, Guidelines, and Regulations

Theresa C. Stec, BA, MT(ASCP)

The objective of this talk is to provide an overview of requirements for informed consent, confidentiality. Donor selection, facility licensure and accreditation, training and competency will be covered which will comprise 10-20 percent of the Qualification in Apheresis (QIA) exam.
OPENING COMBINED SYMPOSIUM: SOLID ORGAN AND HEMATOPOIETIC STEM CELL TRANSPLANT

Therapeutic Plasma Exchange Facilitates Successful Solid Organ Transplantation: HLA Desensitization and Antibody Mediated Rejection

Theresa Kinard, MD

The practice of solid organ transplantation has made significant transformations in the past century since it was first performed. Advances in science and medicine have expanded our abilities to share these valuable resources to patients and have improved peri-transplant management. Most notably, breakthroughs in surgical techniques and immune management have overcome historical limitations to solid organ transplant. In addition to chemical immunosuppression therapy, therapeutic plasma exchange (TPE) is becoming a requested medical procedure for pre-transplant desensitization and post-transplant antibody mediated rejection of solid organs. TPE may acutely reduce human leukocyte antigen (HLA) antibodies in highly desensitized patients to improve the donor selection pool and cross-matching, who, otherwise, may not be considered for a life-saving transplant. Unfortunately, some recipients will develop antibody mediated rejection due to donor specific antibodies (DSAs) despite maximal medical efforts. In conjunction with alternative chemotherapies, TPE may help reverse acute injury and reduce permanent damage to the transplanted organ by reducing DSAs. Intimate Collaboration between the transplant clinicians, laboratory medicine, and apheresis service can facilitate successful transplants and aid in the management of antibody mediated rejection.

Apheresis Medicine in ABO Incompatible Kidney Transplantation: Strategies for Successful Outcomes

Lance Williams, MD

Dr. Lance Williams will discuss the history of kidney transplantation and give an overview of how ABO incompatible transplants, once thought impossible, have now become an essential part of kidney transplant programs worldwide. Research to support the use of apheresis in the pre- and post-operative periods of ABO incompatible kidney transplants will be reviewed. A highlight of this lecture will include program optimization, technical aspects, and potential pitfalls to avoid, and will end with a look into the future of this ever evolving area of organ transplantation.

CME Objectives:

• Understand the principles of ABO incompatible kidney transplantation and the barriers that must be overcome for graft and patient survival.
• Discuss different protocols for ABO incompatible kidney transplantation and the integral role of apheresis.
• Review niche apheresis procedure details for ABO incompatible kidney transplant protocols.
• Identify the keys to success for an ABO incompatible kidney transplant program that incorporates apheresis for desensitization.

New Strategies for HPC Mobilization and Stem Cell Collection: Effect of Content on Outcomes

Jeffrey L. Winters, MD

The collection of cells for autologous hematopoietic progenitor cell (HPC) transplantation has traditionally focused on the collection of the greatest number of CD34+ cells possible without consideration of other cell types within the HPC product. A growing body of published evidence indicates that cells other than CD34+ cells also influence clinical outcomes in patients undergoing autologous HPC transplantation. For example, the granulocyte content of the product has been found to be associated with reactions at the time of infusion, including severe and, in some cases, fatal reactions. This session will focus on the published evidence concerning the influence of lymphocyte and monocyte content within the HPC product on progression free and overall survival in patients undergoing autologous HPC transplantation. In addition, the influence of the apheresis device used and instrument settings on the lymphocyte and monocyte content of the product will be discussed.

Hematopoietic Progenitor Cell Products

Rona Singer Weinberg, PhD

Cellular Therapy Laboratories manufacture personalized and precision medicine cellular products for patients. Hematopoietic progenitor cell (HPC) products collected by apheresis are an example of such a product. This presentation
will include: a brief overview of hematopoiesis, comparison of HPC products collected from bone marrow, peripheral blood by apheresis, and cord blood, FDA regulations, accreditation standards, laboratory procedures that ensure the quality, potency, and purity of HPC products, minimal manipulation techniques such as plasma reduction and red blood cell reduction, cryopreservation, cell enrichment and depletion techniques that enable haploidentical transplants such as enrichment of CD 34+ cells and depletion of T-cells, respectively, and outcome evaluation.

