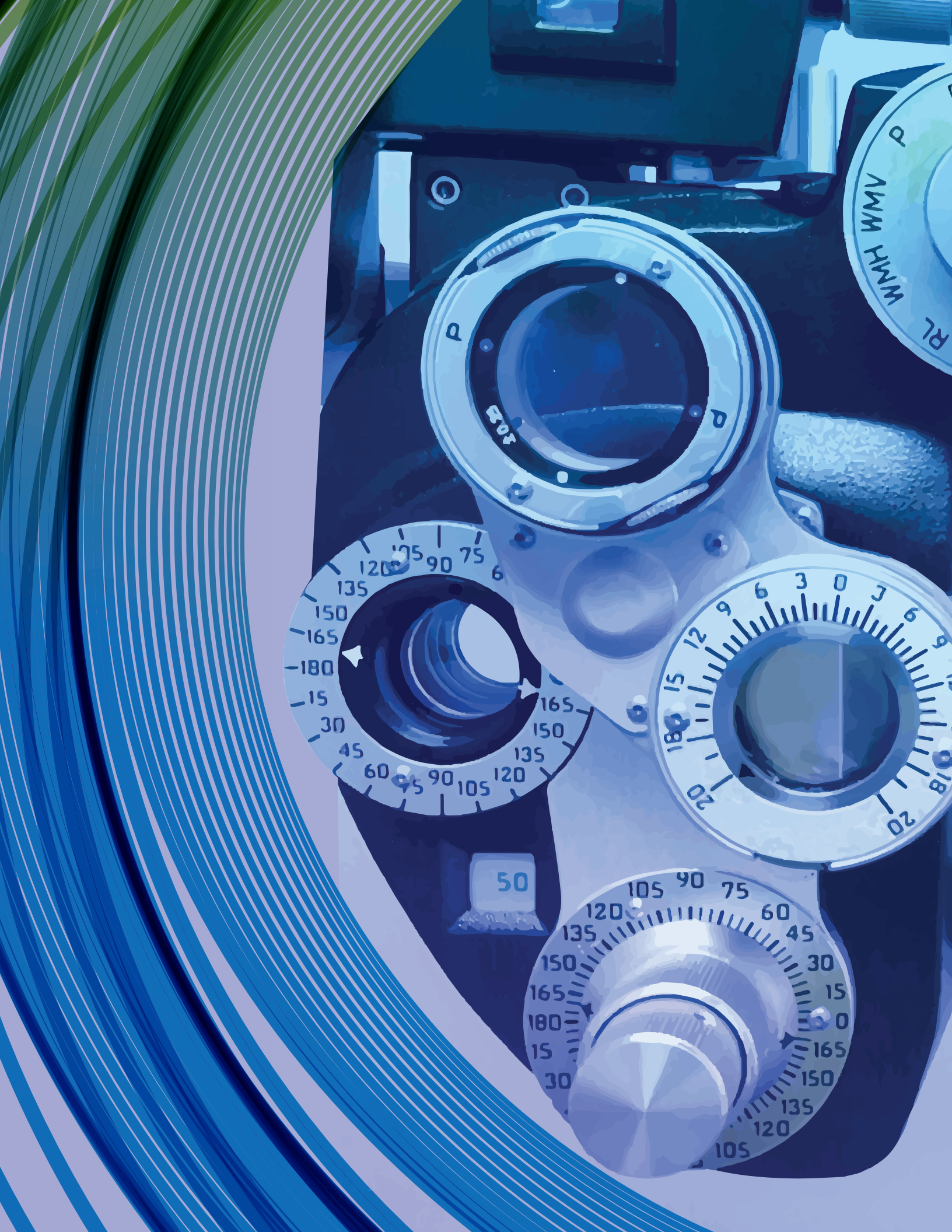
EBAA 2021 ANNUAL MEETING

JUNE 8-18 • #EBAA2021

2021 SYMPOSIUM PROGRAM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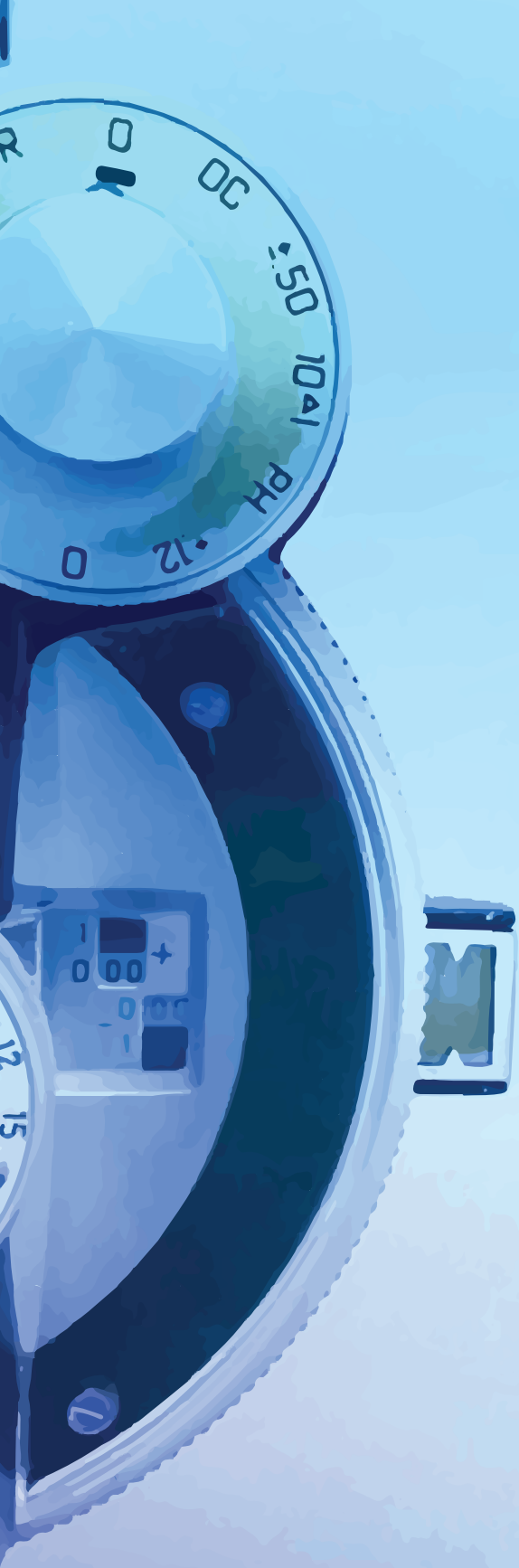

2021 EBAA SYMPOSIA

2021 Annual Meeting
Saturday, June 12, 2021
Online

Scientific Symposium
10:30 a.m. – 1:00 p.m. EDT

Physician Discussion
1:15 p.m. – 2:15 p.m. EDT

Medical Directors Symposium
2:30 p.m. – 4:30 p.m. EDT

EBAA 2021 ANNUAL MEETING

SCIENTIFIC PROGRAMS COMMITTEE

Leadership

Chair
Marjan Farid, MD
University of California, Irvine
Irvine, CA

Vice Chair
Joshua H. Hou, MD
Lions Gift of Sight/ University of Minnesota
St. Paul, MN

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Bennie Jeng, MD
University of Maryland School of Medicine
Baltimore, MD

Joann Kang, MD
New York Eye and Ear Infirmary
New York, NY

Adam Kaufman, MD
Cincinnati Eye Bank
Cincinnati, OH

Joung Kim, MD
Emory Eye Center
Atlanta, GA

Jennifer Li, MD
Sierra Donor Services Eye Bank
Sacramento, CA

Marian Macsai, MD
Oyster Point Pharma
Chicago, IL

Priya Mathews, MD
Florida Eye Specialists and Cataract Institute
Tampa, FL

Corrina Patzer
Lions VisionGift
Portland, OR

Saira Quraishy, CEBT
Georgia Eye Bank
Atlanta, GA

Michelle K. Rhee, MD
The Eye-Bank for Sight Restoration
New York, NY

C. Drew Salisbury, MD
Premier Medical Group
Atlanta, GA

Christine Shieh, MD
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Nashville, TN

Michael Titus, CEBT
Eversight
Ann Arbor, MI

David D. Verdier, MD
Verdier Eye Center, PLC
Grand Rapids, MI

EBAA 2021 ANNUAL MEETING

LEARNER NOTIFICATION

Acknowledgment of Financial Commercial Support

No financial commercial support was received for this educational activity.

Acknowledgment of In-Kind Commercial Support

No in-kind commercial support was received for this educational activity.

Satisfactory Completion

