

# Pocket Guide



**Stand strong for science**  
**Stand for strong vision science**

**ARVO**  
2018

April 29 – May 3  
Hawaii Convention Center  
Honolulu, Hawaii

 **ARVO**  
The Association for Research  
in Vision and Ophthalmology

[ARVO.org/AM](http://ARVO.org/AM)

abbvie

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OPHTHA

214

PAPERS

67

PRODUCT APPROVALS



# Program Overview

<b>Sunday, April 29</b>		
Registration/Badge Printing	Main Lobby	7am–6pm
ARVO Central	Exhibit Hall	7am–5:30pm
Exhibits	Exhibit Hall	8:15am–5pm
Basic Clinical Lecture	Kalakaua Ballroom A	8:15–10:15am
Symposia	See program	8:15–10:15am
Posters	Exhibit Hall	8:15–10am   1–2:45pm   3:15–5pm
Proctor Award Lecture	Kalakaua Ballroom BC	10:45–11:30am
Friedenwald Award Lecture	Kalakaua Ballroom BC	11:45am–12:30pm
Pizza with the Experts*	313BC	1–2:30pm
SIGs/Workshops	See program	1–2:30pm
Papers/Minisymposia	See program	3:15–5pm
Weisenfeld Award Lecture	Kalakaua Ballroom BC	5:15–6pm
Sunday Social*	Rooftop Garden	6–7:30pm
<b>Monday, April 30</b>		
Registration/Badge Printing	Main Lobby	7am–6pm
ARVO Central	Exhibit Hall	7am–5:30pm
NAEVR Defense Briefing	313BC	7–8am
Exhibits	Exhibit Hall	8:15am–5:15pm
Posters	See program	8:15–10am   11:15am–1pm   3:30–5:15pm
Papers/Minisymposia	See program	8:15–10am   11:15am–1pm   3:30–5:15pm
Section Business Meetings	See program	10:15–11am
SIGs/Workshops	See program	1:30–3pm
MOI Group	313A	1:30–3pm
EVER/ARVO Workshop	314	1:30–3pm
China/ARVO Networking	313BC	1:30–3pm
ARVO/Alcon Keynote Session	Kalakaua Ballroom BC	5:30–6:45pm
Special Session	Kalakaua Ballroom A	7–8:30pm
Student/Trainee Social	Rooftop Garden	7:30–9pm
<b>Tuesday, May 1</b>		
Registration/Badge Printing	Main Lobby	7am–6pm
ARVO Central	Exhibit Hall	7am–5:30pm
Exhibits	Exhibit Hall	8:15am–5:15pm
Posters	See program	8:15–10am   11:15am–1pm   3:30–5:15pm
Papers/Minisymposia	See program	8:15–10am   11:15am–1pm   3:30–5:15pm
General Business Meeting	320	10:15–11am
SIGs/Workshops	See program	1:30–3pm
Genetics Group	313A	1:30–3pm
Clinician Scientist Forum	316A	1:30–3pm
ARVO Foundation WEAVER Luncheon*	Ala Moana Hotel	1:30–3pm
MIT Outstanding Poster Award Competition	Exhibit Hall	5:30–7pm
ARVO/Champalimaud Award Lecture	Kalakaua Ballroom BC	5:30–6:30pm
Special Session	Kalakaua Ballroom A	6:45–8:15pm
<b>Wednesday, May 2</b>		
Breakfast with the Experts*	313BC	6:45–8:15am
Registration/Badge Printing	Main Lobby	7am–6pm
ARVO Central	Exhibit Hall	7am–5:30pm
Exhibits	Exhibit Hall	8:15am–5:15pm
Posters	See program	8:15–10am   11:15am–1pm   3:30–5:15pm
Papers/Minisymposia	See program	8:15–10am   11:15am–1pm   3:30–5:15pm
Cogan Award Lecture	Kalakaua Ballroom BC	10:15–11am
SIGs/Workshops	See program	1:30–3pm
NEI Extramural Roundtable	313BC	1:30–3pm
Low Vision Group	313A	1:30–3pm
Special Session	Kalakaua Ballroom A	5:30–7pm
Classical Concert	Hilton Hawaiian Village	8–10pm
Karaoke Night*	Sheraton Princess Kaiulani	9pm–12 midnight
<b>Thursday, May 3</b>		
Registration	Main Lobby	7am–2pm
ARVO Central	Exhibit Hall	7am–12:45pm
Symposia	See program	8:15–10:15am
Posters	See program	8:30–10am   11am–12:45pm
Vancouver Kickoff Reception	Exhibit Hall	10:15–11am
Papers	See program	11am–12:45pm
Beckman Argyros Award Lecture	Kalakaua Ballroom BC	1–2pm
ARVO/Alcon Keynote Session	Kalakaua Ballroom BC	2:15–3:45pm

\* Separate registration/tickets required

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## Disclaimer

The Association for Research in Vision and Ophthalmology (ARVO) Annual Meeting online program materials and print publications aim to promote vision research and scientific discourse for educational purposes. ARVO accepts no responsibility for any products, presentations, opinions, statements or positions expressed; and inclusion of such material within the meeting, the publications or posted online does not constitute an endorsement by ARVO.

## Photography Release

By attending the ARVO Annual Meeting, attendees agree to allow their names, likenesses and images either in audio, photographic or video format recorded onsite to be used by ARVO and the ARVO Foundation for Eye Research for educational and promotional purposes.

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## ARVO Policies

### **Use of recording/photography/audiotape/video equipment:**

Recording by any means (photographing, audiotaping, videotaping) of any presentations or sessions at any ARVO meeting is prohibited, except by an ARVO-authorized agent for official purposes or by First Authors who want to photograph their own poster presentations. Violators risk confiscation of their equipment and/or dismissal from the Annual Meeting as deemed appropriate by ARVO.

**Commercial Relationships Policy:** Presenters must state and display all applicable commercial relationships. For more information on this important policy, refer to the Commercial Relationships Index at [arvo.org/program-summary](http://arvo.org/program-summary).

**Clinical Trials Registration Policy:** All clinical trials that will be reported in ARVO Annual Meeting abstracts must be registered on a publicly available database. The required acknowledgement of the First Author, acting as the authorized agent for all authors, certifies that any research presented in the abstract that reports on a clinical trial is registered, and the registration location and number are included on the abstract, in compliance with the ARVO Statement on Registering Clinical Trials, [arvo.org/About/policies/statement-on-registering-clinical-trials](http://arvo.org/About/policies/statement-on-registering-clinical-trials). For more information on this policy, refer to the Clinical Trials Registration Index at [arvo.org/program-summary](http://arvo.org/program-summary).

**Children in the convention center:** Children under 18 years old must be accompanied by a parent or guardian at all times. Parents/guardians who bring children into paper sessions must remove them immediately if they become disruptive. Children are not allowed to accompany parents/guardians in sessions/events where tickets are required or food is provided, except events for which children's tickets are available for purchase. Under no circumstances are children permitted in the exhibit hall during set-up or dismantle times.



ACCME  
ACCREDITED

### **Continuing Medical Education**

ARVO is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

ARVO designates this live activity for a maximum of 29.25 *AMA PRA Category 1 Credits*<sup>™</sup>. Physicians should claim only the credit commensurate with the extent of their participation in the activity. Please refer to the CME information on page 119.



Like us. Follow us.  
**Connect with us.**

Connect with ARVO on your favorite social networking site for the most up-to-date Annual Meeting information:



[twitter.com/ARVOinfo](https://twitter.com/ARVOinfo) or #ARVO2018



[facebook.com/ARVOinfo](https://facebook.com/ARVOinfo)



[linkedin.com/company/arvoinfo/](https://linkedin.com/company/arvoinfo/)

 **ARVO**  **Connect** [arvoconnect.arvo.org](https://arvoconnect.arvo.org)

PATENTED



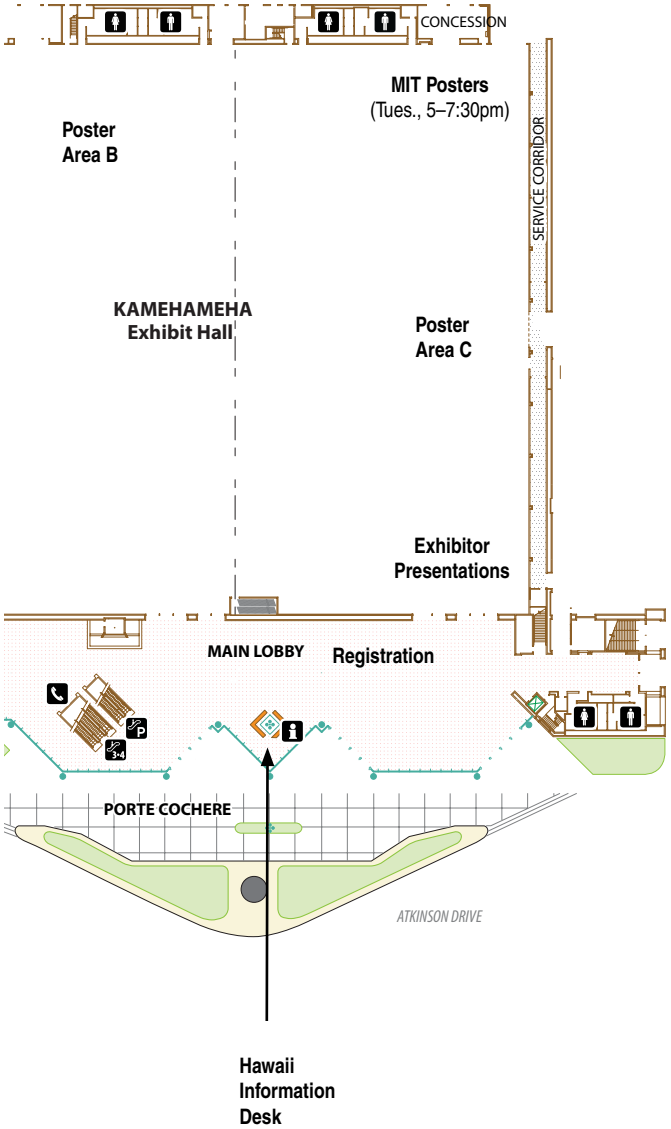
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**Hawaii Convention Center**  
Main Level — Lobby and Exhibit Halls