**FRANCIS S. MORRISON, MD MEMORIAL LECTURE**

**30+ Years in Apheresis and Transfusion Medicine**

*Mark E. Brecher, MD*

In Transfusion Medicine/Apheresis we stand at the crossroads of many critical fields in medicine (e.g. surgery, neurology, infectious disease, anesthesiology, oncology and transplantation). This positions our small cross-over field to make contributions in a number of areas. Dr. Brecher will look back over his career to illustrate, how from our fairly unique vantage point, we can influence and change the practice of medicine.

**EDUCATION SESSION I: BASIC DONOR APHERESIS**

**Optimizing the Blood Donor in Center and on Mobile Blood Drives**

*Antonia Hagen-Coonradt*

Blood Centers face many challenges today. Customers must manage within shrinking budgets and have forced price reductions on the blood suppliers. Blood Centers are trying to reduce internal costs by collecting blood products as efficiently and cost-effectively as possible.

This presentation will cover steps in the conversion and optimization of blood donors, to focus on collection that is closely associated with the demands of the customer and that also fits within the budget of the Blood Center.

It will describe the actions, the staff and management team of a Blood Center can take, in order to achieve maximum product availability for their customers by optimizing draw.

**Iron Balance and Blood Donation**

*Anne Eder, MD, PhD*

Whole blood and apheresis donors lose iron with each donation, which can cause or aggravate iron deficiency anemia. Each whole blood collection (500 mL) removes about 200 mg of iron as RBC hemoglobin, which corresponds to about 25% of iron stores in men and 75% in women. Since individuals can give whole blood every 56 days, frequent blood donors can deplete their total body iron stores with only a few whole blood donations. Plateletpheresis donors lose less whole blood with donation but can also become iron depleted over time, because of the volume of blood sampled for testing and lost in the apheresis circuit. Blood centers have taken steps to monitor, limit or prevent iron deficiency in blood donors. In addition, FDA's 2016 Final Rule on blood donor eligibility increases the minimum predonation hemoglobin from 12.5 g/dL to 13.0 g/dL for male donors. This session will explore hemoglobin and iron balance in blood donors and evaluate various preventive strategies to protect against iron depletion with frequent donation.

**Donor Math**

*Marleen Neyrinck, RN*

To collect specific blood components by apheresis techniques, a volume of blood from the donor is processed. It is important to take care of the health of the donor and perform apheresis procedures as safely as possible. So we have to consider a number of issues.

First of all, the total blood volume (TBV) is not the same in everybody. There are differences according to gender, physical properties and age. To address these differences, various formulas have been published for more exact calculations of the TBV. A correct calculation is important to calculate the maximally allowed extracorporeal volume. For the safety of the donor, you need to consider the blood volume outside the body.

Also, the total plasma volume is not the same in everybody. Differences in plasma volume influence your procedure when you perform donor plasma collections.
It is also important to calculate the collection efficiency (CE) of your procedures. It can be used for quality aspects of your collection and collection facility. You can compare the data of different clinics.

Observed are differences in CE in autologous donors with various diseases, the donor’s gender, between autologous or allogeneic donors, but also between co-workers.

By knowing the mean CE, you can calculate what volume of blood should be processed to collect a specific number of cells. You can also make an estimation what you will collect when you process a specific volume of blood. So you know if you need one or more procedure days. It can reduce costs, think of additional mobilizations, side effects, risk of line infections, additional hospital admissions.

In the presentation, I will tell you more about the possibilities with calculations in apheresis.