Learners must complete an evaluation form to receive a certificate of completion. Partial credit of individual sessions is not available. If you are seeking continuing education credit for a specialty not listed below, it is your responsibility to contact your licensing/certification board to determine course eligibility for your licensing/certification requirement.

Physicians

In support of improving patient care, this activity has been planned and implemented by Amedco LLC and Eye Bank Association of America. Amedco LLC is jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC), to provide continuing education for the healthcare team.

Credit Designation Statement

Amedco LLC designates this live activity for a maximum of 5.5 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Objectives - After Attending This Program You Should Be Able To:

1. Learn new developments and techniques in eye banking and corneal transplantation.
2. Understand updates in eye banking standards and practices.
3. Cite new research findings in corneal transplantation, preservation, preparation, and processing.

How to Get Your Certificate:

1. Go to http://EBAA.cmecertificateonline.com
2. Click on the "2021 Annual Meeting" link.
3. Evaluate the meeting.
4. Print all pages of your certificate for your records.

Questions? Email Certificate@AmedcoEmail.com

DISCLOSURE OF CONFLICT OF INTEREST

The following table of disclosure information is provided to learners and contains the relevant financial relationships that each individual in a position to control the content disclosed to Amedco. All of these relationships were treated as a conflict of interest, and have been resolved. (C7 SCS 6.1-6.2, 6.5)

All individuals in a position to control the content of CE are listed in the program book. If their name is not listed below, they disclosed that they had no financial relationships with a commercial interest.