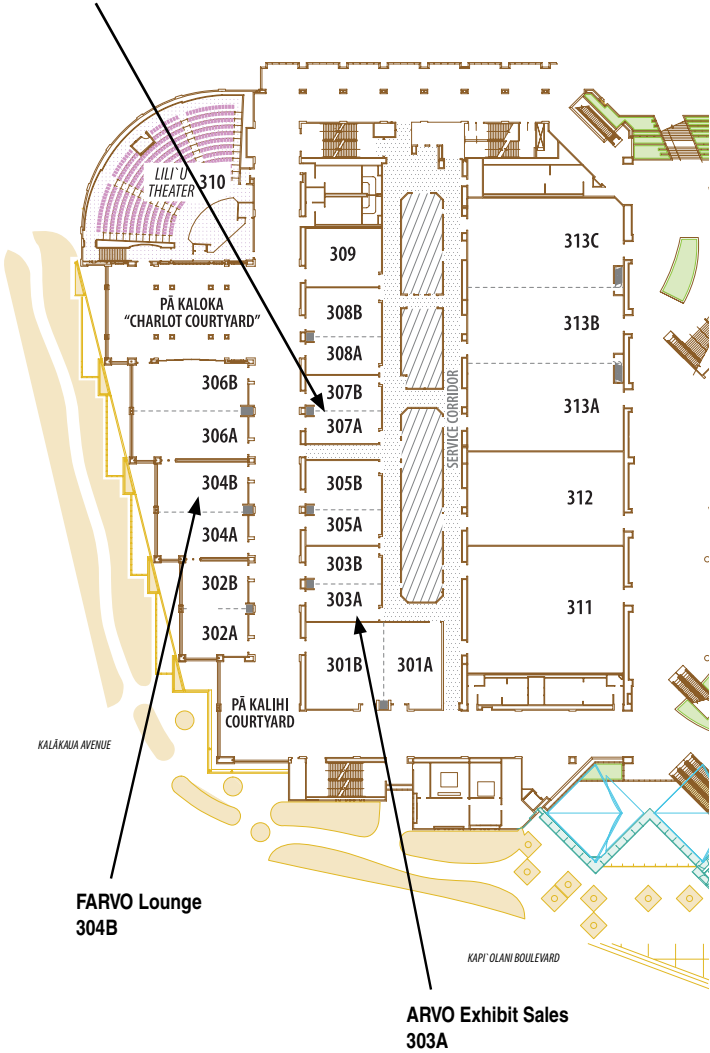


# Convention Center

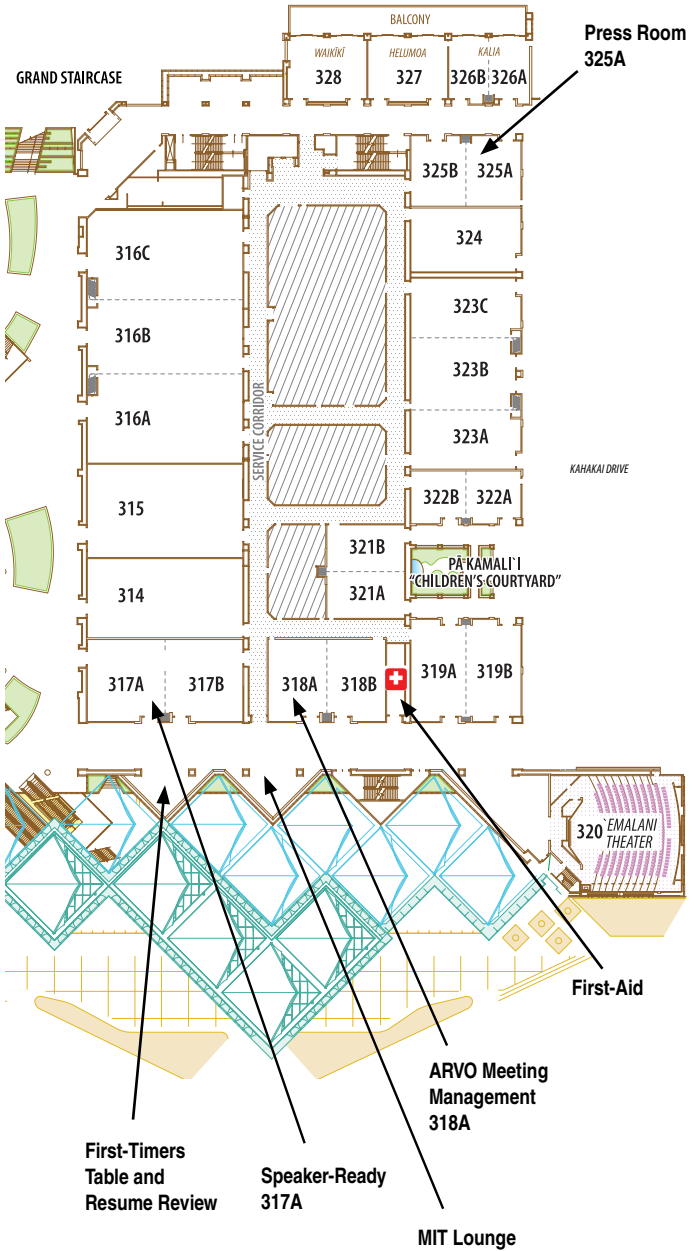
Mother's Lounge – 307A\*

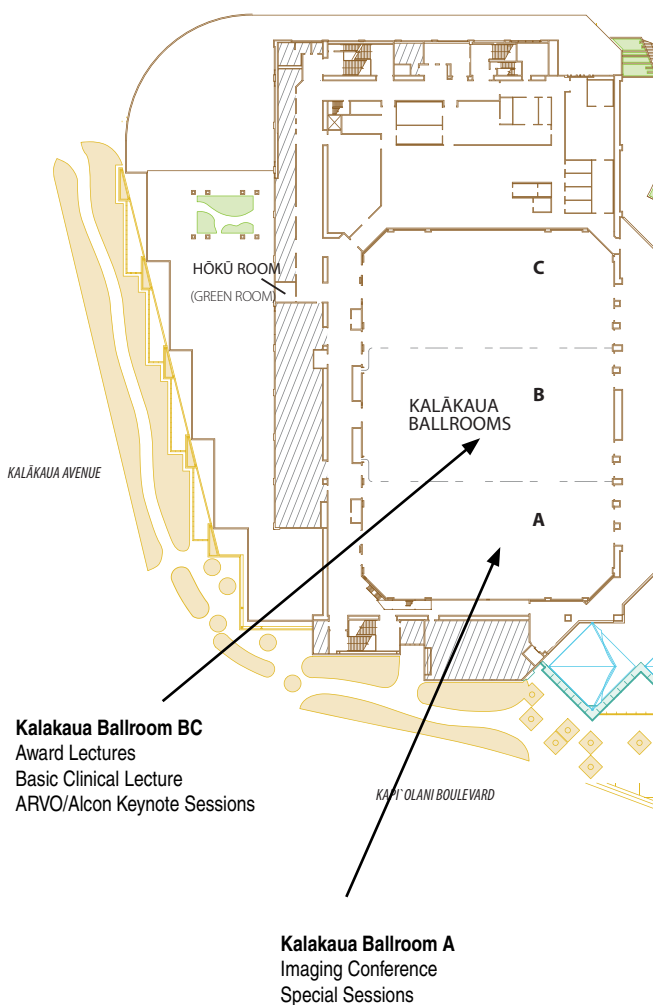
Meditation Room – 307B\*

\* Go to ARVO Meeting Management (318A) for access

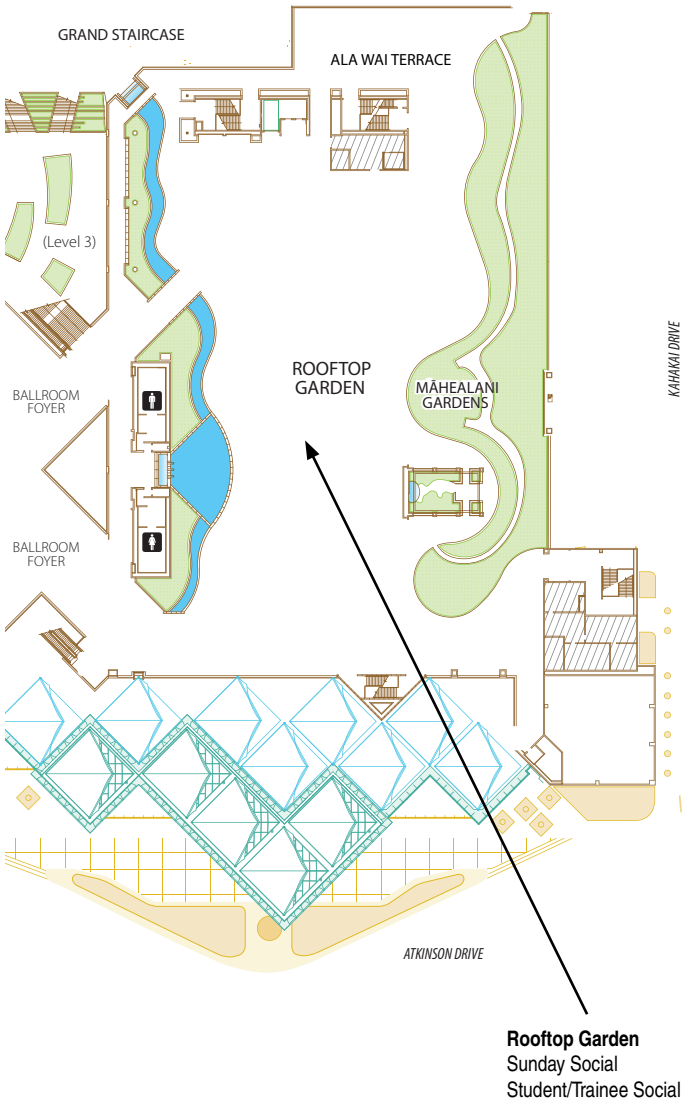


## Hawaii Convention Center Level 3 — Meeting rooms and theaters





## Hawaii Convention Center Level 4 — Ballrooms and Rooftop Garden



### Wireless Internet

Complimentary wireless Internet access will be available in designated areas throughout the Hawaii Convention Center. Search for “ARVO” from your device’s web browser and click to connect to the network.

Wi-Fi provided by ARVO is used by all attendees and ARVO asks that attendees limit their web use with regards to live streaming and downloading. The ARVO wireless network is an “open” network and does not use any encryption or security measures. We recommend that you avoid making online purchases or accessing personal information over the wireless network.

### Safety/Security Tips

- Carry with you the name, address, phone numbers and email of an individual to contact in case of emergency. If you have a mobile phone, enter the emergency contact phone number in your contacts list under the heading “ICE” (In Case of Emergency).
- Be sure to carry a card describing any medical conditions or allergies you may have, or wear a medical alert tag.
- Do not wear your meeting name badge out and about in Honolulu.
- Avoid poorly lit streets and always walk with another person when sightseeing or shopping, particularly at night.
- Do not display large amounts of cash when paying for taxis or other purchases.
- Do not leave unsecured valuables in your hotel room; lock them in your in-room safe. Hotels are not responsible for items left in your room.
- At the meeting, check items at the coat and luggage check area located on the Lobby Level of the Hawaii Convention Center.



# JOIN US!

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**Co-Hosts:** European Society of Ophthalmology and  
Spanish Society of Implant-Refractive Ocular Surgery

**Partners:** Catalan Society of Ophthalmology  
and Barraquer Institute

**Register Now**

**[www.icoph.org/woc2018](http://www.icoph.org/woc2018)**

## Presenters

All speakers scheduled in session rooms are required to check into the Speaker Ready Room, Room 317A, preferably 24 hours, but no later than four hours before their presentations.

- Previously uploaded presentations must be reviewed and approved.
- All presentation slides and other files must be uploaded in advance of your presentation.
- Presenters will not be allowed to load PowerPoint slides or other files directly to the computer in the session room.
- Personal laptops cannot be used for presentations in the session rooms.
- Do not bring your laptop or other media devices to the session. There are no exceptions to this policy.

If you are unavoidably delayed, you must still go directly to the Speaker Ready Room.

## Speaker Ready Room — Room 317A

Tel: 808.792.6522

Fri., April 27 .....	4 – 9pm
Sat., April 28 .....	7am – 6pm
Sun., April 29 .....	7am – 6pm
Mon., April 30 .....	7am – 6pm
Tues., May 1 .....	7am – 6pm
Wed., May 2 .....	7am – 6pm
Thurs., May 3 .....	7am – 1pm

For details, see Paper, Invited Speaker, SIG Presentation Guidelines: [arvo.org/am/abstracts](http://arvo.org/am/abstracts).

## Poster Presenters

- Sunday poster presenters are strongly encouraged to register and print their badges on Saturday.
- All posters must be placed by 8am on the day of presentation and remain on display the entire day.
- Posters may not be displayed prior to the day of presentation.
- Presenters must be present at their poster boards during their scheduled presentation time. The poster area will be monitored, and “no show” presenters will be recorded and will be ineligible for 2019 abstract submission as First Author.

- Posters scheduled Sunday must be removed by 5:30pm. Posters scheduled Monday through Wednesday must be removed by 5:45pm. Thursday posters must be removed by 1:15pm.
- ARVO is not responsible for poster materials left at the end of day. Posters remaining on the poster boards will be removed and discarded.
- For details, see Poster Presentation Guidelines: [arvo.org/am/abstracts](http://arvo.org/am/abstracts).

## Abstract Withdrawals and Substitute Presenters

If the First Author cannot attend and present, he/she must submit an online withdrawal or an online request for approval of a co-author as substitute presenter. Withdrawals and substitute presenter requests must be received by 2pm (U.S. HAST) the day before the scheduled presentation. Failure to comply will result in rejection of the First Author's abstract submission to the 2019 Annual Meeting.

For details, see Abstract Withdrawal and Substitute Presenter Policy: [arvo.org/am/abstracts](http://arvo.org/am/abstracts).

**ISER 2018**

XXIII Biennial Meeting of the International Society for Eye Research  
September 9 - 13, 2018  
Belfast, Northern Ireland, UK

XXIII Biennial Meeting of the International Society for Eye Research  
September 9-13, 2018 | Belfast, Northern Ireland, UK

**Key Dates**

Abstract Submission Deadline	May 29, 2018
Young Investigator Travel Fellowship Application Deadline	May 29, 2018
Early Registration Fees Deadline	June 21, 2018

For more information, visit [www.iserbiennialmeeting2018.org](http://www.iserbiennialmeeting2018.org)

Registration and Abstract Submission are now OPEN!

## Business Center

808.792.6699; [HCCBusinessCenter@hccaeg.com](mailto:HCCBusinessCenter@hccaeg.com)

The Business Center is located on the third level of the Hawaii Convention Center, convenient to meeting rooms, theaters and courtyards. Services available to exhibitors and attendees include printing, copying, faxing, shipping and receiving.

Sat. April 28 .....	8am – 12 noon
Sun., April 29 .....	8am – 5pm
Mon., April 30 .....	8am – 5pm
Tues., May 1 .....	8am – 5pm
Wed., May 2 .....	8am – 5pm
Thurs., May 3 .....	7am – 4:30pm

## Cash Machine/ATM

There are three ATMs in the building. Two are located in the main lobby on Level 1 and one outside the Business Center on Level 3.

## Mother's Lounge

The Mother's Lounge is in room 307A of the Hawaii Convention Center. Go to Meeting Management (room 318A) to request a key for access to the lounge.

## Coat and Luggage Check

**(Level 1, Registration area)**

Check your coat, luggage, and other items.

Sat., April 28 .....	6:30am – 6:30pm
Sun., April 29 .....	6:30am – 8pm
Mon., April 30 .....	6:30am – 9:30pm
Tues., May 1 .....	6:30am – 7:30pm
Wed., May 2 .....	6:30am – 8pm
Thurs., May 3 .....	6:30am – 4pm

ARVO is not responsible for items left at the end of the meeting.

## First-Aid or Medical Needs

The First Aid office is located on Level 3 between rooms 318B and 319A of the Hawaii Convention Center.

## Lost and Found

All lost items are taken to Meeting Management Office, Room 318A. Please stop by this office, call (808) 792-6520 or email [arvoabstracts@arvo.org](mailto:arvoabstracts@arvo.org) to see if your item has been found.

## Prayer/Meditation Room

The Prayer/Meditation Room is in room 307B of the Hawaii Convention Center. Go to Meeting Management (room 318A) to request a key for access to the room.

## Recycling

Recycling and compost bins are located throughout the Hawaii Convention Center. Help ARVO in our efforts to be environmentally friendly and put your trash in the appropriate receptacle.

## Visit Hawaii Information Desk

**(Level 1, Registration area)**

Information is available on local attractions and activities as well as city maps, water taxi schedules and much more.

## Security Services

If you need assistance while at the Hawaii Convention Center, contact the Information Desk in ARVO Central, Exhibit/Poster Hall or Meeting Management in Room 318A.

## Water Coolers

Water coolers are available throughout the Hawaii Convention Center. In addition, there are water bottle fill stations near each restroom.



# Invest in the future

Your donation to the ARVO Foundation supports the next generation of eye and vision research scientists.

**“Donate today  
and we’ll match  
your gift!”**

Together, we can reach our combined goal of raising \$30,000 to support young scientists pursuing their vision research goals.

— *Drs. Joyce Tombran-Tink  
and Colin Barnstable*

## Ways to give

- In ARVO Central in the Exhibit Hall
- [ARVOFoundation.org/Donate](http://ARVOFoundation.org/Donate)

 **ARVO Foundation**  
for Eye Research®

Donations are tax-deductible for U.S. residents.  
Donate at the Gift Shop in ARVO Central to receive a receipt for your donation.



**NAEVR**

National Alliance For  
Eye And Vision Research

### Visit NAEVR Central in the Exhibit Hall

**Hours: Sun.: 8:15am – 5pm;**

**Mon.–Wed.: 8:15am – 5:15pm**

Hosted by NAEVR's James Jorkasky and David Epstein

- Contact Congress to support vision research funding increases
- Learn about research funding resources, such as multiple Department of Defense (DoD) funding opportunities to meet critical vision research gaps

### NAEVR's Defense-Related Vision Research Opportunities Session

**Mon., April 30, 7 – 8am | Room 313BC**

NAEVR has invited DoD representatives to speak about funding opportunities and past DoD awardees to offer insights into how researchers can be most responsive to the funding Program Announcement

[EyeResearch.org](http://EyeResearch.org)

**MARK YOUR  
CALENDAR!**

**June 1, 2018**  
Start abstract submission  
and congress &  
hotel registration

# 8<sup>th</sup> WORLD GLAUCOMA CONGRESS

MARCH 27 - 30, 2019 **MELBOURNE**



[www.worldglaucoma.org](http://www.worldglaucoma.org)

The Global Glaucoma Network

### Meeting Management Office

Tel: 808.792.6520; email: [arvoabstracts@arvo.org](mailto:arvoabstracts@arvo.org).

Staff will be available in Room 318A throughout the week to assist with meeting services.

Sat., April 28 .....	7am – 5:30pm
Sun., April 29 .....	7am – 5:30pm
Mon., April 30 .....	7am – 7pm
Tues., May 1 .....	7am – 5:30pm
Wed., May 2 .....	7am – 5:30pm
Thurs., May 3.....	7am – 3pm

### Press Activities/Press Registration

Tel: 808.792.6523.

ARVO invites members of the press to cover paper and poster sessions at the meeting. Pre-registered press should bring their email confirmation to Room 325A to pick up their badges. Other press may apply for press credentials in Room 325A. Please note that research presented at the meeting may be proprietary or submitted for publication.

### Annual Meeting Registration

#### (Hawaii Convention Center)

ARVO 2018 registration is in the main lobby of the Hawaii Convention Center. Registration includes:

#### ■ Badge Printing

Bring your email confirmation with the QR code to an ExpressPass badge printing kiosk. Simply scan the QR code and receive your badges and/or tickets. QR codes can also be scanned from your smartphone.

#### ■ Onsite Registration

Complete the onsite registration form and submit payment at the onsite registration desk.

#### ■ Onsite Guest

Complete the appropriate registration form and submit payment at the onsite registration desk.

#### ■ Name badge replacement

Replace a lost or forgotten name badge at the Badge Replacement desk for a \$50 fee. Corrections to the badges are free.

#### ■ Exhibitor registration

All pre-registered exhibitors should print their confirmation



and bring it with them to the convention center. Simply scan the QR code at the Exhibitor registration desk. All non-registered exhibitors may register onsite at the Exhibitor registration desk.

## Registration and Badge Printing

### (Hawaii Convention Center)

Sat., April 28.....	7am – 6pm
Sun., April 29.....	7am – 6pm
Mon., April 30.....	7am – 6pm
Tues., May 1.....	7am – 6pm
Wed., May 2.....	7am – 6pm
Thurs., May 3.....	7am – 2pm

Note: *Sunday presenters are strongly encouraged to register and/or print their badges on Saturday.*

## Badge Printing

### (Hilton Hawaiian Village & Sheraton Waikiki)

Bring your email confirmation with the QR code to an ARVO kiosk at the following hotels:

- Hilton Hawaiian Village (Main Lobby)  
2005 Kalia Road, Honolulu, HI
- Sheraton Waikiki (Lobby, Adjacent to Koi Pond)  
2255 Kalakaua Ave, Honolulu, HI

Sat., April 28.....	7am – 9pm
Sun., April 29.....	7am – 3pm

## ARVO Fellows

ARVO Fellows in the Class of 2018 may pick up their materials at the FARVO Lounge in Room 304B of the Hawaii Convention Center during registration hours. Please note: enter through Room 304A to gain access to the Room 304B. Ribbons for prior year Fellows will also be available.

## Travel Grant Recipients

Pick up your Travel Grant packet during registration hours at the Travel Grants/Awards Desk on Saturday in the Main Lobby on Level 1 and on Sunday – Thursday at ARVO Central in the Exhibit Hall.



Former ARVO Foundation chairs Gary Abrams, MD, FARVO; Mark Petrash, PhD, FARVO; and John Dowling, PhD, FARVO, present Joan Miller, MD, FARVO, with a Dowling Society medal in recognition of her 2017 pledge to the Foundation.

## Dowling Society

The prestigious Dowling Society recognizes individuals for their significant support for eye and vision research. The society is named for vision researcher and first Chairman of the ARVO Foundation Board of Governors, John E. Dowling, PhD, FARVO, in honor of his accomplishments within the ARVO Foundation, ARVO and the vision research community.