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**EDUCATION SESSION II: ADVANCED THERAPEUTIC APHERESIS**

**Pharmacology**  
YanYun Wu, MD, PhD

1. Review basic pharmacokinetics and its relevance in drug removal by therapeutic apheresis  
2. Review the removal by therapeutic apheresis of medications commonly used in patients undergoing therapeutic apheresis  
3. Discuss approaches/strategies in managing drug removal by therapeutic apheresis

**Tiny Tandems: The Ins and Outs of Therapeutic Tandem Procedures**  
Christina Gallagher, RN

This presentation will review therapeutic apheresis procedures that run in conjunction with continuous renal replacement therapy (CRRT) as well as extracorporeal membrane oxygenation (ECMO). The highlights will include types of diseases/disorders treated with tandem TPE, calculations when running conjunctive therapies, considerations for machine prime, how to connect to existing circuit, electrolyte management, and the importance of strong communication between departments. Tandem therapies can be run safely and efficiently even on the tiniest patients.

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**SCIENTIFIC SYMPOSIUM: CURING DISEASE WITH CELLULAR THERAPY**

**Cellular Therapy Overview**  
Nicole Aqui, MD

Cellular therapy has existed since at least the 17th century, when the first blood transfusion was performed. However, as the last twenty years has seen an explosion in our understanding of immune tolerance, the field has advanced dramatically and its true potential is only now starting to be realized. This presentation will review principles of cellular therapy and describe various cell sources and applications. A brief summary of data from pertinent clinical trials of cellular therapy will also be presented.

**Building Synthetic Immunity to Cancer Using Chimeric Immunoreceptors**  
Michael C. Milone, MD, PhD

The presentation will review the clinical development of CTL019, an autologous T cell immunotherapy using a CD19-specific chimeric antigen receptor that is currently in phase II clinical trials for leukemia and lymphoma. This review will include a discussion of the challenges associated with manufacturing autologous T cell products along with highlighting some of the unique toxicities associated with CD19-directed T cell immunotherapy.

**Familial Haploidentical Allogeneic Stem Cell Transplantation in Patients with High-Risk Sickle Cell Disease (SCD)**  
Mitchell S. Cairo, MD

Background: SCD is characterized by chronic vaso-occlusive crises (VOC), multiorgan failure and early mortality. HLA matched sibling donor (MSD) AlloSCT remains the only curative therapy in high risk patients with SCD. However, less than 15% of eligible SCD patients have an unaffected HLA MSD (Talano/Cairo et al, EJH, 2015). While we have reported 100% EFS/OS utilizing reduced toxicity conditioning (RTC) and AlloSCT from HLA MSD (Bhatia/Cairo et al, BMT, 2014), the results were
less optimal utilizing RTC and matched and partially matched UCBT (Radhakrishnan/Cairo et al, BBMT, 2013). FHI AlloSCT as an alternative allogeneic donor source in the past has been limited by excessive graft failure (GF) and/or severe AGVHD (Cairo et al, BBMT, 2008). To overcome these barriers we previously investigated an approach of CD34 enriched and T cell addback (2.0x10^5 CD3/kg) in pediatric recipients utilizing matched unrelated donors (Geyer/Cairo et al, BJH, 2012).

Methods: SCD patients 2-21yrs of age with one or more high risk features: a) stroke, b) ACS, c) multiple VOC and/ or d) abnormal TCD (BMT CTN criteria) received a myeloablative conditioning regimen followed by FHI AlloSCT from a parental donor (SCD trait), following CD34 enrichment (CliniMACS®) (target 10x10^6 CD3/kg final product) and T cell addback (2x10^5 CD3/kg final product) and tacrolimus AGVHD prophylaxis. WBC donor and CD71+ (RBC) chimeraism was performed by STR.

Results: Sixteen patients have been enrolled, median age 13.5 (4-20) yrs, M/F (9/7), primary high risk criteria included: 56% stroke, 19% ACS, 12.5% VOC, 12.5% abnormal TCD. Median engraftment of myeloid cells and platelets was 10 and 16 days, respectively. The cumulative incidence of grade II-IV AGVHD was 11% (CI95 0-73). Day 180 whole blood and CD71 (RBC) donor chimerism was 98±3% and 97±5%, respectively. Viral reactivation occurred with CMV (N=4), adenovirus (N=1) and EBV (N=1). There has been no GF and 1 patient died of SOS at day -59 and 1 of steroid refractory AGVHD. The one-yr probability of EFS is 85% (CI95 54-99). All remaining 14 patients are SCD symptom free with stable to improved organ function.