FIRST	LAST	COMMERCIAL INTEREST
Anthony	Aldave	Eye Bank Association of America: Scientific/ Medical Advisory Board Member
Peter	Bedard	University of Minnesota: Patent Holder BrightStar Therapeutics: Patent Holder
Lorenzo	Cervantes	Eversight: Scientific/Medical Advisory Board Member Eversight: Corporate Board Member
Clara	Chan	Allergan: Speakers Bureau Alcon: Speakers Bureau Bausch and Lomb: Speakers Bureau Aequus: Consultant Santen: Consultant Tearlab: Research Grant Site Principal Investigator Johnson and Johnson: Consultant Zeiss: Consultant Labtician: Speakers Bureau Thea: Consultant Novartis: Speakers Bureau Sun Pharmaceuticals: Consultant
David	Chu, MD	Abbvie, Aldeyra, Mallinckrodt, Santen, Dompe: Consultant Mallinckrodt: Speakers Bureau, Research Grant Overall Principal Investigator Abbvie, Aldeyra, Gilead,M allinckrodt, Santen, Tarsius: Other Financial or Material Support
Marjan	Farid	Johnson and Johnson Vision: Consultant Allergan: Consultant CorneaGen: Consultant Dompe: Consultant Biotissue: Consultant Zeiss: Consultant Bausch and Lomb: Consultant Novartis: Consultant KALA: Consultant

FIRST	LAST	COMMERCIAL INTEREST
Asim	Farooq	GlaxoSmithKline: Consultant
Pedram	Hamrah	Dompe: Research Grant Site Principal Investigator Coopervision: Research Grant Site Principal Investigator Shire: Research Grant Site Principal Investigator Allergan: Research Grant Site Principal Investigator OKYO: Research Grant Site Principal Investigator National Eye Institute: Research Grant Site Principal Investigator Santen: Consultant Ocunova: Consultant OKYO: Consultant Novartis: Research Grant Overall Principal Investigator Novaliq: Scientific/Medical Advisory Board Member Dompe: Scientific/Medical Advisory Board Member
Sadeer	Hannush	Kowa, Inc: Consultant
Erik	Hellier	Eversight: Employee
Joshua	Hou	Brightstar Therapeutics: Patent Holder
Adam	Kaufman	Alcon: Consultant 1800 Contacts: Consultant Bausch & Lomb: Consultant
Caithlin	Lopes	Eversight: Employee
Marian	Macsai	Trefoil: Consultant Allergan: Consultant Inversa: Consultant Glaukos: Scientific/Medical Advisory Board Member Novartis: Speakers Bureau Bruder: Scientific/Medical Advisory Board Member Eyevance: Stock Shareholder Oyster Point Pharma: Employee

FIRST	LAST	COMMERCIAL INTEREST
Priya	Mathews	W. L. Gore and Associates: Consultant Sun Pharmaceutical: Speakers Bureau
Gerrit	Melles	DORC International/Dutch Ophthalmic USA: Consultant SurgiCube International: Consultant
Shahzad	Mian	KOWA: Research Grant Site Principal Investigator VisionCare: Research Grant Site Principal Investigator DOD: Research Grant Site Principal Investigator
Sudeep	Pramanik	Eyedea Medical: Stock Shareholder
Francis	Price	Haag-Streit: Consultant Aerie Pharmaceuticals: Consultant Alcon: Consultant Allergan: Consultant Eyepoint: Consultant
Michelle K.	Rhee	Ocular Therapeutix: Research Grant Site Principal Investigator NovaBay: Scientific/Medical Advisory Board Member
Christine	Shieh	GSK: Consultant
Divya	Srikumaran	AAO Hoskins Center/ Iris Registry Grant: Research Grant Site Principal Investigator Alcon: Consultant
Michael	Szkarlat	Eversight: Employee
Mark	Terry	Bausch and Lomb Surgical: Patent Holder Moria: Unrestricted Educational Grant for Annual EKG Breakfast
Michael	Titus	Eversight: Employee
Elmer	Tu	Eversight: Scientific/Medical Advisory Board Member GSK: Consultant Dompe: Consultant

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EBAA SYMPOSIA PROGRAM

ONLINE

EBAA 2021 ANNUAL MEETING

SCIENTIFIC SYMPOSIUM 10:30 a.m. – 1:00 p.m.

10:30 a.m. – 10:32 a.m. **Welcome**
Marjan Farid, MD, and Joshua Hou, MD

Invited Session

10:33 a.m. – 10:53 a.m. **R. Townley Paton, Father of Modern Eye Banking: A Portrait of His Own Times in His Own Words**
Mark Mannis, MD, University of California, Davis and Medical Director, Sierra Donor Services

Scientific Abstracts Section I

10:54 a.m. – 10:59 a.m. **COVID-19 Pandemic and Eye Banking: Impact of the Second Wave**
Dena Ballouz, MD,* University of Michigan Kellogg Eye Center

11:00 a.m. – 11:05 a.m. **A Novel Virtual Wet Lab - Using a Smartphone Camera Adapter and a Video Conference Platform to Provide Real-Time Surgical Instruction**
Caithlin Lopes, Eversight