Members of the Dowling Society have made a pledge or donation to the Foundation for \$10,000 or more. Members have the option of adding a spouse/partner for an additional contribution of \$5,000. Pledges may be paid over five years. Below are members of the Dowling Society that we wish to recognize for their contributions:

Gary W. Abrams, MD, FARVO,  
and Jane C. Werner, MD

Robert E. Anderson, MD, PhD,  
FARVO

Joanne Angle, MLS, MPA

Sally S. Atherton, PhD, FARVO,  
and Robert Atherton

Robert B. Barlow, PhD, FARVO,  
and Patricia Barlow

Haydee E. P. Bazan, PhD, FARVO,  
and Nicolas G. Bazan, MD,  
PhD, FARVO

Bernard Becker, MD, FARVO

David C. Beebe, PhD, FARVO,  
and Betsy Beebe PA-C

Eliot L. Berson, MD, FARVO, and  
Kyra Kaplan-Berson

Paul S. Bernstein, MD, PhD,  
FARVO

Roger W. Beuerman, PhD,  
FARVO

Laszlo Z. Bitó, PhD

Janet C. Blanks, PhD, FARVO

Jeffrey H. Boatright, PhD, FARVO

William J. Brunken, PhD, FARVO,  
and Dale D. Hunter, PhD, JD

Claude F. Burgoyne, MD, FARVO

Patrick Burke, MD, PhD

Stanley Chang, MD, FARVO

Steve T. Charles, MD, FACS, FICS

Emily Y. Chew, MD, FARVO, and  
Robert P. Murphy, MD

- Bruce E. Cohan, MD
- Lancey B. Cowan, JD, CAE
- Cheryl M. Craft, PhD, FARVO
- Patricia A. D'Amore, MBA, PhD, FARVO
- Paulus T. V. M. de Jong, MD, PhD, FARVO, FEBOPhth, FRCOPhth and Marij de Jong
- John E. Dowling, PhD, FARVO, and Judith F. Dowling
- Joseph L. Dowling, MD
- David L. Epstein, MD, FARVO, and Susan M. Epstein, RN, JD
- Rafal Farjo, PhD
- Steven J. Fliesler, PhD, FARVO
- Robert N. Frank, MD, FARVO
- Ronald E. P. Frenkel, MD
- Juan E. Gallo, MD, PhD, FARVO
- Israel A. Goldberg, PhD, and Diane Goldberg
- Evangelos S. Gragoudas, MD, FARVO
- Linda D. Hazlett, PhD, FARVO
- David Huang, MD, PhD, FARVO
- Martine J. Jager, MD, PhD, FARVO
- Murray A. Johnstone, MD, and Jeanie Johnstone
- Paul L. Kaufman, MD, FARVO, and Margaret Kaufman
- Dimitrios Karamichos, PhD
- Shigeru Kinoshita MD, PhD, FARVO
- Ingrid Kreissig, MD
- Paul P. Lee, MD, JD, FARVO, and Jennifer Lee
- Alice R. McPherson, MD
- Jennifer J. Kang-Mieler, PhD, FARVO and William F. Mieler, MD, FARVO
- Ann H. Milam, PhD, FARVO
- Joan W. Miller, MD, FARVO
- Robert F. Miller, MD, FARVO
- Alan R. Morse, PhD
- Janice Oliva
- Samir C. Patel, MD
- Christopher A. Paterson, PhD, DSc, FARVO
- David R. Pepperberg, PhD, FARVO
- J. Mark Petrash, PhD, FARVO, and Kelly Cope Petrash
- Robert Ritch, MD, FARVO
- Stella M. Robertson, PhD, and James D. Robertson, PhD
- Frances Rucker, PhD, MCOptom, FAAO
- Iris M. Rush, CAE
- Stephen J. Ryan, Jr., MD, FARVO
- David E. Saffer
- Jose Alain Sahel, Jr., MD, FARVO
- Joel S. Schuman, MD, FARVO
- William Eric Sponsel, MD
- W. Daniel Stamer, PhD, FARVO
- Paul Sternberg, Jr., MD, FARVO, and Gloria Sternberg
- Joyce Tombran-Tink, PhD, FARVO, and Colin J. Barnstable, DPhil, FARVO
- Carol B. Toris, PhD, FARVO
- Erik J. van Kuijk, MD, PhD, and Virginia Brooke, RN, PhD
- David R. Williams, PhD, FARVO, and Inger M. Williams, PhD
- Thomas Yorio, PhD, FARVO, and Elena Yorio

**To become a member of the Dowling Society, please contact the ARVO Foundation at +1.240.221.2950 or [info@arvofoundation.org](mailto:info@arvofoundation.org)**

**808 Coffee Café – 3rd Floor**

Offers specialty coffees, pastries, and sandwiches.

Sat., April 28.....	7:30am – 6pm
Sun., April 29 – Wed., May 2 .....	6:30am – 6pm
Thurs., May 3.....	6:30am – 3pm

**Aloha Brew Coffee – 3rd Floor**

Offers specialty coffees.

Sun., April 29 – Wed., May 2 .....	8am – 4pm
Thurs., May 3.....	8am – 1pm

**Marketplace Café – 3rd Floor**

A Taste of Hawaii from our local chefs and restaurants.

Sun., April 29 – Wed., May 2 .....	11am – 3pm
------------------------------------	------------

**Marketplace Café II – 3rd Floor**

A Taste of Hawaii from our local chefs and restaurants.

Sun., April 29 – Wed., May 2 .....	11am – 3pm
------------------------------------	------------

**HCC Coffee Cart – Exhibit Hall**

Offers Kona Blend drip coffee, decaf coffee and hot tea.

Sun., April 29 – Wed., May 2 .....	7am – 1pm
------------------------------------	-----------

**HCC Café I – Exhibit Hall**

Offers cold beverages, Kona Blend drip coffee, and decaf coffee and hot tea. Food includes sandwiches, salads, snacks, and hot entrees.

Sun., April 29 – Wed., May 2 .....	9:30am – 3:30pm
------------------------------------	-----------------

**HCC Café II – Exhibit Hall**

Offers cold beverages, Kona Blend drip coffee, and decaf coffee and hot tea. Food includes sandwiches, salads, snacks, and hot entrees.

Sun., April 29 – Wed., May 2.....	10:30am – 3:30pm
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## General Business Meeting

Room 320 | Tues., May 1, 10:15 – 11am

- Welcome — ARVO President, Claude Burgoyne, MD, FARVO
- Presentation of ARVO Distinguished Service Awards —
  - Emily Y. Chew, MD, FARVO
  - Sarah Coupland, MBBS, PhD, FARVO
  - J. Mark Petrash, PhD, FARVO
  - Dennis Levi, OD, PhD, FARVO
  - Thomas Yorio, PhD, FARVO
- Presentation of the Joanne G. Angle Award to Harry A. Quigley, MD, FARVO
- Presentation of Membership Update and Election Results
- Membership and Annual Meeting attendance update
- Introduction of Incoming Officers
- 2018 Achievement Award recipients
- 2019 Achievement Award nominees
- Conclude meeting



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### ARVO/Alcon Monday Keynote

Mon., April 30, 5:30 – 6:45pm | Kalakaua Ballroom



**Jennifer A. Doudna, PhD**  
University of California, Berkeley  
Berkeley, Calif.

***CRISPR-Cas Gene Editing:  
Biology, Technology and Ethics***

Gene editing with CRISPR technology is transforming biology. Understanding the underlying chemical mechanisms of RNA-guided DNA and RNA cleavage provides a foundation for both conceptual advances and technology development. I will discuss how bacterial CRISPR adaptive immune systems inspire creation of powerful genome engineering tools, enabling advances in both fundamental biology and applications in medicine. I will also discuss the ethical challenges of some of these applications.

### ARVO/Alcon Closing Keynote

Thurs., May 3, 2:15 - 3:45pm | Kalakaua Ballroom



**Shoukhrat Mitalipov, PhD**  
Oregon Health & Science  
University

***Principles of gene repair in  
human embryos***

IVF represents a successful cell therapy approach for treatment of infertility. My center is actively investigating novel germ line gene therapy approaches that would allow us to repair gene defects in mutant gametes or early preimplantation embryos. The focus of this lecture is to inform on applications of gene editing and gene replacement strategies in preclinical and clinical studies demonstrating feasibility, efficacy and long-term safety of germ line gene therapy.

The ARVO/Alcon Keynote Series is sponsored by the ARVO Foundation through the generous support of Alcon.



## Looking for grant money to fund your ophthalmic research?

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### ARI YOUNG INVESTIGATOR GRANT

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- \$50,000 Grant to be used for research
- 3-5 Grants per year
- ARI EC and SSC vote on grant proposals
- Proposals accepted July 1 – February 1. Grant recipients announced in May.

For more information on eligibility criteria and how to apply:  
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@ [alcon.researchinstitute@alcon.com](mailto:alcon.researchinstitute@alcon.com)

## Proctor Award and Lecture

Sun., April 30, 10:45 – 11:30am | Kalakaua Ballroom BC



**Artur V. Cideciyan, PhD**  
Scheie Eye Institute  
University of Pennsylvania Health System  
Philadelphia, Pa.



**Samuel G. Jacobson, MD, PhD, FARVO**  
Scheie Eye Institute  
University of Pennsylvania Health System  
Philadelphia, Pa.

*From observations in the retina clinic to insights into pathophysiology*

## Friedenwald Award and Lecture

Sun., April 30, 11:45am – 12:30pm | Kalakaua Ballroom BC



**Reza Dana, MD, MSc, MPH, FARVO**  
Massachusetts Eye and Ear Infirmary/  
Harvard Medical School  
Boston, Mass.

*What Escher and Bach teach us about Immunology*

## Mildred Weisenfeld Award and Lecture

Sun., April 30, 5:15 – 6pm | Kalakaua Ballroom BC



**M. Elizabeth Hartnett, MD, FACS, FARVO**  
Moran Eye Center, University of Utah  
Salt Lake City, Utah

*Discovering mechanisms in the changing and diverse pathology of ROP*

## Cogan Award and Lecture

Wed., May 2, 10:15 – 11am | Kalakaua Ballroom BC



**Felipe Medeiros, MD**  
Duke University  
Durham, N.C.

*From micro imaging to macro functioning in glaucoma*



# Lighthouse Guild

congratulates

Botond Roska, MD, PhD

Faculty of Medicine, University of Basel, Switzerland

recipient of the

## **2018 Bressler Prize**

for his contribution to  
the field of retinal studies

and

Joshua D. Stein, MD, PhD

W.K.Kellogg Eye Center, University of Michigan

recipient of the

## **2018 Pisart Award**

for his work to improve  
the health care delivery system

---

The Bressler Prize recognizes a mid-career vision clinician-scientist whose leadership, research and service have led to important advancements in the understanding of vision loss, treatment of eye disease, or the rehabilitation of people with vision loss.

The Pisart Award recognizes an early-career vision clinician-scientist whose contributions to vision science have the potential for substantial influence.

For both the Bressler Prize and the Pisart Award, non-clinicians may be eligible if their work has direct, immediate and readily translatable clinical relevance.

---



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Guild**

[lighthouseguild.org](http://lighthouseguild.org)

## ARVO Distinguished Service Awards

Distinguished Service Award recipients will be recognized at the General Business Meeting (Tues., May 1, 10:15 – 11am | Room 320, Level 3).



Emily Chew, MD, FARVO  
NIH/National Eye Institute, Bethesda, Md.  
2017 ARVO President  
CL Section Trustee



Sarah Coupland, MBBS, PhD, FARVO  
University of Liverpool, Liverpool, U.K.  
2017 ARVO Vice President  
AP Section Trustee



J. Mark Petrash, PhD, FARVO  
University of Colorado, Aurora, Colo.  
2015 – 2018 Chair,  
ARVO Foundation Board of Governors



Dennis Levi, OD, PhD, FARVO  
University of California, Berkeley  
Berkeley, Calif.  
2013 – 2017 Editor-in-Chief  
*Journal of Vision*



Thomas Yorio, PhD, FARVO  
University of North Texas Health Science  
Center, Fort Worth, Texas  
2015 – 2017 Editor-in-Chief  
*Investigative Ophthalmology & Visual Science*

## Joanne G. Angle Award



The Joanne G. Angle Award is the highest service honor to a volunteer professional bestowed by ARVO.

The 2018 award is presented to Harry A. Quigley, MD, FARVO, of the Johns Hopkins Wilmer Eye Institute. Dr. Quigley is Maumenee Professor at Wilmer, Johns Hopkins, directing its Glaucoma Center for 40 years and the Dana Center for Preventive Ophthalmology for 20 years. He is a past ARVO Executive Vice President, Editor-in-Chief of *IOVS*, and a Friedenwald Award recipient.

Dr. Quigley has given 37 named lectures, trained 60 glaucoma clinician-scientists, and has pioneered studies of the epidemiology, morbidity and progression rate of glaucoma. He was first to use successful gene therapy in experimental glaucoma and has developed the field of scleral neuroprotection.

The award will be presented to Dr. Quigley at the General Business Meeting (Tues., May 1, 10:15 – 11am, Room 320).

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## ARVO/Champalimaud Award Lecture



Tues., May 1, 5:30 – 6:30pm  
Ballroom BC

The 2017 António Champalimaud Vision Award is given jointly to Sightsavers and Christoffel-Blindenmission (CBM), two organizations with distinguished histories of supporting blindness prevention, alleviation and rehabilitation programs in developing countries like Nepal, Mozambique, Uganda, Ethiopia and Bangladesh.

U.K.-based Sightsavers and the international Christian development organization CBM were the creators of a model to combat vision disorders based around three pillars — prevention, cure and support.



Izidine Hassane of Sightsavers and Babar Qureshi of CBM receive the 2017 Champalimaud Vision Award in Lisbon.

## Beckman–Argyros Award

**James G. Fujimoto, PhD**  
Massachusetts Institute of Technology  
Cambridge, Mass.



Thurs., May 3, 1 – 2pm | Ballroom BC  
***History, evolution and future prospects of optical coherence tomography***

The Arnold and Mabel Beckman Foundation through its Beckman-Argyros Award in Vision Research funds potentially high-impact work that lacks the full suite of data necessary to secure government funding. This year's recipient is James Fujimoto, PhD, the Elihu Thomson Professor of Electrical Engineering, at MIT.

Fujimoto pioneered OCT imaging in ophthalmology, now considered the standard of care with more than 30 million procedures performed worldwide every year. Fujimoto is currently developing advanced optical imaging for cancer detection including endoscopic OCT and surgical guidance.

# Updates in Neovascular Age-Related Macular Degeneration

*Improving Detection, Reducing the Burden of Treatment,  
and Optimizing Visual Outcomes*

**Monday, April 30, 2018 – 6:15 AM – 8:15 AM**

## Chair & Presenter



### Pravin U. Dugel, MD

Retinal Consultants of Arizona LTD  
Retinal Research Institute LLC  
Phoenix Eye Institute  
Banner University Medical Center  
Phoenix, Arizona  
USC Roski Eye Institute  
Keck School of Medicine  
University of Southern California  
Los Angeles, California

## Presenter



### David S. Boyer, MD

Retina-Vitreous Associates  
Medical Group  
USC/Keck School of Medicine  
Los Angeles, California

## Presenter



### Peter K. Kaiser, MD

Cole Eye Institute  
Cleveland Clinic  
Cleveland, Ohio

**CME  
Breakfast  
Symposium**

## KEY REASONS TO ATTEND

- Hear expert views on best practices in the diagnosis and treatment of neovascular AMD
- Learn how to overcome barriers to achieving optimal visual outcomes for patients with neovascular AMD
- Hear the latest data for novel agents being investigated for neovascular AMD and their potential clinical impact

## Hilton Hawaiian Village Waikiki Beach

Mid-Pacific Conference Center – Coral Ballroom 1-2  
2005 Kalia Road Honolulu, Hawaii 96815

Attendees must register for the ARVO 2018 Annual Meeting in order to attend this program.  
To register for the ARVO 2018 Annual Meeting please visit, <https://www.arvo.org/annual-meeting>.

## Agenda

**6:15 AM Registration and Breakfast**

**6:45 AM Welcome and Introduction**

- An introduction of the faculty and a profile of the morning's scientific session

**6:50 AM MasterClass Module 1: Individualizing the Management of Patients With Neovascular AMD According to the Latest Evidence**

- **MasterClass:** A foundational review of the current approach to diagnosing and treating neovascular AMD, including best practices in individualizing therapy
- **Practicum:** A practical discussion of the challenges with the current management schema (eg, burden of frequent injections, refractory patients) and strategies to overcome these obstacles; patient stories will be utilized to illustrate key points and questions from the audience will be addressed

**7:30 AM MasterClass Module 2: New Horizons in the Treatment of Neovascular AMD**

- **MasterClass:** An overview of the latest data for novel agents being investigated for the treatment of neovascular AMD
- **Practicum:** An engaging discussion regarding the potential impact these therapies may have on clinical practice if approved; questions from the audience will be addressed

**8:10 AM Summary and Reflections**

**8:15 AM Adjourn**

This CME activity is jointly provided by Penn State College of Medicine and PVI, PeerView Institute for Medical Education.

This activity is supported by an educational grant from Novartis Pharmaceuticals Corporation.

This event is not organized or sponsored by ARVO.

## Fellows of ARVO

ARVO will induct the Fellows Class of 2018 at the opening ARVO/Alcon Keynote Session, to recognize and honor these members for their leadership, dedication and contributions to the Association.

### Gold Fellows

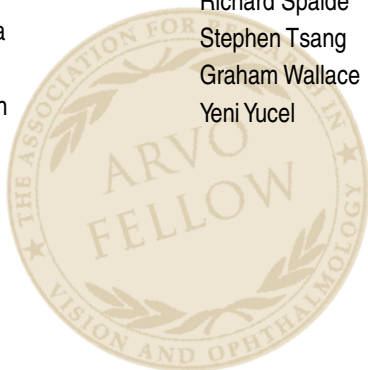
William Brunken  
Mark Bullimore  
Melinda Duncan  
Dennis Levi

Robert Koenekoop  
Peter Koulen  
Susumu Ishida  
Chia-Yang Liu  
Anat Loewenstein  
Birgit Lorenz

### Silver Fellows

Michael Abramoff  
Francine Behar-Cohen  
Claus Cursiefen  
Michael Elliott  
Paul Gamlin  
Neeru Gupta  
Frank Holz  
Ram Kannan  
Mary Kelley

Chi Pui Pang  
Jason Porter  
Lyne Racette  
Tonia Rex  
Solange Salomao  
Richard Spaide  
Stephen Tsang  
Graham Wallace  
Yeni Yucel



## 2018 Annual Meeting Survey

We want to hear from you! Following the Annual Meeting, all attendees will receive a link to the Online Annual Meeting Survey. Please respond and send us your thoughts about how ARVO can continue to improve the Annual Meeting. We appreciate your attendance and look forward to receiving your comments.



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European University Professors of Ophthalmology

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Course on Retina & Uveitis

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# ARVO 2018

April 29 – May 3 | Honolulu

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## Exhibit Hall Hours

Sun., April 29	8:15am – 5pm
Mon., April 30	8:15am – 5:15pm
Tues., May 1	8:15am – 5:15pm
Wed., May 2	8:15am – 5:15pm

The Association for Research in Vision and Ophthalmology gratefully acknowledges the support of exhibiting companies and Annual Meeting supporters.