Summary: These preliminary results demonstrate the safety, feasibility and efficacy of FHI AlloSCT utilizing CD34 enrichment and T cell addback from parental SCD trait donors. This research was supported by FDA grant 5R01FD004090.

Unravelling the Saga of MSCs

Edwin M. Horwitz, MD, PhD

Mesenchymal stem/stromal cells (MSCs) are spindle-shaped, plastic adherent cells that may be isolated from a wide array of tissues and defined according to standard, but very general criteria. For clinical applications, bone marrow, and adipose tissue are the most common sources. Over the last two decades, MSCs have emerged as one of the most commonly studied, and controversial cells in the field of cell therapy. MSCs have found potential applications in regenerative medicine as well as cancer therapeutics. An abundance of encouraging preclinical data has prompted early phase clinical trials in many disorders that, collectively, have established an outstanding safety profile for MSC cell therapy. However, unambiguous proof of efficacy remains a work in progress. One area of contention is the seemingly conflicting reports of the mechanism of biologic/therapeutic activity. Together, though, the body of literature seems to suggest that MSCs are restorative cells; the many intrinsic activities of MSCs are focused on restoring diseased or damaged tissues to their healthy, physiologic state. Engineering MSCs is actively pursued in an effort to enhance the intrinsic activity or often, to confer an entirely new biologic activity, especially important for cancer therapeutics. Thus, natural or engineered ex vivo expanded MSCs may be exploited as cell therapy for many, highly disparate diseases. Our research team has demonstrated that MSCs can stimulate growth in children with severe osteogenesis imperfecta, a genetic disorder characterized, in part, by marked growth deficiency. We and many others are using MSCs to modulate immunity in an effort to treat graft-vs-host disease after hematopoietic cell transplantation. Finally, investigators are exploiting the intrinsic tumor-homing capacity of MSCs to develop gene therapy approaches to develop novel strategies to treat cancer. MSCs have extraordinary potential as an agent of cell therapy. Our challenge is prove the immense value with rigorous science and unequivocal clinical data.

EDUCATION SESSION III: BASIC THERAPEUTIC APHERESIS

Red Cell Exchange

Sonja Vozniak, RN, BSN

Red blood cell exchange transfusion is performed mostly for patients with sickle cell disease. When performing these procedures routinely you have to develop a standard of care approach to ensure the procedure is safe and effective. It is important to develop a schedule for the patient that ensures blood products are available for the day of the procedure. It is also imperative that the nursing staff develops a workflow that includes pre-procedure checklist to ensure patient has
a valid consent, complete physician orders, confirmation of line placement if needed, and blood products available. If a workflow is developed, most likely you will follow standard operating procedures and meet the patient’s desired goals. We will discuss scheduling, procedural specifications, procedure types, vascular access, complications, as well as staff training and competency.

**Mobile Therapeutic Apheresis**  
*Melinda Caltabiano, BA, MPA*

**Topics Covered:**
- Brief history of NYBC and the Apheresis Program
- Structure of the Clinical Apheresis department
- Activity of the department
- Integration of Coral Therapeutics
- Logistics
- Our staff – RN’s
- Credentialing for multiple hospital customers
- Quality oversight of the program
- Challenges of running a 24/7/365 service
- Benefits of having a mobile service
- Training an entirely field based staff (online training and in-person)
- Customer service
- Competencies and requirements
- Who is our service for?
- Introduction to Comprehensive Cell Solution

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**EDUCATION SESSION IV: INTERNATIONAL APHERESIS**

**Plasma Exchange Around the World – A Perspective from Africa**  
*Colwyn Poole, MBChB*

Plasma exchange occurs in South Africa in the context of multiple coinciding epidemics including infectious diseases (with special reference to HIV/AIDS and Tuberculosis), diabetes and other diseases of lifestyle as well as trauma-related disease. South Africa has the largest number of persons living with HIV/AIDS globally, the highest incidence of Tuberculosis globally, a long established epidemic of trauma and emerging epidemics of diabetes and other diseases of lifestyle. An additional factor discussed is the complex challenges facing people in South Africa with respect to health care provision and health care access.