11:06 a.m. – 11:11 a.m. **Bowman Layer Onlay Grafting: Proof-of-Concept of a New Technique to Flatten Corneal Curvature and Reduce Progression in Keratoconus**
Isabel Dapena, MD, PhD, Netherlands Institute for Innovative Ocular Surgery

11:12 a.m. – 11:17 a.m. **Eye Bank Prepared Nanothin DSAEK Tissue: Three year Processing Experience**
Peter Bedard, MS, Lions Gift of Sight

11:18 a.m. – 11:23 a.m. **Safety of Eye Bank Prepared Pre-stripped, Pre-stained, Pre-loaded Descemet's Membrane Endothelial Keratoplasty (p3DMEK) Tissue**
Sana Qureshi, MD**, University of Michigan

11:24 a.m. – 11:32 a.m. **Q&A with Abstract Presenters**

Invited Session

11:33 a.m. – 11:45 a.m. **Launch of the Diabetic Endothelial Keratoplasty Study (DEKS): Impact of Diabetes on Corneal Transplant Success and Endothelial Cell Loss**
Jonathan Lass, MD, University Hospital Cleveland Medical Center

*Medical Student | **Resident

Scientific Abstracts Section II

11:46 a.m. – 11:51 a.m.
Comparison of Donor Cornea Endothelial Cell Density Determined by Eye Banks and by a Central Image Analysis Reading Center
Heidi Huang,* Case Western Reserve University

11:52 a.m. – 11:57 a.m.
Smoking Associated with Repeat Keratoplasty after Endothelial Keratoplasty
Divya Srikumaran, MD, Wilmer Eye Institute

11:58 a.m. – 12:03 p.m.
Investigation of Oxidative Stress and Inflammatory Response in ex vivo Corneal Endothelial Cells during Cell Culture and Expansion
Doug Chung, PhD, Stein Eye Institute, UCLA

12:04 p.m. – 12:09 p.m.
The Impact of Amphotericin B Fortified Preservation Media on Donor Cultures and Post-Transplant Infection
Catherine Sheils, MD,** University of California Irvine
Department of Ophthalmology

12:10 p.m. – 12:16 p.m.
Q&A with Abstract Presenters

Invited Session

12:17 p.m. – 12:55 p.m.
Prevention of Fungal Infection Following Keratoplasty: The Great Debate
Moderators:
Bennie Jeng, MD, University of Maryland School of Medicine
Elmer Tu, MD, Eversight/ University of Illinois, Chicago

Role of Donor Rim Fungal Cultures
David Ritterband, MD, FSCS, Icahn School of Medicine at Mount Sinai
Mark Terry, MD, Lions VisionGift/ Devers Eye Institute

Adding an Antifungal to the Storage Solution
Clara Chan, MD, FRCS, Eye Bank of Canada (Ontario Division)
Maria S. Cortina, MD, University of Illinois, Chicago

Role of Antifungal Prophylaxis Following Positive Donor Rim Fungal Culture
Anthony Aldave, MD, Stein Eye Institute, UCLA
Francis Price, Jr., MD, Price Vision Group

12:56 p.m. – 12:58 p.m.
Best Paper of Session Presentation
Supported by unrestricted Educational Grant from the International Journal of Eye Banking

12:59 p.m. – 1:00 p.m.
Closing Remarks
Marjan Farid, MD, and Joshua Hou, MD

*Medical Student | **Resident

PHYSICIAN DISCUSSION (1:15 p.m.- 2:15 p.m.)

1:15 p.m. – 2:15 p.m. **Physician Discussion on Clinical Cases**
Moderator: Sadeer Hannush, MD, Lions Eye Bank of Delaware Valley/ Wills Eye Institute
All physician attendees are welcome to join.

MEDICAL DIRECTOR SYMPOSIUM (2:30 p.m. – 4:30 p.m.)

2:30 p.m. – 2:32 p.m. **Welcome**
Marjan Farid, MD, University of California, Irvine

2:33 p.m. – 3:17 p.m. **COVID-19 and the Cornea**
Beverly Forsyth, MD, Icahn School of Medicine at Mount Sinai
Anthony Aldave, MD, Stein Eye Institute, UCLA
Shahzad Mian, MD, Eversight/ University of Michigan

3:18 p.m. – 3:30 p.m. **Accreditation Board Update and Remote Inspections**
Michelle Rhee, MD, The Eye Bank-Bank for Sight Restoration

3:31 p.m. – 3:53 p.m. **Determination of Graft Failure and Early Re-Grafts**
Winston Chamberlain, MD, PhD, Casey Eye Institute/ Lions VisionGift
Sean Edelstein, MD, Mid-America Transplant
Susan Hurlbert, Eversight
Divya Srikumaran, MD, Wilmer Eye Institute

3:54 p.m. – 4:28 p.m. **Medical Director Dilemmas**
Jennifer Li, MD, Sierra Donor Services Eye Bank/ University of California, Davis
Roheena Kamyar, MD, Center for Organ Recovery and Education
David Warner, MD, Arkansas Lions Eye Bank and Laboratory
Josh Hou, MD, Lions Gift of Sight/ University of Minnesota