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## A

### **AbbVie ..... 719**

Temple Daly  
 1 North Waukegan Rd.  
 North Chicago, Ill. 60064  
 Tel: 847-935-8658; email: temple.daly@abbvie.com  
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AbbVie is a global, research-based biopharmaceutical company which combines the focus of a leading-edge biotech with the expertise and structure of a long-established pharmaceutical leader. AbbVie is committed to using unique approaches to innovation to develop and market advanced therapies that address some of the world's most complex and serious diseases.

### **AbbVie Medical Affairs..... 819**

Cathy Miller  
 1 North Waukegan Rd.  
 North Chicago, Ill. 60064  
 Tel: 847-937-8915; email: catherine.miller@abbvie.com

### **ABO..... 1037**

Claudia Moral  
 Rua Casa do Ator 1117 Vila Olimpia  
 Sao Paulo, SP 04546-004  
 Brazil  
 Tel: 55-113-266-4000; email: aboonline@cbo.com.br  
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### **Absorption Systems..... 1536**

Tawny Britton  
 436 Creamery Way, #600  
 Exton, Pa. 19341  
 Tel: 610-280-7300; email: contact@absorption.com  
 absorption.com

Absorption Systems is a preclinical contract research organization specializing in ADMET services for drugs, biologics, and medical devices. Our ocular capabilities span from in vitro permeability to in vivo PK, toxicology, disease models, devices and custom model development. We have experience with species such as rabbit, pig, dog, and sheep. All animal studies are performed in our 30,000 sq. ft. AAALAC-accredited, GLP-compliant, and NIH-assured vivarium in San Diego, CA.

## Exhibitor Descriptions

### **AcuiSee ..... 1041**

Jeff Jamison  
5512 Bob White Ave.  
Kalamazoo, Mich. 49009  
Tel: 858-736-1359; email: jeff@acuiSee.com  
acuiSee.com

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### **Aerie Pharmaceuticals ..... 703**

Michael Rowe  
2030 Main St., Suite 1500  
Irvine, Calif. 92614  
Tel: 949-526-8700; email: marketing@aeriepharma.com  
www.aeriepharma.com

Aerie is an ophthalmic pharmaceutical company focused on the discovery, development and commercialization of first-in-class therapies for the treatment of patients with open-angle glaucoma and other diseases of the eye. Aerie's first product, Rhopressa(r) (netarsudil ophthalmic solution) 0.02%, for the reduction of intraocular pressure (IOP) in patients with open-angle glaucoma or ocular hypertension, was recently FDA approved.

### **Aero Pump GmbH..... 727**

Rouven Kraus  
Dr. Ruben Rausing Str. 5  
Hochheim am Main 65239  
Germany  
Tel: +49 6146603-115; email: rouven.kraus@aeropump.de  
aeropump.de/en/home

AERO PUMP GmbH is a leading manufacturer of high precision application systems for the pharmaceutical and healthcare industry with a state-of-the-art production facility. Our sophisticated Ophthalmic Multidose System is widely established in the OTC and prescription drugs market. Its modular design allows a maximum level of flexibility to meet the individual requirements of our customers.

### **Aier Eye Hospital Group ..... 831**

Shibo Tang, MD, PhD  
198 Furong Middle Rd., New Century Building, 18th Floor  
Changsha Hunan 410015  
China  
Tel: +86 13925100123; email: tangshibo@vip.163.com  
aierchina.com/en

Aier Eye Hospital Group is the largest eye health service provider in China. It has 300 specialized eye hospitals all over the country, providing service for over 5 million people every year. Devoting to the course of human eye care, together with its strong medical and research teams, Aier will have many more competitive eye hospitals to provide high-quality, multi-level eye care for the public and achieve the ideal of enabling everyone, rich or poor, to enjoy the right of eye care.

**Akari Therapeutics..... 1533**

Belinda Darwall Smith  
 75 Wimpole St.  
 London W1G 9RT  
 U.K.  
 Tel: 44-020-800-4027-0; email: belinda.darwall-smith@akaritx.com  
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**Akari Therapeutics..... MS5**

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**Alcon ..... 1317**

Erin Moore  
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 Tel: 817-568-6077; email: erin.moore@alcon.com  
 alcon.com

Alcon, a global leader in eye care, offers the broadest portfolio of products to enhance sight and improve people's lives. Our products touch the lives of more than 285 million people each year living with conditions like cataracts, glaucoma, retinal diseases and refractive errors, and there are millions more who are waiting for solutions to meet their eye care needs. For more information, visit [alcon.com](http://alcon.com).

**Alimera Sciences..... 813**

Claudia Del Cid  
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 alimerasciences.com

Alimera Sciences (NASDAQ:ALIM), a prescription ophthalmic pharmaceutical manufacturer, sells ILUVIEN® (fluocinolone acetonide intravitreal implant) 0.19mg available in the U.S. for the treatment of DME in patients who have been previously treated with a course of corticosteroids and did not have a clinically significant rise in intraocular pressure. ILUVIEN is also commercially available in the United Kingdom, Germany, Portugal and the Middle East.

**Allergan ..... 1027**

Mary Mikels  
 2525 Dupont Dr.  
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 Tel: 714-246-4500; Fax: 714-246-4971; email: mikels\_mary@allergan.com  
 allergan.com

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## Exhibitor Descriptions

### **Allergan Medical Affairs..... 1126**

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### **Alpha Independent Review Board, Inc..... 917**

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### **American Academy of Ophthalmology..... 1411**

Customer Service  
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San Francisco, Calif. 94109  
Tel: 415-561-8540; Fax: 415-561-8575; email: customer\_service@aao.org  
aao.org

The American Academy of Ophthalmology is a global community of eye physicians and surgeons who are dedicated to protecting sight and empowering lives. As the leader in ophthalmic education, we offer a wealth of innovative resources, such as the ONE® Network, EyeWiki® and IRIS® Registry. Join us for AAO 2018 in Chicago, Oct. 27 – 30.

### **Aptar Pharma..... 827**

Pamela Moran  
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Congers, N.Y. 10920  
Tel: 845-639-3700; email: pamela.moran@aptar.com  
aptar.com

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### **Asia-Pacific Academy of Ophthalmology (APAO) ..... 1338**

Cynthia Wong  
Secretariat, Asia Pacific Academy of Ophthalmology  
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Dept. of Ophthalmology & Visual Sciences, Hong Kong Eye Hospital 4/F  
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apaophth.org

**Association for Ocular Pharmacology & Therapeutics..... 1239**

Peter F. Kador  
 11778 Whitmore St.  
 Omaha, Neb. 68142  
 Tel: 402-740-4397; email: pkador@cox.net  
 aopt.org

Association for Ocular Pharmacology and Therapeutics is a global not-for-profit organization for scientists and individuals from all disciplines related to ocular pharmacology and its therapeutic applications. AOPT has diverse, multi-national membership composed of preclinical and clinical scientists, students, and healthcare professionals. The society organizes biennial conferences and provides editorial leadership for the peer-reviewed Journal of Ocular Pharmacology and Therapeutics (JOPT).

**Aurora Surgical ..... 902**

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 111 2nd Ave., Suite 600  
 St. Petersburg, Fla. 33701  
 Tel: 727-821-3303; Fax: 727-821-3311; email: ljonsson@aurorasurgical.com  
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**AYOXXA Biosystems, Inc. .... 815**

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 Cambridge, Mass. 02142  
 Tel: 760-277-3280; email: santiago.fadul@ayoxxa.com  
 ayoxxa.com

AYOXXA's offers LUNARIS™ Multiplex Ophthalmology Kits for human and mouse samples optimized to run on AYOXXA's platform that is specifically designed for multiple protein analysis of highly precious and scarce samples. Offering optimized preparation protocols for ocular fluids (vitreous and aqueous humor) requiring less than 5 µL sample volume, AYOXXA enable researchers to study eye disease underlying molecular mechanisms.

**B**

**B. Braun CeGaT, LLC..... 1538**

Dawn Brooke  
 824 Twelfth Ave.  
 Bethlehem, Pa. 18018-3524  
 Tel: 773-255-3611; email: dawn.brooke@bbrauncegat.com  
 bbrauncegat.com

Our genetic diagnostic laboratory offers a wide range of services for the sequencing and analysis of genetic information. We have expertise in the genetic causes of eye disease having analyzed thousands of patients with these diseases. Our Panel for Eye Diseases covers 21 subpanels with over 320 genes known to be associated with retinal and related disorders, our sequencing is at a high coverage (800-1000x) in order to increase the probability of finding causative variants in a patient's DNA

## Exhibitor Descriptions

**Bausch & Lomb, Inc.** ..... MS6  
Brenda Dugue  
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Bridgewater, N.J. 08807  
Tel: 908-541-3254; Fax: 585-338-0686; email: [brenda.dugue@bausch.com](mailto:brenda.dugue@bausch.com)  
[bausch.com](http://bausch.com)

Bausch + Lomb, a Valeant Pharmaceuticals International, Inc. company, is a leading global eye health organization that is solely focused on protecting, enhancing, and restoring people's eyesight. Our core businesses include ophthalmic pharmaceuticals, contact lenses and lens care products, and ophthalmic surgical devices and instruments. We develop, manufacture and market one of the most comprehensive product portfolios in our industry, which are available in more than 100 countries.

**Bio-Concept Laboratories, Inc.**..... 903  
Francis Smith  
13 Industrial Way  
Salem, N.H. 03079  
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[bioconcept.com](http://bioconcept.com)

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**BioTime** .....MS7  
Allison Valentine  
1010 Atlantic Ave., #102  
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BioTime is leading the next revolution in medicine – regenerative medicine. BioTime is a late stage clinical biotechnology company focused on developing and commercializing products addressing degenerative diseases. Our Company's current clinical programs are targeting three primary sectors: Aesthetics, Ophthalmology, Cell/drug delivery. Together with our subsidiaries, we have a strong focus on improving patients' lives, and we are advancing clinical trials and a robust pipeline.

**Blueprint Genetics**..... 1003  
Sarah Lance  
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Tel: 630-229-8325; email: [sarah.lance@blueprintgenetics.com](mailto:sarah.lance@blueprintgenetics.com)  
[blueprintgenetics.com](http://blueprintgenetics.com)

Blueprint Genetics delivers quality genetics testing to the global clinical community. We provide clinicians, and their patients, with comprehensive and high-quality tools and resources for diagnostics of genetic conditions. Through our innovative laboratory process, latest sequencing technology with AI empowered data-crunching tools, and world-class professionals, we are advancing mainstream healthcare.

**Boston Micromachines Corp..... 828**

Michael Feinberg  
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Cambridge, Mass. 02138  
Tel: 617-868-4178; Fax: 617-868-7996; email: mrf@bostonmicromachines.com  
bostonmicromachines.com

Founded in 1999, Boston Micromachines Corporation (BMC) is a designer of advanced retinal imaging instrumentation and is the leading provider of microelectromechanical systems (MEMS) - based mirror products. BMC's customizable Apaeros Retinal Imaging Systems are adaptive optics scanning laser ophthalmoscopes (AOSLO). This family of instruments is designed for best-in-class performance and has the ability to add the latest features developed by leaders in retinal imaging instrument development.

**BrightFocus Foundation..... 1033**

Kara Summers  
22512 Gateway Center Dr.  
Clarksburg, Md. 20871  
Tel: 301-948-3244; email: ksummers@brightfocus.org  
brightfocus.org

BrightFocus Foundation is a donor-supported charity that funds research seeking cures for age-related macular degeneration, glaucoma, and Alzheimer's disease and provides the public with information about risk factors, preventative lifestyles, available treatments and coping strategies. Since inception, BrightFocus has committed more than \$176 million in support of its research aims. For more information, visit [www.brightfocus.org](http://www.brightfocus.org).

## C

**Calvert Laboratories, Inc..... 912**

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**Cambrian Medical, Inc..... 806**

Asita Prabhushankar  
427 S Main St., Suite 311  
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Tel: 408-996-0205; Fax: 408-904-4914; email: sales@cambrian-med.com  
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## Exhibitor Descriptions

### **Cambridge Research Systems** ..... 920

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Tel: +44-1634-7207-07; Fax: +44-1634-7207-19  
email: carol.luscombe@crsltd.com  
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### **CenterVue, Inc.** ..... 814

Keshia Sanchez  
43301 Osgood Rd.  
Fremont Calif. 95439  
Tel: 408-988-8404; Fax: 408-716-3271; email: keshia.sanchez@centervue.com  
centervue.com

CenterVue develops highly advanced and easy to use diagnostic systems for early detection and management of sight-threatening pathologies such as Diabetic Retinopathy, Glaucoma and Macular Degeneration. Our innovative devices employ imaging principles and fluid functionality that aid in precise diagnosis and efficient workflow. The CenterVue portfolio includes the DRS Automated Fundus Camera, the EIDON Wide-Field Confocal Scanner, the MAIA Microperimeter and the new COMPASS Fundus Perimeter.

### **Centre for Ocular Research & Education (CORE)** ..... 1316

Bonnie Boshart  
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Waterloo ON N2L 3G1  
Canada  
Tel: 519-888-4742; Fax: 519-888-4303; email: bonnie.boshart@uwaterloo.ca  
core.uwaterloo.ca

With global expertise in advanced biosciences, clinical research and education, CORE (formerly CCLR) collaborates with sponsors, agencies and academia, providing uncompromising independence and results of the highest quality. It serves a range of sectors, including medical devices, ocular pharmaceuticals, digital technologies and more, focusing on the anterior segment.



**Charles River** ..... 1112  
 Greta Lindberg  
 251 Ballardvale St.  
 Wilmington, Mass. 01887-1000  
 Tel: 339-368-0944; Fax: 978-988-9236; email: greta.lindberg@crl.com  
 criver.com

Charles River offers an integrated approach to ophthalmology research to guide new drugs from bench to market. Compounds or implantable devices intended for ocular treatment can be assessed for efficacy and safety. Ocular effects of compounds targeted to non-ocular conditions can also be characterized. GLP studies either as stand-alone studies or as part of general and specialty toxicology programs as well as Non-GLP pilot or proof-of-concept studies can also be conducted.

**CiToxLAB North America** ..... 1030  
 Sophie Dubois  
 445 Boulevard Armand Frappier  
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 Tel: 450-973-2240; email: duboiss@ca.citoxlab.com  
 citoxlab.com/en

CiToxLAB is a full-service non-clinical CRO, serving the Pharma/Biotech and Chemical/Agrochemical/Cosmetic industries through five state-of-the-art GLP facilities in North America and Europe. Our service portfolio includes general and specialty toxicology (reproductive, juvenile, infusion, inhalation, carcinogenicity, transgenics), safety pharmacology (including EEGs and CV/ CNS electrophysiology), genomics, biomarkers, bioanalysis, immunology, ecotoxicology and radiation safety.

**Cleveland Clinic Cole Eye Institute**..... 1103  
 Alan Steinberger  
 9500 Euclid Ave.  
 Cleveland, Ohio 44195  
 Tel: 216-444-5832; email: steinba1@ccf.org  
 ccf.org

The Cole Eye Institute is one of the few dedicated, comprehensive eye institutes in the world. It is one of 27 clinical and special expertise institutes at Cleveland Clinic, a nonprofit academic medical center ranked as the No. 2 hospital in the country by U.S. News & World Report.

**Clinical Edge, Inc.**..... 1541  
 Lisa Laskowski  
 939 West North Ave., Suite 750  
 Chicago, Ill. 60642  
 Tel: 773-218-6449; email: llaskowski@clinicaledgeinc.net  
 clinicaledgeinc.com

Clinical Edge, Inc. provides certification in all areas of visual function including BCVA, low luminance, reading tests and IOP in order to assure a high level of quality and consistency amongst clinical sites participating in the conduct of ophthalmology drug, biologic, and device trials. Our Certifiers are licensed optometrists and ophthalmologists, with added experience in serving patients with low-vision. Our Team of professionals has an unparalleled level of expertise and experience.

## Exhibitor Descriptions

### **Comparative Biosciences, Inc.** ..... 1130

Rachel Stainton  
786 Lucerne Dr.  
Sunnyvale, Calif. 94085  
Tel: 408-738-8074; Fax: 408-738-9278; email: rachel\_stainton@compbio.com  
compbio.com

BI provides the best resources and quality service to all sectors of the biomedical community. With a multitude of expertise, we are able to serve pharmaceutical and biotech companies as well as academic, industrial and governmental organizations. CBI's extensive experience performing ocular GLP and non-GLP preclinical toxicology, efficacy, pharmacology, pharmacokinetics-pharmacodynamics, histopathology, and safety studies make us the ideal collaborator for your next scientific breakthrough.

### **Congruence Medical Solutions** ..... 1629

Gautam Shetty  
7789 Arundel Mills Blvd., #237  
Hanover, Md. 21076  
Tel: 216-272-5521; email: gs@congruencemed.com  
congruencemed.com

### **Cylite** ..... 1613

Steve Frisken  
7/45 Normanby Rd.  
Nottingham, VIC 3168  
Australia  
Tel: 614-012-8704-7; email: steve.frisken@cyliteoptics.com  
cyliteoptics.com

Cylite's Hyperparallel OCT (HP-OCT) technology can acquire over 1000 simultaneous A-scans in one millisecond, freezing eye movement and allowing, for the first time in a commercial instrument, accurate in-vivo measurements of anterior ocular surface topography using OCT. Cylite's HP-OCT instrument also features axial length measurement and high resolution volumetric imaging.