In this context, details of therapeutic plasma exchange in South Africa as provided by the South African National Blood Service (SANBS) are presented. Therapeutic plasma exchange has been performed in South Africa by the SANBS since 1996. All disease indications for plasma exchange over a three year period are discussed. This includes a special focus on the most common indication for plasma exchange, thrombotic thrombocytopenic purpura (TTP), detailing a cohort of 233 TTP patients as well as a case series summary for selected rare diseases (e.g. neuromyelitis optica and stiff person syndrome). Procedure volumes, service provision models, application of ASFA 2013 guidelines and the regulatory framework in South Africa are also discussed.

South Africa is illustrative of the disease burden driving plasma exchange requirements in Sub-Saharan Africa. Results of a survey providing an overview of plasma exchange practice in countries in Africa is presented.

**Red Blood Cell Exchange Around the World - A Perspective from Africa**  
*Colwyn Poole, MBChB*

The relationship between malaria and sickle cell disease is well documented as is the geographical overlap of high incidence of both diseases in West, Central and East Africa.

Red cell exchange is most commonly used in the setting of sickle cell disease in global published literature. Despite Africa being home to about 85% of children born with sickle cell disease (SCD), published red cell exchange procedures for SCD is low.

Nigeria has an estimated Hb S allele frequency ranging from 0.09% to 0.18%. In a publication from March 2016 entitled “Blood transfusion services for patients with sickle cell disease in Nigeria”, 31 of 74 hospital respondents surveyed reported that packed red cells was available in 14 (45%), access to leukodepleted packedcells was present in 1 (3%), HIV, HBV and HCV donor-screening was available in 30 (97%), 31 (100%) and 27 (87%) respectively, extended red cell phenotypinh and alloantibody testing was available in 0 (0%) and 15 (55%) offered chronic transfusion therapy by standard transfusion or manual exchange with the most
common indication being previous stroke. None of the hospitals surveyed offered automated red cell exchange.

There are no malaria endemic regions in South Africa, however neighbouring countries are endemic. South Africa is a migration destination country from all regions in Africa. From 2012 to 2016 and during this period only 4 red cell exchange procedures have been performed in total and no red cell exchange for paediatric patients with sickle cell disease has been performed by the South African National Blood Service (SANBS). During this same period, two patients with severe malaria (P. falciparum with parasite count >50%) were successfully treated with red cell exchange.

Results of a survey providing an overview of red cell exchange practice in Africa is presented.

**Extracorporeal Photochemotherapy (ECP) Around the World**

*Paolo Perseghin, MD*

ECP has become progressively widespread in these last decades, since its introduction in clinical practice as a FDA-licensed first-line treatment for cutaneous T-cell lymphoma by Edelson et al in 1987. It has been reported that more than 200 institutions all over the world perform ECP procedures. ECP has been demonstrated to induce MNC apoptosis and T-reg lymphocytes increase, but its mechanism/s of action are still under investigation. ECP may be performed either as a on-line treatment (the only FDA-approved) or, mostly in European countries as a off-line procedure (at first MNC collection followed by the addition of 8-MOP and UV-A irradiation with another device). ECP is mostly used in the treatment of acute or chronic GvHD refractory to conventional therapy with steroids, CSA, MMF, etc. This in turn induced over the years several scientific societies in Italy (2013, Transfusion), UK (2012, BJH) , Austria-Germany-Switzerland (BBMT 2011, 2013) , USA (BBMT 2012) to develop guidelines or recommendations to deliver uniform treatments to the patients. GvHD aside, ECP has been introduced as a potentially effective treatment in different clinical settings, such as solid organ rejection, autoimmune diseases (Lupus, systemic sclerosis, rheumatoid arthritis), dermatological diseases (pemfigo bullosus, lichen planus, atopic dermatitis), etc. ECP has been investigated in pilot studies in multiple sclerosis, type 2 diabetes, Crohn’s disease. By searching PubMed database (march 16th, 2016) roughly 1150 citation have been found using ECP and/or photopheresis as key words. Nevertheless, ECP treatment is weakened by the very few numbers of randomized trials performed in the different settings. Finally, alternative approaches in performing ECP has been recently tried in different institutions, including mini buffy-coats ECP procedures and freezing/thawing of aliquots from MNC yields for further UV-A irradiation in low-weight children, to reduce the number of MNC collections.