4:28 p.m. **Closing Remarks**
Marjan Farid, MD, University of California, Irvine

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SCIENTIFIC SYMPOSIUM:

INVITED SESSIONS

EBAA 2021 ANNUAL MEETING

R. Townley Paton, Father of Modern Eye Banking: A Portrait of His Own Times in His Own Words
(10:33 a.m. – 10:53 a.m.)

Mark J. Mannis, MD, Sierra Donor Services Eye Bank/ University of California, Davis

In this lecture, Dr. Mark Mannis will present a series of films, narrated by R. Townley Paton, describing the history of early corneal transplantation and the establishment of the first eye bank

Launch of the Diabetic Endothelial Keratoplasty Study (DEKS): Impact of Diabetes on Corneal Transplant Success and Endothelial Cell Loss
(11:33 a.m.- 11:45 a.m.)

Jonathan Lass, MD, University Hospital Cleveland Medical Center

This randomized multicenter clinical trial sponsored by the National Eye Institute will determine if the 1-year graft success rate following DMEK performed with corneas from donors without diabetes is superior to the graft success rate with corneas donors with diabetes. It will also determine if the 1-year central endothelial cell density (ECD) following DMEK performed with corneas from donors without diabetes is superior to the central ECD when corneas from donors with diabetes are used. Finally, the study will explore the relationship of severity of diabetes in the donor, as measured by eye bank-determined diabetes risk categorization scores, and post-mortem hemoglobin A1c with graft outcomes 1 year following DMEK in corneas from donors with diabetes.

This study will provide primary evidence as to whether donor and/or recipient diabetes is or is not associated with DMEK graft outcomes. It will also prospectively examine the relation of donor diabetes severity in DMEK prep success performed by masked technicians with an exploratory analysis.

Prevention of Fungal Infection Following Keratoplasty: The Great Debate (12:17 p.m. – 12:55 p.m.)

Fungal infection after keratoplasty is a devastating complication. Various methods to prevent this untoward event have been suggested recently, but controversy still exists. In this session, the utility of donor rim fungal cultures, as well as the role of antifungals in corneal storage media will be debated. Appropriate responses to positive rim cultures will also be discussed.

Moderators:
Bennie Jeng, MD, University of Maryland School of Medicine
Elmer Tu, MD, Eversight/ University of Illinois, Chicago

Role of Donor Rim Fungal Cultures
David Ritterband, MD, FSCS, Icahn School of Medicine at Mount Sinai
Mark Terry, MD, Lions VisionGift/ Devers Eye Institute

Adding an Antifungal to the Storage Solution
Clara Chan, MD, FRCS, Eye Bank of Canada (Ontario Division)
Maria S. Cortina, MD, University of Illinois, Chicago

Role of Antifungal Prophylaxis Following Positive Donor Rim Fungal Culture
Anthony Aldave, MD, Stein Eye Institute, UCLA
Francis Price, Jr., MD, Price Vision Group

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SCIENTIFIC ABSTRACTS:

SECTION I

EBAA 2021 ANNUAL MEETING

COVID-19 Pandemic and Eye Banking: Impact of the Second Wave

10:54 a.m. – 10:59 a.m.

Dena Ballouz, MD,* University of Michigan Kellogg Eye Center

Co-Authors: Onkar B. Sawant, PhD; Susan Hurlbert; Michael S. Titus; and Shahzad I. Mian, MD

Purpose:
To examine the impact of the second wave of the COVID-19 pandemic on eye banking.

Methods:
Retrospective review of Eversight eye bank eligible donors from July through December 2020. Referrals and donors ruled out due to Eye Bank Association of America (EBAA) COVID-19 eligibility criteria were counted. Results of routine post-mortem COVID testing were examined.

Results:
EBAA COVID guidelines resulted in an average of 3.01% of eye bank referrals ruled out for potential donation between July and December 2020. There was a shortage of 9.38% donor corneal grafts when comparing available tissue to number of scheduled surgeries. The eye bank performed 1,602 post-mortem COVID tests over this six-month period, of which 39 tests (2.7%) were positive or indeterminate. There was a strong correlation between COVID-19 positive cases in states compared to Eversight post-mortem positivity ($r = 0.88$).

Conclusion:
During the second wave of the pandemic, when corneal transplant procedures were back to near-normal levels, there was a shortage of corneal tissue. Routine post-mortem testing captures asymptomatic donors where corneal grafts would have been used for transplantation.

*Medical Student- Graduated May 2021

A Novel Virtual Wet Lab - Using a Smartphone Camera Adapter and a Video Conference Platform to Provide Real-Time Surgical Instruction

11:00 a.m. – 11:05 a.m.