## D

### **D-Eye, Srl** ..... 833

Spencer Lee  
6097 Rocky Point Circle  
Truckee, Calif. 96161  
Tel: 401-473-6323; Fax: 401-473-6323; email: slee@spencerleemarketing.com  
d-eyecare.com

D-EYE is a smartphone-based retinal imaging system. The D-EYE lens was invented by Italian Ophthalmologist Andrea Russo and works in harmony with iPhones and Android devices by removing corneal glare. D-EYE is the modern day "digital ophthalmoscope" as retinal images may now be captured, stored and transmitted with ease. The perfect eye health screening device for use in just about anywhere.

**Diagnosys, LLC..... 1215**

Anne Doran  
 55 Technology Dr., Suite 100  
 Lowell, Mass. 01851  
 Tel: 978-458-1600; Fax: 978-458-1755; email: anne@diagnosysllc.com  
 diagnosysllc.com

This year, Diagnosys LLC is pleased to offer you a top of the line, simple-to-use Rodent ERG system; Celeris delivers reproducible, noise-free results in a matter of minutes. Our clinical line has also expanded with the addition of Envoy, our versatile, mini pattern stimulator that's useful for PERG & VEP. Please visit our booth to see Celeris and Envoy for yourself. Our new product forums are being held at 2:30pm on Monday, Tuesday, and Wednesday during the show.

**DigiSight Technologies ..... 713**

Ritu Tandon  
 535 Mission St., #1929  
 San Francisco Calif. 94105  
 Tel: 650-223-5560; email: ritu.tandon@digisight.net  
 digisight.net

DigiSight Technologies, Inc., a leading digital health company in ophthalmology, is committed to using ophthalmic data to provide better care for patients, enable efficient workflows for providers, and create deeper insights for the entire ophthalmic community. DigiSight's cloud-based Paxos platform integrates mobile technologies, imaging modalities, and data analytics to create a first-of-kind, HIPAA-compliant care coordination tool for ophthalmology. Learn more at [www.digisight.net](http://www.digisight.net).

**Doheny Eye Institute (DIRC)..... 837**

Christopher C. Conway, JD  
 PO Box 86228  
 Los Angeles, Calif 90086  
 Tel: 323-342-7101; email: ccconway@doheny.org  
 doheny.org

Doheny Eye Institute, now affiliated with UCLA Stein Eye Institute, is a global leader in vision research. Our physician-scientists lead the quest to improve vision—from precise diagnostic and analytic capacities of optical coherence tomography to history-making gene therapy that treats Leber's hereditary optic neuropathy, to new methodologies for tracking aqueous fluid outflow in patients with glaucoma, and much, much more. Visit our booth at ARVO to learn about joining the Doheny team

## E

**Ellex ..... 1006**

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 Minneapolis, Minn. 55344  
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## Exhibitor Descriptions

**Elsevier Inc..... 1026**

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elsevierhealth.com

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**Emmes..... 737**

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**Encompass Pharmaceutical Services, Inc..... 826**

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150 Technology Pkwy., N.W.  
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Tel: 770-248-4501, ext. 260; Fax: 678-215-0180  
email: rick.coulon@encompass-pharma.com  
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**Epsilon..... 802**

Mohammed Ibrahim  
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**EVER (European Association Vision Eye Research)..... 1718**

Marlene Verlaeckt  
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EVER, the European Association for Vision and Eye Research, is currently the leading ophthalmological research association in Europe which covers all areas of ophthalmology and the visual sciences. Membership is open to individuals of any nationality engaging in or with an interest in ophthalmic and vision research. The EVER 2018 congress will be held in France at the Nice Acropolis Convention Center from October 4-6, 2018.

**Eversight ..... 926, MS2**

Colleen Vrba  
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 Tel: 312-469-5552; Fax: 312-706-6761; email: colleen@eversightvision.org  
 eversightvision.org

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**Experimentica Ltd. .... 1542**

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Experimentica Ltd. is a contract research organization dedicated to developing and offering preclinical ocular models and services to clients in the pharmaceutical, biotech and academic sectors.

**Exsera BioLabs..... 1607**

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 Aurora, Colo. 80045  
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### **EyeCRO ..... 1237**

Rafal Farjo  
800 Research Pkwy., Suite 360  
Oklahoma City, Okla. 73104  
Tel: 405-271-2557; Fax: 405-271-2554; email: rfarjo@eyecro.com  
eyecro.com

Our team has 80+ years of combined experience utilizing ophthalmic animal models for drug development. We specialize in preclinical ophthalmic studies of pharmacology/efficacy, PK/tox, and eyedrop formulation development. Efficacy models include dry eye, allergic conjunctivitis, corneal NV, laser-induced CNV, STZ-induced diabetes, ischemia/reperfusion, inherited retinal degenerations, quantification of A2E/retinoids, light-induced retinal degeneration, OIR, and experimental autoimmune uveitis.

### **EyeTech Digital Systems ..... 1633**

Keith Jackson  
1750 E McLellan Rd.  
Mesa, Ariz. 85203-3941  
Tel: 877-439-3932; email: kjackson@eyetechds.com  
eyetechds.com

EyeTech debuts the world's first high speed diagnostic VR headset with integrated eye tracking technology capturing 16,000 data points per second. In collaboration with medical research scientists, EyeTech also introduces OCAT—the latest science able to quantify cognitive performance and detect cognitive impairment. This technology is now being embedded into medical diagnostic solutions for ophthalmic and neurological testing, pharmaceutical performance and disease progression monitoring.

## F

### **Fareva ..... 1502**

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fareva.com/pharmaceuticalindustry.html

Fareva is a privately held, global CDMO developing and manufacturing OTC, prescription and cosmetic products. Fareva can develop and manufacture Ophthalmic products in conventional/preservative free bottles, blow, fill and seal (BFS) containers, and ophthalmic ointments and creams in tubes. To support our clients, our 13 sites are strategically located in the United States and Europe. We also produce injectable, tablets, creams, gels, oral liquids/suspensions, aerosols, and nutraceutical products.

**Fight for Sight**..... 1532

Janice Benson  
 381 Park Ave. South, Suite 809  
 New York, N.Y. 10016  
 Tel: 212-679-6060; Fax: 212-679-4466; email: janice@fightforsight.org  
 fightforsight.org

Since 1946, Fight for Sight has supported and inspired eye and vision research by funding promising scientist early in their careers. Fight for Sight has granted over \$21 million dollars and funded more than 3,000 researchers / scientists which have contributed to major advances in ophthalmology and vision research, including development of gene therapies, the intraocular lens, donor cornea preservation, glaucoma therapies and various uses of ophthalmic lasers, and stem cell research.

**Foundation Fighting Blindness**.....MS4

Corrie Simkin-Brocato  
 7168 Columbia Gateway Dr., Suite 100  
 Columbia, Md. 21046  
 Tel: 410-423-0600; email: csimkin-brocato@blindness.org  
 blindness.org

The urgent mission of the Foundation Fighting Blindness is to drive the research that will provide preventions, treatments and cures for people affected by retinitis pigmentosa, age-related macular degeneration, Usher syndrome and the entire spectrum of retinal degenerative diseases. A cure is in sight and you can help us reach it.

**G**

**GeneDx**..... 1630

Heidi Caccamo  
 207 Perry Pkwy., Suite 6  
 Gaithersburg, Md. 20877  
 Tel: 301-519-2100, ext.101; Fax: 130-151-9289-2  
 email: hcaccamo@genedx.com  
 genedx.com

GeneDx was founded in 2000 by two scientists from the National Institutes of Health (NIH) to address the needs of patients diagnosed with rare disorders. Today, GeneDx has grown into a global industry leader in genomics, having provided testing to patients and their families in over 55 countries. Led by its world-renowned whole exome and genome sequencing program, and an unparalleled comprehensive genetic testing menu, GeneDx has a continued expertise in rare and ultra-rare disorders.

**Genentech, A Member of the Roche** .....1117, MS8

Sue Garcia  
 1 DNA Way  
 South San Francisco, Calif. 94080  
 Tel: 650-255-1000; email: sgarcia@gene.com  
 gene.com

Considered the founder of the biotechnology industry, Genentech has been delivering on the promise of biotechnology for more than 35 years, using human genetic information to discover, develop, manufacture and commercialize medicines to treat patients with serious or life-threatening medical conditions. Today, Genentech is among the world's leading biotech companies, with multiple products on the market and a promising development pipeline.

## Exhibitor Descriptions

**Getson & Schatz PC** ..... 1138  
Brian Getson, Esquire  
230 S. Broad St., 1001  
Philadelphia, Pa. 19102-4105  
Tel: 215-520-4000; email: bgetson@getsonimmigration.com  
researchergreencard.com

Brian Getson and the lawyers at researchergreencard.com help international scientific researchers win U.S. green cards. Brian Getson is a graduate of the UPenn Law School with 20 years of experience. He is a leading U.S. immigration lawyer and gives presentations on "Green Cards for Scientific Researchers" at numerous major scientific conferences. He often provides a money back guarantee to qualified clients giving them confidence they will get results. See researchergreencard.com for more info.

**Geuder AG** ..... 915  
Michaela Weis  
Hertzstr. 4 Heidelberg Baden-Wurttemberg 69126  
Germany  
Tel: 49-622-130-6705; email: mweis@geuder.de  
geuder.com

The Geuder Group represents innovation and research. Modern procedures cannot be performed without precise instruments, innovative systems, highly effective and well tolerated vitreoretinal fluids and vitreous substitutes. By providing such products, the Geuder Group aims to contribute to the success and ongoing development of the procedures in anterior and posterior eye segment surgeries.

**Glauconix Biosciences, Inc.** ..... 1730  
Feryan Ahmed  
257 Fuller Rd.  
Albany, N.Y. 12203  
Tel: 518-542-5815; email: fahmed@glauconix-biosciences.com  
glauconix-biosciences.com

Glauconix Biosciences novel tissue models and proprietary physiologic testing platforms have been used from discovery through clinical efforts. These microphysiological systems can detect induced changes in intraocular pressure at physiologically relevant levels with direct translatable, species and clinically relevant results. The models provide long-term dynamic studies, combined with human-based healthy or disease models, and able to test diverse genetic populations.

**Good-Lite Company** ..... 1603  
Rick Davidson  
1155 Jansen Farm Dr.  
Elgin, Ill. 60123  
Tel: 847-841-1145; Fax: 847-841-1149; email: rdavidson@good-lite.com  
good-lite.com

Manufacturer of the Lea Test System including Lea Symbols and Lea Numbers. Complete range of vision testing products including the new self-calibrating ETDRS Standardized Viewer. Cortical Vision Assessment, high and low contrast, color vision, preferential looking tests will be on display at ARVO 2018.



## H

### **HAI Laboratories, Inc.**..... 1537

Vivian Xue  
 320 Massachusetts Ave.  
 Lexington, Mass. 02420  
 Tel: 781-862-9884; Fax: 781-860-7722; email: shows@hailabs.com  
 hailabs.com

HAI Laboratories, the leading US manufacturer of ophthalmic equipment, specializes in clinical (non-contact and contact), eye bank and laboratory specular microscopes, digital video slit lamps, full exam-lane equipment, and microsurgical instruments. Our software features live sequence imaging, comprehensive analysis and image-data correlation. We offer custom manufacturing for research and studies. HAI Labs also supply best quality & affordable surgical instrument at the show.

### **Heidelberg Engineering, Inc.** ..... 1417

Marc Crosier  
 10 Forge Pkwy.  
 Franklin, Mass. 02038  
 Tel: 508-530-7847; email: marc.crosier@heidelbergengineering.com  
 heidelbergengineering.com

Please visit Heidelberg Engineering at booth 1417

## I

### **Imagine Eyes**..... 927

Laurent Vabre  
 18 rue Charles de Gaulle  
 Orsay 91400  
 France  
 Tel: 33-164-861-566; Fax: 33-169-075-379; email: lvabre@imagine-eyes.com  
 imagine-eyes.com

Imagine Eyes is a leading pioneer in ultrahigh-resolution retinal imaging. Our flagship product, the rtx1-e Adaptive Optics Retinal Camera, enables imaging patients' retinas with unprecedented microscopic detail. This breakthrough device is equipped with user-friendly software that make examinations quick and easy, as well as software tools for quantifying cellular and microvascular biomarkers.

### **Imedos Systems UG**..... 733

Dieter Mueller  
 Am Nasstal 4  
 Jena Thuringia D-07751  
 Germany  
 Tel: 49-3641-63960; Fax: 49-3641-6396-12; email: info@imedos.de  
 imedos.de

Systems for biomarkers of retinal microcirculation. Retinal Vessel Analysis, Oxygen Saturation and Functional Diagnostic of autoregulation or dysregulation (Dynamic Vessel Analyzer/DVA, Static Vessel Analyzer/SVA) in humans and animals. Contact Lens Dynamometer for measurement of blood pressure magnitudes. Special applications: cardio-vascular risk stratification, retinal vascular diseases and especially new possibilities for glaucoma diagnostic.

## Exhibitor Descriptions

**Innova Systems, Inc.** ..... 1627  
Valerie Valentino  
8330 S. Madison St., Suite 60  
Burr Ridge, Ill. 60527  
Tel: 630-920-8880; Fax: 630-920-8896; email: valerie@innovasystemsusa.com  
innova.systems

Our product line ranges from visual acuity to quality of vision tests including Rabin Cone Test, contrast sensitivity and night vision. Innova Systems' Rabin Cone Test is quickly becoming known as the functional disease detection & management device. The Rabin Cone Test has been chosen for clinical trials by Duke University, UCSF and Shiga University for disease studies including Dry AMD, Glaucoma and MS. Stop by our booth to see how the Rabin Cone Test may be used in your practice or research!

**Integral BioSystems, LLC** ..... 933  
Dave Karasic  
23 Crosby Dr., Suite 100A  
Bedford, Mass. 01730  
Tel: 781-275-8059; email: dkarasic@integralbiosystems.com  
integralbiosystems.com

Bedford, MA-based CRO Integral BioSystems specializes in ophthalmic delivery, partnering with pharmaceutical companies in formulation R&D, dissolution testing, corneal permeability, analytical methods, stability and process development. Dose Forms: Microspheres, Eye-drops, Hydrogels, CMC writing for INDs for 505b1/2, ANDA. Drugs: Small Molecules, Biologics. The company has also developed a proprietary licensable emulsion, OcuSurf, designed for high bioavailability and efficient drug absorption.

**International Council of Ophthalmology** ..... 904  
Jennifer Hanes  
711 Van Ness Blvd., Ste. 445  
San Francisco, Calif. 94102  
Tel: 415-521-1651; email: info@icoph.org  
icoph.org

The International Council of Ophthalmology (ICO) works with ophthalmologic societies and others to enhance ophthalmic education and improve access to the highest quality eye care in order to preserve and restore vision for the people of the world. Visit [www.icoph.org](http://www.icoph.org) to learn more about our Exams, Education, Fellowships, Foundation, and the World Ophthalmic Congress (WOC). WOC2018 will be held June 16-19, 2018 in Barcelona, Spain with 15,000 participants from 130 countries expected.

**International Society for Eye Research** ..... 1028  
Erik Rosales  
655 Beach St.  
San Francisco, Calif. 94109  
Tel: 415-561-8569; Fax: 415-561-8531; email: mail@iser.org  
iser.org

The International Society for Eye Research (ISER) was founded in 1968 to establish an international organization to support eye & vision research and is comprised of vision research scientists from more than 34 countries. The ISER

Biennial Meeting is held in some of the world's most distinctive and exciting cities. Research topics covered at these meeting vary from year to year, and include the most current areas of eye & vision research. ISER's official journal is Experimental Eye Research.

**Iris Pharma..... 1517**

Yann Quentric  
 Allee Hector Pintus  
 La Gaude 06610  
 France  
 Tel: 33-493-594-959; Fax: 33-493-594-950; email: k.barcaroli@iris-pharma.com  
 iris-pharma.com

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**J**

**Jorvec Corp..... 1140**

Edward Miskiel  
 6860 SW 81st St.  
 Miami, Fla. 33143  
 Tel: 305-668-6102; Fax: 305-668-6103; email: info@jorvec.com  
 jorvec.com

Jorvec is a team of expert biomedical engineers and neurophysiologists that designs and manufactures leading-edge, high-quality instruments for electrophysiological testing in human and rodent models. Stop by and see our innovative pattern electroretinogram PERG system with integrated rodent holder and our advanced visual evoked potential VEP systems. We look forward to the opportunity to discuss how our instruments and services can meet your specific research needs.

**K**

**Keeler Instruments ..... 1208**

Liliana A. Gamba  
 3222 Phoenixville Pike, Bldg 50  
 Malvern, Pa. 19355  
 Tel: 610-353-4350; email: lag@keelerusa.com  
 keelerusa.com

Keeler is known for our superior optics and mechanical design in our complete line of ophthalmic products. From Digital desktop Slitlamps to the market leading handhelds. Also on exhibit will be our market leading binocular indirects, contact and non-contact tonometers, Cryo and handheld Retinoscopes and Ophthalmoscopes now with LED technology.