The International Approach to Marginal Groups (Pediatrics and Geriatrics)

*Volker Witt, MD*

5% of the apheresis procedures in the WAA (World Apheresis Association) registry are performed on children and young adults (< 20 years of age). The literature is especially for the technical skills needed for apheresis procedures in very small children (< 10 to 20 kg bodyweight) elaborated and also in textbooks of apheresis science special chapters are giving detailed information about how to proceed in pediatric patients. Nevertheless, there is a lack of information on how to evaluate the disease status and the outcome especially in this population. Are we treating “small adults” or a distinct pathophysiological status? In the opposite marginal group, the elderlies, less information is available. In the example of the data from the WAA registry this group contains 25% of all registered patients. Especially for the very old patients (> 80 years) with all their co-morbidities there is no detailed information published on how we should treat these patients.

This lecture will take these two marginal groups and elucidate possible strategies for dealing with these marginal groups.

**EDUCATION SESSION V: PHOTOPHERESIS**

**Technical Challenges**

*Lindsay Palomino, RN, BSN, HP*

The Therakos CellEx Photopheresis System is FDA-approved to deliver in-line photopheresis therapy. This half-hour session will focus on technical challenges in using this instrument including the following: management of red cell pump and system pressure alarms, troubleshooting the impact of abnormal plasma conditions, and responding to kit defects that have an immediate and direct impact on patient safety.
Quality
Joanna Wigfield, DO

Extracorporeal photopheresis (ECP) is a treatment modality that started in the late 1980’s for the treatment of cutaneous T-cell lymphoma. Today, it is also used in the treatment of graft-versus-host disease and solid organ transplant rejection. Although this treatment modality was discovered 30 years ago, there is still much to learn about the process and how to maximize its use to achieve better patient outcomes. Quality control and improvement continues to be a challenge as we are still learning about ECP’s mechanism of action, treatment protocols, and efficacy. In this presentation, we will discuss areas of the ECP process that may be susceptible to variability or errors that have the potential to affect patient response. In addition, we will present ways to track and monitor potential quality issues and provide suggestions for preventative or corrective actions.

EDUCATION SESSION VI: PEDIATRIC APERATURESIS

Case Study 1: Red Cell Exchange
Leon Su, MD

This session is a presentation of a sickle cell patient on chronic red cell exchange with a focus on the needs and issues of the pediatric patient. Common indications for starting chronic red cell exchange at our institution will be reviewed. In addition, options for vascular access will be explored and the role of child life support in helping our young patients tolerate access will be discussed. Finally, additional topics to be covered during the presentation include blood product selection, the decision between depletion and exchange versus exchange alone, monitoring iron burden following exchange and our experience with adverse reactions in patients undergoing red cell exchange.

Case Study 2: Leukoreduction
Alicia Garcia, RN, HP(ASCP)

This talk will discuss a leukodepletion procedure performed on a 7.4kg patient who presented with leukemia and a white blood cell count of 974K. The talk will outline technical and safety considerations related to performing this procedure using COBE Spectra, and the importance of a multidisciplinary approach and team communication when performing procedures in the ICU setting. Because the child presented with an intracranial hemorrhage, this talk will also touch on the ethical considerations of providing complex, invasive care to the terminal child.

Case Study 3: Pediatric Plasma Exchange
Robin Willis, RN, HP, BSN

The "Case Study in Pediatric Plasma Exchange" is directed to Nurses, Apheresis Operators and Physicians. The presentation will discuss several clinical indications for plasma exchanges most commonly seen in Pediatric Apheresis patients. The case study will include a standard apheresis plasma exchange treatment plan, selection of appropriate vascular access device, maintaining hemodynamic stability, blood priming, etc...of the pediatric patient undergoing plasma exchange.