Caithlin Lopes, Eversight

Co-Authors: David Chu; Erik Hellier, MBA, CEBT; Christian Tallo, BS, and Lorenzo Cervantes, MD

Purpose: Proctored surgical instruction has traditionally been taught through in-person interactions in either the operating room or an improvised wet lab. Eye banks have utilized wet labs to train current surgeons and the next generation of ophthalmologists. Due to the COVID-19 pandemic, live in-person instruction was not feasible due to social distancing protocols, so a virtual wet lab (VWL) was proposed and implemented. Our purpose here is to describe our experience with a VWL as a Descemet membrane endothelial keratoplasty (DMEK) skills transfer course. This is the first time that a VWL environment has been described for the instruction of ophthalmic surgery.

Methods:
Fourteen surgeons took part in VWLs designed for DMEK skills-transfer in September and October 2020. A smartphone camera adapter and a video conference software platform were the unique mediums for the VWL. Following a 60-minute didactic session, participants were divided into break-out rooms for the next 45minutes where their surgical scope view was broadcasted live, allowing instructors to virtually proctor their participants in real-time. Participants were surveyed to assess their satisfaction with the course.

Results:
100% of participants successfully injected and unfolded their DMEK grafts. Nine of 14 participants completed the survey. Respondents rated the experience highly favorably.

Conclusion:
With the use of readily available technology, VWLs can be successfully implemented in lieu of in-person skills-transfer courses and eye banks can continue with their long-standing tradition of training and education. Further development catering to the needs of the participant might allow VWLs to serve as a viable option of surgical education currently limited by geographical and social-distancing boundaries.

Bowman Layer Onlay Grafting: Proof-of-Concept of a New Technique to Flatten Corneal Curvature and Reduce Progression in Keratoconus

11:06 a.m. – 11:11 a.m.

Isabel Dapena, MD, PhD, Netherlands Institute for Innovative Ocular Surgery

Co-Authors: Esther Groeneveld-van Beek, MSc; Korine van Dijk, BOptom, PhD; Jack Parker, MD; Silke Oellerich, PhD; and Gerrit Melles, MD, PhD

Purpose:
To describe a new surgical technique for flattening the corneal curvature and to reduce progression in eyes with advanced progressive keratoconus by using Bowman layer (BL) onlay grafting, and to report on the preliminary outcomes of this procedure.

Methods:
Five patients with advanced progressive keratoconus, underwent BL onlay grafting. After removal of the epithelium, a BL graft was placed and "stretched" onto the stroma, and a bandage lens was placed to cover the BL graft. Best spectacle- and/or best contact lens-corrected visual acuity (BSCVA/BCLVA), refraction, biomicroscopy, corneal tomography, anterior segment optical coherence tomography and complications were recorded at 1 week, and 1, 3, 6, 9, and 12-15 months postoperatively.

Results:
All five surgeries could be performed successfully. Average Kmax went from 75D preoperatively to 70D at one year postoperatively. All eyes showed a completely re-epithelialized and a well-integrated graft. BSCVA improved at least 2 Snellen lines in 3/5 cases and BCLVA remained stable, improving by 3 Snellen lines in case 1 at 15 months postoperatively. Satisfaction was high and all eyes again had full contact lens tolerance.

Conclusion:
BL onlay grafting may be a feasible surgical technique, providing up to -5D of corneal flattening in eyes with advanced keratoconus.

Eye Bank Prepared Nanothin DSAEK Tissue: 3-year Processing Experience

11:12 a.m. – 11:17 a.m.

Peter Bedard, MS, Lions Gift of Sight

Co-Authors: Joshua H. Hou, MD; Natalie Buckman, and Czarina Jimenez

Purpose:
(1) To evaluate surgeon preference for nanothin (≤50 μm), near nanothin (50-70 μm), ultrathin (≤100 μm), and standard DSAEK (≤250 μm). (2) To evaluate rates of tissue loss, on-target cuts, and successful tissue placement for eye bank prepared DSAEK of various thicknesses.

Methods:
Retrospective review of surgeon preferences, surgeon tissue requests, and tissue processing records from 2017 to 2019.

Results:
In total, there were 1,303 requests for DSAEK tissue over the study period. Among surgeons reviewed, 2.1% preferred exclusively nanothin DSAEK, 14.9% preferred near nanothin DSAEK, 25.5% preferred ultrathin DSAEK, and 57.4% preferred standard DSAEK. Over the study period, 9.2% of tissue requests were for nanothin DSAEK, 7.0% were for near nanothin, 27.7% were for ultrathin, and 56.1% were for standard DSAEK. Overall, there was a 4.4%, 3.4%, 0.3%, and 0.8% tissue loss rate per attempted cut for nanothin, near nanothin, ultrathin, and standard DSAEK, respectively. Excluding tissues lost, there was a 68%, 52%, 71%, and 92% success rate for on-target cuts in the preferred thickness range for nanothin, near nanothin, ultrathin, and standard thickness DSAEK, respectively. For off-target cuts outside of the preferred thickness range, 79% of tissues were still accepted by the requesting surgeon, 5% of tissues were redistributed to a different surgeon, and 16% of tissues could not be placed elsewhere.

Conclusion:
DSAEK can be reliably cut down to nanothin range (≤50 μm) with minimal tissue loss. Rates of achieving on-target cuts in the preferred thickness range decreased as the range narrowed. However, most off-target cuts were still accepted by the primary requesting surgeon.