## Exhibitor Descriptions

**Konan Medical USA, Inc.**..... 1007  
Ian McMillan  
15770 Laguna Canyon Rd., Suite 150  
Irvine, Calif. 92618  
Tel: 949-576-2200; Fax: 949-576-2299; email: tradeshows@konanmedical.com  
konanmedical.com

Konan's innovative diagnostic technologies help ophthalmic professionals discover important signs that are routinely missed with conventional methods. Konan technologies include; Specular Microscopy, Visual Electrophysiology (icVEP™, VEP and pERG), Computer Assisted Color Vision Assessment, Pupillography and Ocular Motor Function Assessment. See what you've been missing™

**Kowa Company, Ltd.**..... 1540  
Kazuaki Kashio  
4-14, 3-chome, Nihonbashi-honcho  
Chuo-ku, Tokyo Tokyo 103-8433  
Japan  
Tel: 81-332-797-645; email: k-kasio@kowa.co.jp  
kowa.co.jp/e-life

Since its founding in Japan in 1894, Kowa Group has grown into a global enterprise with more than 120 years-long history. Kowa Company Ltd., as the core of the Group, is actively engaging in various business fields including the manufacturing and sales of medicines and medical equipment. We introduce our Ultra-high Resolution OCT (UHR-OCT) and Dry Eye Monitor at booth No.1540.

**Kugler Publications**..... 914  
Simon Bakker  
P.O. Box 20538  
Amsterdam 1001NM  
The Netherlands  
Tel: 31-20-684-5700; Fax: 31-20-684-7788  
email: simonbakker@kuglerpublications.com  
kuglerpublications.com

Kugler Publications (est. 1974) is an independent publishing company specialized in Ophthalmology, Otorhinolaryngology and related fields. Kugler Publications has built a rich experience and solid reputation in publishing books, journals, proceedings and congress program and abstracts books, both in print and electronic. Drop by our booth to for our newest publications or to discuss your publication ideas.

### L

**LAMBDA-X**..... 809  
Laurent Malfaire  
Avenue Robert Schuman 102  
Nivelles 01400  
Belgium  
Tel: 32-677-940-80; email: sales@lambda-x.com  
lambda-x.com

Worldwide supplier of state-of-the-art ophthalmic metrology instruments, Lambda-X provides a comprehensive range of performing and reliable solutions for the control of IOLs, contact lenses & spectacle lenses. Lambda-X is the manufacturer of NIMO, wavefront sensor of reference in ophthalmic

metrology, based on the proprietary technology “Phase-Shifting Schlieren”. The PMTF, compact & fast Power & MTF bench is the ideal solution for the control of diffractive IOLs.

**Leica Microsystems ..... 1632**

Ryan Hrejsa  
1700 Leider Lane  
Buffalo Grove, Ill. 60089  
Tel: 800-248-0123; email: Ryan.Hrejsa@leica-microsystems.com  
leica-microsystems.com

Leica Microsystems develops and manufactures microscopes and scientific instruments for the analysis of microstructures and nanostructures. The company is one of the market leaders in compound and stereo microscopy, digital microscopy, confocal laser scanning microscopy, electron microscopy sample preparation, optical coherence tomography, and surgical microscopes.

**Lexitas Pharma Services, Inc. .... 930**

Kim Morris  
313 Foster St.  
Durham, N.C. 27701  
Tel: 919-280-9167; email: kim.morris@lexitas.com  
lexitas.com

Lexitas is a full-service contract research organization specializing in ophthalmology. We are focused on providing both technical expertise and exceptional service to our sponsors. Lexitas is your clinical trial partner expert for clinical trial operations, study design, project management, clinical and medical monitoring, and site relations and training.

**Lions Eye Institute for Transplant and Research..... 1437**

Dana Caggia  
1410 N. 21st St.  
Tampa, Fla. 33605  
Tel: 813-289-1200; Fax: 813-242-7025; email: Dcaggia@lionseyeinstitute.org  
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**Lions VisionGift ..... 808**

Corrina Patzer  
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Portland, Ore. 97214-5303  
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visiongift.org

Lions VisionGift has proudly provided ocular tissue for research initiatives across the nation and around the world for more than 40 years. Our world-renowned Vision Research Laboratory is equipped to meet your unique research tissue requests both now and in the future, with both east and west coast locations. Our extensive donor referral network allows us to quickly recover more tissue to supply all of your research initiatives.

## Exhibitor Descriptions

### **LKC Technologies, Inc.**..... 1102

James Datovech  
2 Professional Dr., Suite 222  
Gaithersburg, Md. 20879  
Tel: 301-840-1992; Fax: 301-330-2237; email: sales@lkc.com  
lkc.com

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## M

### **M&S Technologies** ..... 1113

Susan Tanaka  
5715 W. Howard St.  
Niles, Ill. 60714  
Tel: 847-763-0500; Fax: 847-763-1970; email: stanaka@mstech-eyes.com  
[mstech-eyes.com/products/category/clinical-trial-suite](http://mstech-eyes.com/products/category/clinical-trial-suite)

M&S Technologies is pleased to release version 2.18 of our Clinical Trial Suite (CTS), which is comprised of a variety of automated, comprehensive, easy-to-use computerized protocols that ensure any phase of clinical trial testing maintains precision, accuracy and efficiency, at any distance. Customize the Suite based on your trial needs!

### **Mallinckrodt Pharmaceuticals** ..... 1032

Claire Simonds  
1425 Route 206  
Bedminster, N.J. 07921  
Tel: 908-238-6811; email: [claire.simonds@mnk.com](mailto:claire.simonds@mnk.com)

Mallinckrodt Pharmaceuticals is a global specialty biopharmaceutical and medical imaging company. The company's Autoimmune and Rare Diseases business includes H.P. Acthar® Gel (repository corticotropin injection), indicated for use in multiple specialties. To learn more, visit [www.Acthar.com](http://www.Acthar.com)

### **Mallinckrodt Pharmaceuticals - Medical Affairs** ..... 931

Sheila Elliott  
1425 Route 206  
Bedminster N.J. 07921  
Tel: 516-320-4214; email: [sheila.elliott@mallinckrodt.com](mailto:sheila.elliott@mallinckrodt.com)

### **MedGenome, Inc.**..... 832

Hiran Govindamangalam  
348 Hatch Dr.  
Foster City, Calif. 94404  
Tel: 888-440-0954; email: [hiranjith.gh@medgenome.com](mailto:hiranjith.gh@medgenome.com)  
medgenome.com

MedGenome is a global genomics research company headquartered in California. We offer the most comprehensive phenotype knowledgebase (300,000+ patient records) for Ophthalmological disease research. The

knowledgebase offers an aggregate of sample access, phenotype/ treatment information and family pedigree data for researchers to dive deep into the underlying cause of the disease. Our Next Generation Sequencing labs are located in the United States, Singapore, and India.

**Medi Lazer..... 1212**

Yitzchok kurtz  
1110 Brickell Ave., Suite 430  
Miami, Fla. 33131  
Tel: 305-847-9044; email: info@medilazer.net  
medilazer.net

**Media MICE ..... 1631**

Matt Young  
6001 Beach Rd., #19-06 Golden Mile Tower  
Singapore 199589  
Singapore  
Tel: 65 8186 7677; Fax: 65 6298 6316; email: matt@mediamice.com  
mediamice.com

PIE Magazine, Asia-Pacific's first and only magazine dedicated to the back of the eye. It is a free digital publication for ophthalmologists and eye professionals interested in the posterior segment.

**Medmont International..... 1611**

Christopher Ferguson  
Unit 5 56 Norcal Rd.  
Nunawading VIC 3131  
Australia  
Tel: 61 3 9259 0800; Fax: 61 3 9877 6431;  
email: christopher.ferguson@medmont.com  
medmont.com

Medmont International Pty Ltd is an award winning designer and manufacturer of Ophthalmic Instruments for the worldwide eye care market. Medmont's product range is highly respected for their accuracy and ease of use. Medmont is proud to have had, and continues to have, its equipment used in numerous unsponsored peer review studies around the globe. The head office and manufacturing center is located just outside of Melbourne Australia, in Nunawading. Remember Medmont, "When Accuracy Matters"

**Metrovision..... 1336**

Jacques Charlier  
4 rue des Platanes  
Perenchies 59840  
France  
Tel: 33-32-017-1956; Fax: 33-32-017-1951; email: charlier@metrovision.com  
metrovision.com

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## Exhibitor Descriptions

### **Minnesota Lions Eye Bank**..... 1142

Kathy Goode  
1000 Westgate Drive St., Suite 260  
St. Paul, Minn. 55114  
Tel: 612-626-4863; Fax: 612-625-429; email: jezx0001@umn.edu  
aGiftofSight.org

Lions Gift of Sight (formerly Minnesota Lions Eye Bank) serves a critical role in vision research. One of the largest providers of research tissue with 58 years of experience, we have completed more than 30,000 ocular research tissue distributions. Serving industry and academic research initiatives, we offer stringent donor screening, tissue evaluation, custom recovery, and preservation in fulfilling heredity, disease-specific, and specialized tissue requests.

### **Modulight USA**..... 1628

Seppo Orsila  
470 Ramona St.  
Palo Alto, Calif. 94301  
Tel: 408-573-6291; email: usmail@modulight.com  
modulight.com

Modulight designs and manufactures laser products for medical and industrial applications. We provide biomedical laser solutions for oncology, genetics, and ophthalmology. We also support laser solutions like system integration service, and laser design & manufacturing. Leading institutes and companies in oncology are using exclusively Modulight lasers because of their extreme versatility and simplicity of use. Our lasers can be tailored to fit the customer's treatment flow needs.

### **Moorfields Eye Hospital**..... 1530

Julian Hughes  
162 City Rd  
London London EC1V 2PD  
U.K.  
Tel: 44-020-756-6280-1; email: julian.hughes@moorfields.nhs.uk  
moorfields.nhs.uk

Moorfields Eye Hospital NHS Foundation Trust is the leading provider of eye health services in the UK and a world-class centre of excellence for ophthalmic research and education. We have a reputation, developed over two centuries, for providing the highest quality of ophthalmic care. Our 1,800 staff are committed to sustaining and building on our pioneering legacy and ensuring we remain at the cutting edge of developments in ophthalmology.

### **MPI Research** ..... 1341

Katie Kridler  
54943 North Main St.  
Mattawan, Mich. 40971  
Tel: 269-668-3336; Fax: 269-668-4151; email: Katie.Kridler@mpiresearch.com  
mpiresearch.com

MPI Research is a leading early stage drug and device development CRO, offering discovery and preclinical services. The team at MPI Research consists of highly trained ocular pathologists with the experience, passion, and teamwork necessary to advance new ocular treatments. Areas of expertise include formulation preparation, dosing routes, specialty diagnostic procedures, tissue micro-dissection, PK/biodistribution, and ocular histopathology. Learn more at [mpiresearch.com](http://mpiresearch.com).



## N

### **Nanoscope Therapeutics ..... 1238**

Sulagna Bhattacharya  
1312 Brown Trail  
Bedford, Texas 76022  
Tel: 626-244-5300; email: ceo@nanos therapeutics.com  
nanos therapeutics.com

Nanoscope Therapeutics is advancing gene therapy using light-sensitive molecules and light-assisted gene delivery for giving sight to the millions of blind individuals suffering from retinal degenerative disease, for which no cure exists. Our pipeline includes light based retinal regeneration therapy and light-based prosthetics for vision restoration.

### **National Disease Research Interchange ..... 804**

Sara Zakarewsky  
1628 JFK Blvd., 8th Floor, 8 Penn Center  
Philadelphia, Pa. 19103  
Tel: 215-577-7361, ext. 290; email: szakarewsky@ndriresource.org  
ndriresource.org

The National Disease Research Interchange (NDRI) is a 501(c)(3) not-for-profit, NIH-funded organization that provides project-driven human biospecimen service to academic and corporate scientists. NDRI has over 30 years of experience globally distributing human biospecimens for research. Our extensive recovery network has the expertise to provide anatomical structures, organs, and tissues with annotated data.

### **National Eye Institute ..... 1427**

Kerry Goetz  
10 Center Dr., Room 10N109  
Bethesda, Md. 20892-1860  
Tel: 301-443-7835; email: goetzke@nei.nih.gov  
nei.nih.gov

The National Eye Institute (NEI) of the National Institutes of Health will celebrate its 50th anniversary in 2018! During our anniversary year, we will be sharing information and stories about accomplishments in vision research and eye health over the decades. We will look into the future of vision research, and that's where you come in! Be sure to stop by the NEI table to participate in our "Voices in Vision Research" interviews. We're looking forward to meeting you!

### **Natus Medical Inc. .... 821**

Carol Stone  
1501 Industrial Rd.  
San Carlos, Calif. 94070  
Tel: 847-573-5421; email: carol.stone@natus.com  
natus.com

RETCAM Pediatric Eye Imaging is a fully integrated wide-field digital imaging system for the hospital and clinic. This state-of-the-art system provides ophthalmic visualization and photo documentation with features that help assure the capture of pediatric ocular images. natus.com

## Exhibitor Descriptions

### **Nemera** ..... 1506

Manuela Basso  
20 avenue de la Gare  
La Verpillière 38290  
France  
Tel: 33 4 74 94 06 54; Fax: 33 6 75 69 40 38  
email: manuela.basso@nemera.net  
nemera.net

Nemera is a world leader in the design, development and manufacturing of drug delivery devices for the pharmaceutical, biotechnology & generics industries. The use of preservatives can cause irritations, allergies and other side effects to the eye, thus jeopardizing adherence to treatments and damaging patients' eyes. The multidose closing tip system Novelia® avoids the need for preservatives in the drug and prevents bacterial contamination over the duration of treatment.

### **NeoMedix Corporation** ..... 1209

Kevin Uhl  
15042 Parkway Loop, Suite A  
Tustin, Calif. 92780  
Tel: 714-258-8355, ext. 115; Fax: 714-258-8356; email: exhibit@neomedix.net  
neomedix.net

Trabectome is state of the art technology for Micro Incision Glaucoma Surgery (MIGS) and is FDA-cleared device for micro surgical management of adult and infantile glaucoma. In addition to FDA, Trabectome is approved in Canada, Japan, Europe, China, Korea, and many other countries. With over decade of safe and exceptional performance, Trabectome continues to be the go to MIG choice by surgeons around the world.

### **Newway Technology (US), Inc.** ..... 905

312 East Foothill Blvd., Suite D  
Arcadia, Calif. 91006  
Tel: 626-662-7115; email: sales@newwaysw.com

Newway Technology (US), Inc. is a sole proprietorship company established in the United States in 2017. We are focus on R&D of high-frequency Ultrasound and Optical Technologies. Currently, We have established a technical cooperation relationship with University of Southern California. Our main products include: Diagnostic equipment of laboratory: Eye Diagnostic equipment for laboratory animals, and Diagnostic equipment for Human.

### **Nidek** ..... 1510

Angela Zarate  
47651 Westinghouse Dr.  
Fremont, Calif. 94539  
Tel: 510-353-7778; Fax: 510-405-8603; email: angela\_zarate@nidek.com  
usa.nidek.com

NIDEK offers a wide array of diagnostic and surgical equipment designed with simplicity, functionality and reliability to assist you with your patients having anterior and posterior disorders or diseases, including glaucoma, AMD, Visual function and other vision-impairing afflictions.

**NKT Photonics..... 1637**

Nanda Sturm  
3514 N Vancouver Ave., Ste 310  
Portland, Ore. 97227  
Tel: 503-444-8404; email: nast@nktphotonics.com  
nktphotonics.com

NKT Photonics is the leading supplier of high performance fiber lasers, fiber optic sensing systems, and photonic crystal fibers. Our main markets are within imaging, sensing and material processing. Our products include ultrafast lasers, supercontinuum white light lasers, low noise fiber lasers, distributed temperature sensing systems and a wide range of specialty fibers. NKT Photonics has its headquarters in Denmark with sales and service worldwide.

**NOF America Corporation ..... 1439**

Kentaro Miyake  
One North Broadway, Suite 912  
White Plains, N.Y. 10601  
Tel: 914-682-9790; Fax: 914-682-9791; email: info@nofamerica.com  
nofamerica.com

We, NOF CORPORATION, are fine chemical company providing novel and unique products for life science and pharmaceutical final products and their developments. We exhibit the phosphorylcholine polymer which helps to ease dry eye symptom and protect eye cornea for eye-care application. Also, we introduce new, novel silicone monomers for second generation of silicone contact lenses.

**Novartis ..... 1311**

Grace Hoddy  
One Health Plaza  
East Hanover, N.J. 07936  
Tel: 862-778-1759; email: grace.hoddy@novartis.com  
pharma.us.novartis.com

Novartis provides innovative healthcare solutions that address the evolving needs of patients and societies. Headquartered in Basel, Switzerland, Novartis offers a diversified portfolio to best meet these needs: innovative medicines, eye care, cost-saving generic pharmaceuticals, preventive vaccines and diagnostic tools, over-the-counter and animal health products. For more information, please visit <http://www.novartis.com>.

**O**

**Ocular Instruments..... 1013**

Customer Service  
2255 116th Ave., NE  
Bellevue, Wash. 98004  
Tel: 425-455-5200; Fax: 425-462-6669; email: contact@ocularinc.com  
ocularinc.com

Established in 1966, Ocular Instruments is renowned for our technical excellence as well as a designer & manufacturer of Ophthalmoscopy lenses. Our line of ophthalmic lenses for research is designed especially for use on small eyes of laboratory animals. Whether for examination, laser, surgery, or scientific research, Ocular makes the lenses you need. We invite to share your new product ideas with Ocular's R & D department. Who knows – your name could be the next to appear on an Ocular product!