CLOSING SYMPOSIUM: EMERGING INDICATIONS AND ALTERNATIVE THERAPIES

Emerging Indications in Apheresis from the JCA 2016 Special Issue
Anand Padmanabhan, MD, PhD

This presentation will focus on emerging indications for apheresis therapy in human disease that are summarized in the upcoming JCA 2016 Special Issue. The Special Issue includes 13 new diseases added since the previous edition that was published in 2013. In addition, a number of new indications within already categorized diseases will be presented and discussed. The presentation will cover select new indications in diverse areas including Neurology, Hematology and Transplantation.

LDL Apheresis as a New Treatment for FSGS
David Ward, MD

Focal Segmental Glomerulosclerosis (FSGS) is a disease of the renal glomeruli which causes heavy proteinuria, nephrotic syndrome and progressive kidney failure. The so-called primary form of FSGS often recurs after kidney transplantation, implicating endogenous “nephritogenic” factor(s) in the patient’s plasma. It is well established that therapeutic
plasma exchange (TPE) is often effective in this post-transplant situation. TPE can also sometimes be effective in treating the original disease in the native kidneys before transplantation, but there the difficulty is in distinguishing the primary recurrent form from other forms of FSGS that are not due to circulating nephritogenic factors. Also such cases are usually not treated with TPE until other therapies (steroids and immunosuppressives) have failed, thereby selecting the most difficult cases. Research to identify the nephritogenic molecule(s) implicated in this disease has been difficult and is still inconclusive. However, it has been found that LDL-apheresis using dextran sulfate adsorption technology has been markedly effective in a majority of selected pediatric patients with FSGS in their native kidneys, a finding confirmed in the POLARIS study published in 2015. However, some patients who benefitted in that study had other forms of glomerular disease, and it is possible that correction of hyperlipidemia (which is a complication of the nephrotic syndrome whatever its cause) is directly protective of the glomeruli. Alternatively the benefit could be because nephritogenic factor(s) are being removed on the dextran sulfate. This still needs to be worked out, and the clinical choice between LDL-apheresis and TPE needs to be researched further with clinical trials.

**Novel Extracorporeal Therapies Targeting Critically Ill**

*Ayan Sen, MD*

Extracorporeal therapies like CRRT (continuous renal replacement therapy), plasmapheresis have been used in critically ill patients with organ failure for decades. Novel forms of extracorporeal therapies like ECMO (Extracorporeal Membrane Oxygenation), ECCO2R (Extracorporeal Carbon-dioxide Removal), Respiratory Dialysis, Hemoperfusion, Liver Dialysis etc hold promise as supportive therapies in a wide variety of clinical conditions. These artificial mechanical devices are not just a blackbox but actively interact with physiological systems during critical illness. Therapeutic applications need to be tailored to the needs of individual patients. This presentation will aim to describe the concepts behind these novel technologies and elucidate how they provide us with real opportunities to integrate personalized medicine and evidence-based medicine to deliver precise treatments resulting in a quantum leap in healthcare delivery for the critically ill.

**Column Therapy**

*Volker Witt, MD*

Therapeutic apheresis is often performed as total plasma exchange in order to deplete the patient’s blood from harmful substances and to provide a preferable long-lasting clinical benefit for the patients. The advantage is the simple availability and technique. The disadvantage is, that the “total” plasma is substituted or, in case of albumin as a replacement fluid, a dilution is performed of the patient’s plasma. This could lead to secondary problems for the patient. It is possible the balance of cytokines in the body needed to handle the pathological situation is disturbed. To provide a more specific treatment, columns are used in so called secondary plasmapheresis, where the plasma is primarily separated either by centrifugation or filtration, and then in a second step purged with a second column to adsorb, filter, dialyze, or metabolize the distinct pathogen without disturbing the balance of the patient’s plasma. In other words, the patient’s plasma goes back to the patient without the pathogen, but as it was before. Especially in diseases where antibodies play a major role, specific columns can take out specific parts of the antibodies, for example IgE, or Anti – A antibodies, and so on. Adsorption columns can liberate the patient’s plasma from lipids, but also from fibrinogen, CRP and other substances.Columns could also host cells, which could directly or through a second circle metabolize harmful substances like liver cell in acute and chronic liver failure, or donor granulocytes endotoxin without entering the patient’s body.