Safety of Eye Bank Prepared Pre-stripped, Pre-stained, Pre-loaded Descemet's Membrane Endothelial Keratoplasty (p3DMEK) Tissue

11:18 a.m. – 11:23 a.m

Sana Qureshi, MD, University of Michigan**

Co-Authors: Nathan William Anderson Liles, MD, MPH, and Shahzad I. Mian, MD

Purpose:
Despite better visual outcomes, faster healing, and reduced risk of rejection, some surgeons have been hesitant to adopt Descemet membrane endothelial keratoplasty (DMEK) due to a steeper learning curve and difficult tissue preparation. Use of eye bank pre-stripped, pre-stained, and pre-loaded (p^3) DMEK tissue can reduce the learning curve and risk of complications.

Methods:
We conducted a prospective study (3/7/2017-6/11/2019) including 105 eyes undergoing DMEK with p^3 tissue. Primary outcomes were primary graft failure, graft detachment, and re-bubbling. Secondary outcomes included baseline and post-operative visual acuity at week 1 and months 1, 3, 6, and 12. Baseline and post-operative pachymetry and specular microscopy endothelial counts were also collected.

Results:
88 and 67 eyes achieved the 6-month and 1-year follow-up, respectively. No primary graft failures occurred. A total of 33 eyes had at least a partial graft detachment. 21% of eyes required re-bubbling. Mean difference between pre-operative and 12-month post-operative graft endothelial cell counts and pachymetry was -655 cells/mm2 (95% CI -505 –-805), a 24% decrease, and -122 μm (95% CI -103–-143), respectively. Mean case time for p^3DMEK with phaco or p^3DMEK alone was 34 (95% CI 33 –36) and 24 minutes (95% CI 23 –27), respectively. 46% of eyes were 20/20 or better at 3 months. In comparison, mean case time for eyes undergoing DMEK (N=21) with phaco or DMEK alone was 46 (95% CI 43 –49) and 36 minutes (95% CI 29 –43), respectively ($p<0.05$).

Conclusion:
P^3DMEK tissue is safe and can provide excellent clinical outcomes that are comparable to surgeon prepared and loaded DMEK tissue. Eyes undergoing p^3DMEK benefited from decreased intraoperative times, risk of endothelial cell loss and need for re-bubbling.

**Resident

SCIENTIFIC ABSTRACTS:

SECTION 11

EBAA 2021 ANNUAL MEETING

Comparison of Donor Cornea Endothelial Cell Density Determined by Eye Banks and by a Central Image Analysis Reading Center

11:46 a.m. – 11:51 a.m.

Heidi Huang,* Case Western Reserve University

Co-Authors: Beth Ann Benetz, CRA, MA; Harry Menegay; Robert O'Brien, PhD; Michael S. Titus; and Jameson Clover

Purpose:
To evaluate agreement between eye banks (EBs) and an image analysis reading center on endothelial cell density (ECD) determinations using same image analysis method.

Methods:
The Cornea Image Analysis Reading Center (CIARC) determined ECD with a single experienced analyst on EB-obtained preoperative central endothelial images from two eye banks, Eversight and Lions VisionGift, employing the Konan center analysis method. The EBs performed ECD determination on their respective sets of images employing the same analysis method with experienced eye bank technicians.

Results:
The mean age of the 196 donors was 54 years (range 30 to 75 years). Seventy (36%) of the 196 patients were women, and 54 (28%) were diabetic. The mean preoperative ECD was 10 cells/mm^2 greater by the EBs than by CIARC (N = 196, p=0.90) with 95% limits of agreement of [-305, 324 cells/mm^2]. Agreement was not substantially changed when the difference between the EB and CIARC ECD was adjusted for gender, donor age, donor diabetes, and number of cells analyzed (mean 23 cells/mm^2, p=0.73). The EBs-determined preoperative ECD was within 5% of the CIARC-determined ECD for 140 (71%) image sets, with 31 (16%) higher by >5% and 25 (13%) lower by >5%.

Conclusion:
Well trained eye bank technicians achieve comparable results for ECD determination with an experienced image analyst from a reading center when the same image analysis method is employed.

*Medical Student

Smoking Associated with Repeat Keratoplasty after Endothelial Keratoplasty

11:52 a.m. – 11:57 a.m.

Divya Srikumaran, MD, Wilmer Eye Institute

Co-Authors: Sudeep Pramanik, MD, MBA

Purpose:
To determine risk factors associated with repeat keratoplasty after endothelial keratoplasty (EK).

Methods:
Retrospective analysis of IRIS® Registry data on EK procedures performed between 2013-2018. Kaplan Meier survival analysis was used to determine probability of subsequent keratoplasty. A multivariable general estimating equation model adjusting for demographics, indication, ocular comorbidities and complications was used to assess risk factors for repeat keratoplasty.