## Exhibitor Descriptions

### **Oculus, Inc.**..... 1442

Jennifer Conway  
17721 59th Ave., NE  
Arlington, Wash. 98223  
Tel: 425-670-9977; email: jconway@oculususa.com  
oculususa.com

OCULUS has been setting milestones in the eye care industry since 1895. In addition to the Pentacam®, we offer visual field perimeters, corneal topographers, slit-lamp cameras, pachymeters, autorefractors, keratometers, trial frames and loupes. OCULUS products are 100% made in Germany and fully supported in the United States.

### **OcuMetrics, Inc.**..... 1528

Bruce Ishimoto  
2224-C Old Middlefield Way  
Mountain View, Calif. 94043-2421  
Tel: 650-960-3955; Fax: 650-960-0611; email: brucei@ocumetrics.com  
ocumetrics.com

Supplying instruments for ophthalmic research: Fluorotron(TM) Master ocular fluorophotometer for assessing the integrity of the blood-retinal and blood-aqueous barriers and measuring aqueous flow, cornea epithelial and endothelial permeability, tear flow and cornea pH.

### **OcuScience**..... 1012

Daniel Lindgren  
2764 North Green Valley Pkwy., Suite 262  
Henderson, Nev. 89014  
Tel: 866-250-3937; Fax: 866-904-2589; email: dl@Ocu-Science.com  
Ocu-Science.com

OcuScience® is advancing eye research and veterinary care for multi-species electroretinography by providing the means to capture unprecedented data. Our iVivo imaging systems provide versatility to meet the requirements of your laboratory. Come learn about our new products such as our intravitreal lenses for mice, rats, and rabbits. Our human retina biosensor is a revolutionary service to test and screen drugs on actual human retina tissue. Visit the OcuScience booth #1012.

### **OD-OS, Inc.**..... 936

Peter-Florian Nyari  
6201 Oak Canyon Dr., Suite 200  
Irvine, Calif. 92618  
Tel: 949-415-7255; Fax: 949-415-7259; email: peter-florian.nyari@od-os.com  
od-os.com

OD-OS is the global leader in the development and commercialization of navigated laser photocoagulators for Ophthalmology. OD-OS' compact Navilas® Laser System 577s enables physicians to digitally pre-plan the entire laser therapy on fundus images as well as external diagnostic images and precisely execute this therapy plan under computer guidance. Unlike any other retina laser, Navilas offers focal treatments without a contact lens and infrared illumination for unsurpassed patient comfort.

**Optical Imaging, Ltd. .... 1443**

Sagi Reuven  
 5 Openheimer St., 3rd Floor, Suite 41  
 5 Rabin Science Park  
 Rehovot 76701  
 Israel  
 Tel: +972549982505; email: sagier@opt-imaging.com  
 opt-imaging.net

Optical Imaging Ltd. (OI) develops, manufactures and sells medical diagnostic equipment to the ophthalmic and neurological marketplace - providing clinicians a unique multi-modal functional imaging device. Seeing the Invisible in the Retina & Brain using Noninvasive Multi-Modal Functional Imaging: \* Blood Flow in the microvasculature \* Blood Velocity in the microvasculature \* Noninvasive Capillary Perfusion Map (Angiography) \* Oximetry in the microvasculature Functional, NOT Structural.

**OptoProbe Research, Ltd..... 1031**

Junqiang Liang  
 Room 352 Langguang yundingMajiapu  
 Rd. NO.180  
 Fengtai District, Beijing  
 China  
 Tel: 861-771-8471-267; email: liangjunqiang@syutime.com  
 optoprobe.com

Optoprobe Research Ltd., founded in 2015, specializes in imaging and functional testing equipment for small animals. We have a series of scientific research instruments such as optical coherence tomography, adaptive optics optical coherence tomography, fundus camera, confocal fluorescein angiography, visual electrophysiology. We also provide experiment protocols and experiment analysis method.

**Optos, Inc. .... 1106**

Emily Vieira  
 500 Nickerson Rd., Suite 500-201  
 Marlborough, Mass. 01752  
 Tel: 508-787-1585  
 optos.com

Optos develops retinal imaging and analysis tools for ophthalmologists. More than 400 peer reviewed studies confirm that optomap ultra-widefield imaging helps doctors more effectively detect and treat retinal pathology. optomap is revolutionizing ophthalmic practice flow and helping doctors save sight and save lives.

**Optovue, Inc. .... 1509**

Kellie Archer  
 2800 Bayview Dr.  
 Fremont, Calif. 94538  
 Tel: 510-623-8868; Fax: 510-623-8668; email: kellie\_archer@optovue.com  
 optovue.com

Optovue, a pioneer in spectral domain optical coherence tomography (SD-OCT) is a privately-held medical company based in Fremont, CA. Since introducing OCT technology to the ophthalmology market in 2006, Optovue continues to advance the technology and its accessibility, and has more than 9000 systems installed worldwide. In 2014, the AngioVue Imaging System was introduced (to markets outside of the U.S.) as the world's first system capable of visualizing blood flow.

## Exhibitor Descriptions

**Ora, Inc.**..... 1308  
Stephanie Roy  
300 Brickstone Sq.  
Andover, Mass. 01810  
Tel: 978-685-8900; email: sroy@oraclinical.com  
oraclinical.com

Ora is the world's leading full-service ophthalmic-only CRO and product development firm, with offices in the United States, Europe and Japan. Over the past 40 years, we have proudly helped our clients earn 47 product approvals. Let Ora be your partner, whether you are at the preclinical, clinical, or post-approval stage of product development. Our disease models and site management organization will accelerate your timelines. Learn more at [oraclinical.com](http://oraclinical.com)

**OSOD, LLC** ..... 937  
Gary Leatherberry  
455 Science Dr., Suite 120  
Madison, Wisc. 53711  
Tel: 608-206-3614; email: gleatherberry@ocularservices.com  
ocularservices.com

OSOD is a consortium of internationally recognized experts specializing in the delivery of world-class services to accelerate identification and development of leading therapeutic compounds and ophthalmic devices. OSOD has expertise in discovery, establishing proof of concept, accelerating drug/device development, and assessment of ocular toxicities. OSOD has an exclusive relationship with Covance, Inc. that allows us to provide our clients with a fully-integrated preclinical service.

### P

**PharmOptima, LLC** ..... 1136  
Steven J. Weber, Ph.D.  
6710 Quality Way  
Portage, Mich. 49002  
Tel: 269-492-3872; Fax: 269-329-4390; email: sjweber@pharmoptima.com  
pharmoptima.com

PharmOptima™, a member of Genesis Biotechnology Group® (GBG), is a preclinical CRO founded, owned, and operated by scientists. PharmOptima™ has been advancing drug discovery and development with a niche in ocular drug development since 2003. Services include in vivo studies such as ADME/PK and ocular models, bioanalysis through LC-MS/MS, and biochemical capabilities such as in vitro and cell based assay development, protein cloning and expression, custom ELISA, ECL, and biomarker development.

**Phoenix Micron**..... 1407  
Chris Siville  
6630 Owens Dr.  
Pleasanton, Calif. 94588  
Tel: 925-485-1100; Fax: 925-485-1155; email: chris.siville@phoenixtech.com

The Phoenix MICRON imaging system is the flagship product of Phoenix Technology Group. For 10 years our rodent retina imaging system has been the standard of quality in eye and eye-brain research. Today 10 out of 12 of the top research institutions use Phoenix MICRON in their research. The Phoenix MICRON system includes a retinal microscope, FA, OCT and ERG in a modular system that makes capturing and processing high quality data easy, freeing researchers to focus on science and discovery.

**Phoenix Technology Group ..... 1403**

Annamarie Jegers  
 6630 Owens Dr.  
 Pleasanton, Calif. 94588  
 Tel: 925-485-1100; Fax: 925-485-1155; email: marketing@phoenixtech.com  
 phoenixtech.com

The Phoenix MICRON imaging system is the flagship product of Phoenix Technology Group. For 10 years our rodent retina imaging system has been the standard of quality in eye and eye-brain research. Today 10 out of 12 of the top research institutions use Phoenix MICRON in their research. The Phoenix MICRON system includes a retinal microscope, FA, OCT and ERG in a modular system that makes capturing and processing high quality data easy, freeing researchers to focus on science and discovery.

**Powered Research..... 841**

Chris Brasfield  
 PO Box 14466  
 Research Triangle Park, N.C. 27709  
 Tel: 919-213-6035; Fax: 919-882-1423  
 email: cbrasfield@poweredresearch.com  
 poweredresearch.com

Powered Research, LLC is a North Carolina based preclinical CRO specializing in ophthalmic models. Led by a Board Certified Veterinary Ophthalmologist & Toxicologist and our Director of Research, we have proven expertise in multiple models for the ocular space including Ophthalmic Examinations, Models of Disease, and Biocompatibility / Toxicity / PK studies. Our standard IACUC protocol review occurs within 3-4 days and we typically can begin a study within 2 weeks of protocol submission.

**Precision Vision ..... 1526**

Jessica Kopidlansky  
 1725 Kilkenny Ct.  
 Woodstock, Ill. 60098  
 Tel: 815-223-2022; Fax: 815-223-2224; email: info@precision-vision.com  
 precision-vision.com

Precision Vision has been the leading producer of vision testing and visual acuity products worldwide for decades. They have been at the forefront of numerous milestones in the field and are still recognized as the premier manufacturer for standard and custom products.

**PreventionGenetics..... 805**

Danielle Krohn  
 3800 South Business Park Ave.  
 Marshfield, Wisc. 54449  
 Tel: 715-387-0484; Fax: 715-384-3661  
 email: danielle.krohn@preventiongenetics.com  
 preventiongenetics.com/index.php

Founded in 2004 and located in Marshfield, Wisconsin, PreventionGenetics is a CLIA and ISO 15189:2012 accredited clinical DNA testing laboratory. PreventionGenetics provides patients with sequencing and deletion/duplication tests for nearly all clinically relevant genes. These tests include our powerful and comprehensive whole exome sequencing test, PGxome®. PreventionGenetics also offers DNA Banking (PGDNABank), a long-term storage of a person's DNA. DNA Banking is available direct-to-consumer.

## Exhibitor Descriptions

### **ProMed Pharma, LLC ..... 1615**

James Arps  
15600 Medina Rd.  
Plymouth, Minn. 55447  
Tel: 763-331-3800; Fax: 761-331-3888; email: jim.arps@promedpharmallc.com  
promedpharmallc.com

Leveraging historical expertise in molded implantable components, ProMed Pharma develops and manufactures polymer-based drug releasing implants and combination device components. Working with both established and early-stage medical device and pharmaceutical companies, we develop robust processes and platforms for controlled release of drugs from a variety of materials. Applications include steroid-eluting components, drug eluting stents, punctal plugs, and ophthalmic implants

### **Promedica International..... 1337**

Terrie Hopton  
3100 Bristol St., Suite 250  
Costa Mesa, Calif. 92626  
Tel: 714-460-7363; Fax: 714-460-7364; email: thopton@promedica-intl.com  
promedica-intl.com

Promedica International is a privately held, full-service, ISO-certified CRO providing clinical trial services for the medical device, biotechnology and pharmaceutical industries. Founded in 1985, we are a woman-owned corporation headquartered in Orange County, California. We have successfully provided exceptional value to our clients in clinical trial project management, site recruitment and management, clinical study monitoring, data management, biostatistics, medical writing and GCP auditing.

### **PTGS-CRO..... 1236**

Mark Butler  
3495 Bailey Ave.  
Buffalo, N.Y. 14226  
Tel: 716-862-6824; email: mcbutler@buffalo.edu  
buffalo.edu

## Q

### **Quantel Medical .....MS3**

Mindy Rushing  
11 Rue Du Boi Joli  
CS 40015 Cournon d'Auvergne 63808  
France  
Tel: 877-782-6835; email: mrushing@quantelusa.com  
quantel-medical.com

Quantel Medical is a global ophthalmic medical device company dedicated to developing leading technologies to improve the treatment of ocular diseases. Quantel Medical has a strong emphasis in research and development, resulting in many first-to-market product introductions and has built up a worldwide leadership reputation in the field of ocular Ultrasound and Laser systems.



## R

### **Regeneron Pharmaceuticals ..... 1503**

777 Old Saw Mill River Rd.

Tarrytown, N.Y. 10591

Tel: 914-847-7000; email: [medical.information@regeneron.com](mailto:medical.information@regeneron.com)

[regeneron.com](http://regeneron.com)

Regeneron is a leading biotechnology company that invents life-transforming medicines for people with serious diseases. Founded and led for 30 years by physician-scientists, our unique ability to consistently translate science into medicine has led to six FDA-approved treatments and numerous product candidates in development, all of which were homegrown in our laboratories.

### **Reichert, Inc. .... 1132**

Linda Hauser

3362 Walden Ave.

Buffalo, N.Y. 14043

Tel: 716-686-4500; Fax: 716-686-4545; email: [linda.hauser@ametek.com](mailto:linda.hauser@ametek.com)

[reichert.com](http://reichert.com)

Reichert Technologies of Buffalo, NY (unit of AMETEK, Inc.) is a global leader in the design and manufacture of diagnostic devices for optometry, ophthalmology, and retail eye centers. Inventors of the Phoroptor® and Non-Contact Tonometer, Reichert continues its American-made tradition by providing industry defining products, including the digital Phoroptor® VRx, Tono-Pen® Tonometer, the break-through Ocular Response Analyzer® featuring Corneal Hysteresis, and ClearChart Digital Acuity Systems.

### **Remidio Innovative Solutions PVT, Ltd. .... 836**

Adeeb Ulla Baig

No. 1-51-2/12, (II Floor), Vacuum Techniques Compound, Opp Volvo Factory

Peenya Industrial Area, Phase-I

Bangalore Karnataka 560058

India

Tel: 91-9008298004; email: [adeeb@remidio.com](mailto:adeeb@remidio.com)

[remidio.com](http://remidio.com)

Remidio is an innovative medical device company that seeks to create Healthcare Access by combining simplicity of product design with technology & sustainable business models. Remidio's retinal imaging devices have helped screen and impact more than 7.5 million patients in 15 countries globally, as a result of increased access provided by the ease of use and affordability of Remidio's patented optics on the smartphone platform.

## Exhibitor Descriptions

### **Retina World Congress ..... 1616**

Debra Espe, MPA  
415 Laurel St., #508  
San Diego, Calif. 92101  
Tel: 619-733-4156; email: debbie.espe@retinaworldcongress.org  
retinaworldcongress.org

One of the world's premiere congresses on retina health, RWC is a dynamic educational and professional forum. RWC is an accredited event for physicians. Learn the latest scientific advances and best practices in retinal health while earning CME/CE credits. Interact with international thought leaders in retina and pioneering retina specialists from across the globe convening at RWC. Participate in RWC's multimedia session by submitting an abstract featuring innovative techniques and unique cases.

### **RetinAi Medical GmbH ..... 1039**

Carlos Ciller  
Spitalgasse, 24  
Bern 3011  
Switzerland  
Tel: 0041764643141; email: carlos@retinai.com  
retinai.com

RetinAi Medical develops healthcare solutions to protect patients from vision loss using artificial intelligence (AI). To achieve this goal, we build tools to collect, analyze and to organize health data, empowering healthcare professionals and patients with automatic image and data analysis supported by advanced machine learning.

### **Review of Ophthalmology/Jobson Publishing ..... 1016**

Casey Foster  
11 Campus Blvd, Suite 100  
Newton Square, Pa. 19073  
Tel: 610-492-1007; Fax: 610-492-1039; email: cfoster@jobson.com  
reviewofophthalmology.com

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### **Roland Consult ..... 1527**

Joachim Finger  
Friedrich Franz Str. 19  
Brandenburg 14770  
Germany  
Tel: 49-3381-890 1034; Fax: 49-3381-890 2994  
email: j.finger@roland-consult.de  
roland-consult.com

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**RxGen, Inc.**..... 906

Christopher Stanley  
 100 Deepwood Dr.  
 Hamden, Conn. 06517  
 Tel: 203-498-9706; Fax: 619-353-6690; email: cstanley@rx-gen.com  
 rx-gen.com

RxGen is a specialty translational research company developing and providing innovative in vivo disease modeling and related preclinical research and development services to meet preclinical and translational research needs of the global pharmaceutical, biotechnology, and life sciences industry. Our translational research platform is designed to accelerate the evaluation, selection, and development of candidate therapeutics while reducing the cost and risk of clinical failure.

## S

**Santen**..... 1203

Jamie Zimmerman  
 6401 Hollis St., Suite 125  
 Emeryville, Calif. 94608  
 Tel: 415-268-9100; email: Jamie.Zimmerman@santen.com  
 santenUSA.com

As a global ophthalmology company, Santen specializes in the research, development and commercialization of pharmaceutical, surgical, and OTC eye care products. With over 3,600 employees and its worldwide headquarters in Japan, Santen continues to provide innovative solutions in glaucoma, retina, uveitis, dry eye, ocular allergy and infection to patients around the world. Santen is the market leader in Japan for prescription ophthalmic pharmaceuticals and sells products in over 60 countries.