This lecture will give an overview of the possible use of Column in apheresis treatments, from the simple depletion of harmful substances to the artificial organ.

**EDUCATION SESSION VII: ASFA & AABB JOINT SESSION – EMERGING BLOOD PRODUCTS TO SUPPORT FUTURE TRANSFUSION SERVICES**

**Introduction and Platelets**

*Beth Shaz, MD*

This presentation will discuss new blood products to support future transfusion services. This will include pathogen inactivated, platelet additive solutions, and secondary
bacteria tested platelets. The risks and benefits for various products and product modifications will be reviewed. Lastly new products being developed will be discussed.

**Plasma and Red Blood Cells**

*Claudia Cohn, MD, PhD*

New FDA-approved components are available which raise the safety profile for patients. For plasma there is Octaplas™, a solvent-detergent treated component that is aliquoted from large donor pools, and pathogen-inactivated plasma. Both components mitigate the risk of transfusion transmitted infections. For red blood cells and whole blood there are technologies under development which are being tested in clinical trials. This presentation will go through these different products, and also detail the associated risks and benefits. There will also be a brief discussion of technical and logistical hurdles which may occur.

**EDUCATION SESSION VIII : CELLULAR THERAPY**

**CAR-T Cells**

*Una O'Doherty, MD*

CAR-T cells have transformed how we treat leukemia and lymphoma and possibly many other illnesses. They have also transformed the role of the apheresis unit and the manufacturing laboratory in the care of these patients. A history of our experience with CAR-T cells at Penn and the basic science behind CAR-T efficacy will be provided. An important goal of the presentation will be to provide a deeper understanding of the science behind cellular engineering including vector-based transduction of T cells. This deeper understanding will provide background for the practical considerations that relate to the apheresis unit’s role and the laboratory’s role to generate potent CAR-T cells. These practical issues include enhancing T cell collections as well as optimizing T cell manipulations to enrich, activate, transduce and expand the harvested T cells in the laboratory. The challenges and toxicities related to CAR-T cells will also be explored with an eye to future applications and avenues of research.

**Technical Challenges with the Unmobilized Patient**

*Christine Fernandez, RN, MSN*

Tumor-specific cellular immunotherapy represents an important potential advance in treating patients with a variety of mutations and malignancies. There are approximately 428 active clinical research trials enrolling subjects worldwide. Apheresis programs in a variety of settings are performing these MNC collections for these trials. The apheresis operator needs to have an understanding of the scope and goals of these collections. In this session, the unmobilized (unstimulated) patient cellular therapy collection will be defined. The current trends will be discussed, and technical challenges will be identified. Interventions that may be useful in approaching these collections, and the challenges associated with those procedures will be explored. The implementation of a prediction algorithm and collection decision pathway will also be discussed as a possible approach to standardize and improve outcomes. Identifying factors which can impact successful leukapheresis collections for cellular immunotherapy manufacturing, will be integral to future research and treatment success.

**Peripheral Blood Stem Cell Collections in the Age of Gene Therapy**

*John Manis, MD*

Cellular therapy including gene therapy has re-emerged as a viable technique to treat a variety of genetic diseases by delivering intact genes to target cells. Autologous hematopoietic stem and progenitor cells remain a frequent target for delivery of nucleic acid vectors that can potentially correct and treat monogenic gene defects. This presentation will overview the history of gene therapy and highlight the diseases and therapies being currently treated in clinical trials. These diseases include immunodeficiency, sickle cell anemia, chronic granulomatous disease, and adrenoleukodystrophy. In vitro manipulation of peripheral blood stem cells requires large numbers of cells to be collected in one or two procedures, thus requiring close communication between the gene therapist, the cell manipulation laboratory and the therapeutic apheresis unit. Mobilization and timing techniques will be discussed and collection goals will be presented for optimal outcomes. Finally, novel gene editing techniques for future trials will be presented.
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