Results:
A total of 29,412 eyes were included in the analysis; 3,646 eyes underwent repeat keratoplasty. The probability of repeat keratoplasty was 91.3% (95% CI: 91.0 – 91.6%), 88.9% (88.5 - 89.3%), and 82.6% (82.0 – 83.3%) at 1, 2, and 5 years, respectively. Factors associated with repeat keratoplasty include Black versus white race (OR 1.24, 95% CI: [1.10-1.39]), active smoking versus non-smokers (OR 1.14, [1.04-1.26]), Medicaid insurance versus private (OR 1.46, [1.12-1.90]), indication of prior graft failure (OR 1.61, [1.45-1.78]) or bullous keratopathy (OR 1.60, [1.46-1.74]) versus Fuchs, history of glaucoma (OR 1.22, 95% CI:1.12-1.33) or glaucoma surgery (OR 1.21, [1.10-1.34]) and subsequent procedures including re-bubble (OR 2.24, [2.05-2.45]), cataract (OR 1.60, [1.44-1.78]), other anterior segment (OR 2.44, [2.24-2.66]), or glaucoma (OR 1.52, [1.38-1.68]) surgery.

Conclusion:
This large national study identified smoking as an independent factor associated with decreased graft survival in addition to Black race, lower socioeconomic status, surgical indication other than Fuchs, and post-operative procedures. Surgeons should advise graft recipients about this association to encourage smoking cessation.

Investigation of Oxidative Stress and Inflammatory Response in ex vivo Corneal Endothelial Cells during Cell Culture and Expansion

11:58 a.m. – 12:03 p.m.

Doug Chung, PhD, Stein Eye Institute, UCLA

Co-Authors: Charlene Choo, BS, and Anthony Aldave, MD

Purpose:
Ex vivo expansion of corneal endothelial cells (CEnC) has the potential to alleviate the global shortage of donor corneal tissue that limits access to corneal transplantation. To determine whether oxidative stress plays a role in the expansion capacity of ex vivo CEnC (evCEnC), we cultured evCEnC with and without SkQ1, an antioxidant, and measured intracellular free radical (IFR) levels.

Methods:
HCEnC-21T, a CEnC line, was cultured in media supplemented with SkQ1 to determine the optimal SkQ1 dose range in CEnC. Then the cells were treated with or without tBH, an oxidative stress inducing agent, and cell viability was assessed by MTT assay. To determine the impact of SkQ1 treatment on IFR levels, evCEnC were isolated from donor corneas and split into two cultures (SKQ1-treated and untreated), which were each grown to confluence. DCFH-DA assay was performed to measure differences in IFR levels.

Results:
When compared to untreated cells, HCEnC-21T treated with 50nM, 250nM, 500nM, or 750nM SkQ1 exhibited 98.8%, 96.9%, 65.8%, and 22.7% cell viability, respectively. Under 100 μM tBH oxidative stress induction, cell viability protection was observed in a SkQ1 dose-dependent manner with 0nM, 50nM, 250nM, and 500nM SkQ1 treatment leading to 14.8%, 18.2%, 36.3%, and 41.2% cell viability, respectively. evCEnC treated with 50nM and 250nM SkQ1 demonstrated a ~7.5% and ~22.5% decrease, respectively, in IFR concentrations compared to tBH-untreated evCEnC at passage 0.

Conclusion:
Supplementing culture media with SkQ1 provides a CEnC line with tBH-induced oxidative stress protection and decreases IFR concentrations in cultured evCEnC. The preliminary findings of this study suggest antioxidants, such as SkQ1, may increase the expansion potential of evCEnC by reducing oxidative stress levels.

The Impact of Amphotericin B Fortified Preservation Media on Donor Rim Cultures and Post-Transplant Infection

12:04 p.m. – 12:09 p.m.

Catherine Sheils, MD, University of California Irvine Department of Ophthalmology**

Co-Authors: Vincent Hussey, MS; Nasim Salimiaghdam, MD; Aman Mittal, MD; and Marjan Farid, MD

Purpose:
Despite eye bank infection prevention measures, donor-to-host transmission of organisms is a known cause of post-transplant infection. The impact of antifungal-containing corneal preservation media on rates of positive donor rim fungal cultures and incidence of post-transplant fungal infection is unknown. This study aims to determine whether the addition of Amphotericin B to corneal preservation media reduces the rate of positive donor rim cultures or the incidence of post-transplant infection.

Methods:
Retrospective chart review at a single institution.

Results:
A total of 2,136 transplantations from 2012 to 2020 will be analyzed, including penetrating keratoplasty, deep anterior lamellar keratoplasty, Descemet's stripping automated endothelial keratoplasty, Descemet's membrane endothelial keratoplasty, and keratolimbal allograft. Each case will be reviewed to abstract donor rim culture results and post-operative clinical course up to 6 weeks. The primary outcomes include the rate of positive fungal donor cornea rim cultures and incidence of clinical infection including keratitis and endophthalmitis. Our analysis will compare the rate of positive cultures and incidence of infection in transplants stored in Optisol to those in Optisol fortified with Amphotericin B.

Conclusion:
The impact of Amphotericin-enhanced Optisol on positive donor rim cultures and infections will be updated as results are analyzed.

**Resident

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