**SDC**..... 1314

Jim Townsend  
 21 East 6th St., Suite 110  
 Tempe, Ariz. 85281  
 Tel: 480-632-5468; Fax: 480-632-5469; email: jtownsend@sdclinical.com  
 sdclinical.com

SDC delivers top-tier clinical trial services to pharma, biologic, & device/diagnostic companies. With strategic scientific consulting & clinical data services (statistics, data management/EDC, & IRT/IWRS) expertise at our core, our services are scalable via our strategic partnerships to provide full service clinical trial solutions. With extensive experience on 150+ ocular trials since 2005, speak with us today to see why SDC is The Right Fit for your ophthalmic study needs. sdclinical.com

## Exhibitor Descriptions

### **Second Sight Medical Products**..... 1728

Duane Tsutsui  
12744 San Fernando Rd., Suite 400  
Sylmar, Calif. 91342  
Tel: 818-833-5060; Fax: 818-833-5067; email: dtsutsui@secondssight.com  
secondssight.com

Second Sight Medical Products is the developer and manufacturer of the Argus II® Retinal Prosthesis System - the first and only approved long-term device therapy for people living with advanced Retinitis Pigmentosa in the U.S. Argus II is designed to provide artificial vision to people who are profoundly blind and provide them with increases in orientation and mobility skills and is intended to increase their independence and quality of life by restoring their ability to see objects and motion.

### **Seinda Biomedical Corp.**..... 1710

Jing-Feng Huang  
Guangzhou International Bio-Island Luoxuan 4 Rd. #9, Building 4, C401  
Guangzhou Guangdong Province 510300  
China  
Tel: 85-825-491-88; email: jingfeng@ljbioconsulting.com

### **Shenyang Xingqi Pharmaceutical Co., Ltd.**..... 1626

Qiang Yang  
No.68 Sishui St., Dongling District  
Shenyang 110163  
China  
Tel: 8613998857971; Fax: 8613998857971; email: yangqiang@sinqi.com  
sinqi.com

Shenyang Xingqi Pharmaceutical Co., Ltd. is a state-level new and high-tech enterprise specializing in R&D, production and sales of ophthalmic drugs. With an eye on the rejuvenation of China's national pharmaceutical industry, it is committing itself to the ophthalmology.

### **Shire (Commercial)**..... 1609

Christine Caci  
300 Shire Way  
Lexington, Mass. 02421  
Tel: 781-482-1688; email: ccaci@shire.com  
shire.com

Shire is the leading global biotechnology company focused on serving people with rare diseases and other highly specialized conditions.

### **Shire Medical Affairs**..... 938, MS9

Harpreet Ram  
300 Shire Way  
Lexington, Mass. 02421  
Tel: 201-357-5066; email: hram-c@shire.com

Shire is the global leader in serving patients with rare diseases. We strive to develop best-in-class therapies across a core of rare disease areas, supplemented by diversified capabilities in highly specialized conditions. We feel a strong sense of urgency to address the high unmet medical needs of these patient communities.

**Sichuan Primed Shines Bio-tech Co., Ltd.** ..... 1704  
 Mingling Wu  
 B4-501, Tianfu Science Technology Park, No.88  
 Keyuan South Rd., Hi-tech Zone  
 Chengdu Sichuan Province 610041  
 China  
 Tel: 86-28-85921823; Fax: 86-28-62491302; email: wuml@scprimed.com  
 primed.com.cn

With 13 years of experience in Non-Human Primate (NHP) research, Primed's (AAALAC accredited) large NHP population (n= ~3000) and curated spontaneous disease animals enable it to carry out studies in advanced induced ocular models and many naturally occurring ocular disorders. This unique combination allows its partners to make comprehensive pre-clinical decisions and derisk the clinical development. Primed offers pharmacology/ efficacy, PK/toxicology services in all ocular models.

**Singapore Eye Research Institute (SERI)**..... 1614  
 Sharmila Kannan  
 The Academia, 20 College Rd., Discovery Tower Level 6  
 Singapore 169856  
 Singapore  
 Tel: 65-65767217; Fax: 65-62252568; email: sharmila.kannan@seri.com.sg  
 seri.com.sg

Singapore Eye Research Institute, SERI is Singapore's national eye research institute. SERI has played key strategic roles in the conceptualization of research ideas & technologies with local & international institutions that has ensured a high level of research competency & skills transfer. Critically, SERI's research has translated to tangible outcomes, actual patient benefit, & success stories. Today, SERI is recognized as a preeminent pacesetters of eye research in Asia and globally

**Slack, Inc.** ..... 1618  
 Ashley Seigfried  
 6900 Grove Rd.  
 Thorofare, N.J. 08086  
 Tel: 856-848-1000; Fax: 856-848-3522  
 healio.com/ophthalmology

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## Exhibitor Descriptions

### **Softcare, Ltd.**..... 1641

Kenji Okamoto  
Yatsunami 243-5  
Fukutsu Fukuoka 811-3201  
Japan  
Tel: 81-940-36-9693; email: okamoto@softcare-ltd.co.jp  
softcare-ltd.co.jp

Softcare's Laser Speckle Flowgraphy (LSFG-NAVI or Lite) visualizes the distribution of blood flow in the retina with a series of 2-D color coded maps and observes changes in retinal and choroidal blood flow in real time. Demonstrations of the latest version of LSFG-NAVI's value to the study of ocular blood circulation will be conducted at the exhibition. We can provide the equipment (LSFG-Micro and etc.) to observe blood flow of animal eye ground as laboratory mice, rats, rabbit, pig or monkey.

### **Spark Therapeutics**..... 1303

Gabrielle Dauster  
3737 Market St., Suite 1300  
Philadelphia, Pa. 19104  
Tel: 215-282-0370; email: gabrielle.dauster@sparktx.com  
sparktx.com

Spark Therapeutics, a fully integrated company, strives to challenge the inevitability of genetic disease by discovering, developing, and delivering gene therapies that address inherited retinal diseases (IRDs), neurodegenerative diseases, as well as diseases that can be addressed by targeting the liver. To learn more about us, visit [www.sparktx.com](http://www.sparktx.com).

### **Speedway Delhi** ..... 909

Mr. Jatin Pahwa  
64 1st Floor, Edward Line, Kingsway Camp  
Delhi 110009  
India  
Tel: 919811027705; email: sales@speedwaydelhi.com  
speedwaydelhi.com

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### **Sterling IRB**..... 803

Kathye Richards  
5500 Interstate North Pkwy., Suite 515  
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**Striata Technologies** ..... 1636

Thomas Muench  
 Otfried-Müller-Str. 25  
 Tübingen Baden-Württemberg 72076  
 Germany  
 Tel: 49-152-098-9938-0; email: thomas.muench@striata-tech.com  
 striata-tech.com

The OptoDrum system from StriataTechnologies quantifies the visual abilities in mice based on their optomotor reflex. Mice (like other animals and humans) compensate for global image drift in the visual environment with reflexive eye and head movements. This behavior can be used to characterize the visual abilities of the animal, thus gaining information about its spatial acuity or contrast sensitivity. With our OptoDrum system, this is done in a fully automated way.

**Studylog Systems, Inc.** ..... 729

Eric Ibsen  
 101-A Hickey Blvd., Suite 301  
 So. San Francisco, Calif. 94080  
 Tel: 650-290-7540; email: eibsen@studylog.com  
 studylog.com

Studylog's Animal Study Workflow Software® is designed for biomedical animal research and provides features for the design, planning, execution, analysis, and reporting of animal studies in a standardized, highly efficient manner, while protecting data integrity. Reducing many labs' study-related labor by half, Studylog automates and streamlines the entire animal study process, making it easier, faster and cheaper, so researchers have more time and resources to get their job done.

**Syneos Health** ..... 919

Stephanie Ramos  
 3201 Beechleaf Ct., Suite 600  
 Raleigh, N.C. 27604  
 Tel: 919-876-9300; email: stephanie.ramos@incresearch.com  
 incresearch.com

INC Research is a leading global contract research organization providing a full range of Phase I to Phase IV clinical development services for the biopharmaceutical and medical device industries. INC Research is headquartered in Raleigh, NC, with operations across six continents and experience spanning more than 100 countries.

## T

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 email: amanda.myrkalo@taylorandfrancis.com  
 tandfonline.com

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## Exhibitor Descriptions

### **Teledyne e2v** ..... 1716

Lynn Todd  
765 Sycamore  
Milpitas, Calif. 95035  
Tel: 949-212-3000; email: [lynn.todd@teledyne-e2v.com](mailto:lynn.todd@teledyne-e2v.com)

Teledyne e2v has over 40 years' experience in designing, manufacturing and delivering imaging requirements, including CMOS, CCD and EM (Electron Multiplying) image sensors, camera modules and line scan cameras. Teledyne e2v's unique approach involves listening to the market and application challenges of customers and partnering with them to provide innovative standard, semi-custom or fully custom imaging solutions bringing increased value to their systems.

### **The JAMA Network**..... 913

Millette Jackson-Bates  
330 N. Wabash Ave., Suite 39300  
Chicago, Ill. 60611  
Tel: 312-464-4868; Fax: 312-464-5831  
email: [millette.jackson-bates@ama-assn.org](mailto:millette.jackson-bates@ama-assn.org)  
[jamanetwork.com](http://jamanetwork.com)

Building on a tradition of editorial excellence, *JAMA Network* brings *JAMA* together with eleven specialty journals to offer enhanced access to the research, viewpoints, and opinions shaping the future of medicine. *JAMA Network Open*, a new open access, general medical journal, will launch in early 2018.

### **The Visions**..... 1441

Dorota Skowronska-Krawczyk  
7832 Camino Noguera  
San Diego, Calif. 92122  
Tel: 858-539-6230; email: [dorokrawczyk@gmail.com](mailto:dorokrawczyk@gmail.com)  
[the-visions.com](http://the-visions.com)

Visions is brought to you by a UCSD scientist, Dorota Skowronska-Krawczyk, PhD, and a Canadian artist, Eva Henry. The art shown here is the result of their common passion to connect art and science and present it in a form that, while it departs from the traditional scientific illustration, still carries a strong educational value. The initiative is aimed to share the importance of basic research with general audience and make science more accessible to everyone through art.

### **Topcon**..... 1002, MS1

Christina Peccini  
111 Bauer Dr.  
Oakland, N.J. 07436  
Tel: 201-599-5100; Fax: 201-599-5248; email: [tmsmarketing@topcon.com](mailto:tmsmarketing@topcon.com)  
[topconmedical.com](http://topconmedical.com)

Topcon presents a wide range of products that are well recognized for their ease-of-use, quality and economical price. Please visit our website at [topconmedical.com](http://topconmedical.com) to see our entire product offering. Join our mailing list: <http://eepurl.com/eoU2s>



**Tourism Vancouver** ..... 1436  
 Debbie Reynolds, CMP, CMM  
 Metro Vancouver Convention and Visitors Bureau Suite 210  
 200 Burrard St.  
 Vancouver, B.C. V6C 3L6  
 Canada  
 Tel: 512-608-9229  
 tourismvancouver.com

**Toxikon Corporation**..... 921  
 Berna Toparlar  
 15 Wiggins Ave.  
 Bedford, Mass. 01730  
 Tel: 781-275-3330; Fax: 781-271-1136; email: Berna.Toparlar@Toxikon.com  
 toxikon.com

Toxikon is a preclinical Contract Research Organization (CRO). Located in a state-of-the art laboratory facility in Bedford, Massachusetts. Our preclinical ocular studies include disease/animal models, acute irritation, ocular tissue distribution, pharmacokinetic/pharmacodynamic (PK/PD), dose escalation, acute and repeat dose toxicity, required ISO and OECD/ICH guideline testing programs, implantation, and drug screening and efficacy.

**tpm taberna pro medicum GmbH**..... 1617  
 Sven Scharenberg  
 Im Dorf 15a  
 Lueneburg, NI 21335  
 Germany  
 Tel: 494-131-4015-55; email: info@tpm-online.de  
 tpm.eu

tpm is launching the new Ocular Pressure Blood Flow Analyzer. Non-invasive diagnostic procedure to measure and record pulsatile ocular perfusion in support of the early detection of glaucoma and other circulatory irregularities. tpm is the global leader in high frequency ultrasound diagnostic for the skin, developed from the inspiration of Ophthalmology systems in 1983. tpm has always been active in Ophthalmology and Dermatology for new and inovative diagnostic products

**Tracey Technologies** ..... 1539  
 Andrea Gatz  
 16720 Hedgecroft Dr., Suite 208  
 Houston, Texas 77060  
 Tel: 281-455-1666; Fax: 281-455-3050; email: agatz@traceytech.com  
 traceytechnologies.com

Tracey Technologies offers the iTrace Ray Tracing Aberrometer & Topographer. Using patented ray-tracing, the iTrace uniquely measures the aberrations of the whole eye and separates internal and corneal aberrations. Because the iTrace can measure in a binocular, open-field setting, it is the chosen device to measure true accommodation and is used in many presbyopia treatment studies. And it offers the cataract surgeon tools and information for diagnostics, surgical planning and post-op analysis

## Exhibitor Descriptions

**Trial Runners, LLC** ..... 1619  
Emily Murphy  
116 W Villard St.  
Dickinson, N.D. 58601  
Tel: 701-483-3599; Fax: 912-257-8353; email: emilymurphy@trialrunners.com  
trialrunners.com

Trial Runners is a Global Ophthalmology CRO providing biotech and pharmaceutical companies with clinical research management services in 83 different countries. During the past 12 years, we have worked on over 60 clinical studies researching innovative ways to manage or cure diseases related to the eye.

### V

**Vasoptic Medical**..... 807  
Jonathan Howarth  
1215 East Fort Ave., Suite 203  
Baltimore, Md. 21230  
Tel: 443-961-3591; email: Jonathan.Howarth@vasoptic.com  
Vasoptic.com

Vasoptic Medical developed the XyCAM, an investigational device able to estimate blood flow in the retina with high spatio-temporal resolution. The XyCAM is portable and affordable, making it suitable for research involving collection of retinal blood flow data in point-of-care setting. Robust elucidation of blood flow is emerging as frontier for retinal imaging. The XyCAM enables assessment of flow-derived trends and parameters that may lead to improved diagnostics and disease management.

**Viewpoint Life Sciences, Inc.**..... 1720  
Eric BATUT  
2550 Bates, Suite 404  
Montreal QC H3S 1A7  
Canada  
Tel: 514-343-5003; email: ebatut@vplsi.com  
vplsi.com

ViewPoint zebrafish offers various solutions with applications in the field of Vision The VisioBox system can accurately analyse movements of the zebrafish eyes subject to visual stimuli surrounding the larvae. Additionally ViewPoint has a patented technology to evaluate discomfort and eye irritation using worms. This easy to use and HTS solution can be used to evaluate quality of compounds used in shampoo or cream but its sensitivity is so high that we can also discriminate products such as eyewash.

**Vision Tiffany, Inc.**..... 1339  
Tiffany Wang  
2345 Wentworth Avenue, 2nd Floor  
Chicago, Ill. 60606  
Tel: 847-287-6688; Fax: 312-277-6768; email: twang@visiontiffany.com  
visiontiffany.com

Vision Tiffany Inc. Is a dedicated eye surgical instrument company • Titanium Instrument & Stainless Instrument reusable and disposables • Surgical Trays • I phone Adapter • Vision Chart and • Portable slit lamps • Slit lamp Digital Adapters Lens Meter

**Visionix- Luneau Technology ..... 1702**

Garrett O'Connell  
 224 James St.  
 Bensenville, Ill. 60106  
 Tel: 800-729-1959-135; email: g.oconnell@luneautech.com  
 luneautechusa.com

Visionix, a brand of the Luneau Technology Group, is a worldwide leader in wavefront technology for the optical industry. Known for technological innovation, Visionix has set the industry standard for high tech instrumentation utilizing wavefront technology with fully automated operational functionality, offering efficient and affordable technology for eye care professionals.

**Volk Optical, Inc. .... 1109**

Ayla Gencer  
 7893 Enterprise Dr.  
 Mentor, Ohio 44060  
 Tel: 440-510-0784; Fax: 440-510-0840; email: katie.humble@volk.com  
 volk.com

Volk Optical is the premier manufacturer of ophthalmic lenses for use in diagnosis, laser therapy and surgery. More recently we have diversified our product offering with an addition of diagnostic imaging equipment. \* Pictor Plus a 2 lb portable fundus and anterior segment camera \* Volk InView a 1lb portable fundus camera that works with your iPhone (5/6/6S) or iTouch \* Single-use lenses, great for use on animals

**Voxeleron, LLC ..... 928**

Jonathan Oakley  
 4695 Chabot Dr., Suite 200  
 Pleasanton, Calif. 94588  
 Tel: 925-558-2755; email: jonathan@voxeleron.com  
 voxeleron.com

Voxeleron's mission is to be the leader in delivering state-of-the-art artificial intelligence and computer vision software for applications in medicine, biology, and beyond. Voxeleron was the first to develop and commercially release platform-independent OCT analysis software in support of clinical and pharmaceutical research. At ARVO we will be demonstrating Orion, our advanced OCT retinal analysis software; and InSight, our animal OCT analysis software.

## W

**Wasatch Photonics..... 1529**

David Frehofer  
 4022 Stirrup Creek Dr. Suite 311  
 Durham, N.C. 27703  
 Tel: 617-513-8730; email: dfrehofer@wasatchphotonics.com  
 wasatchphotonics.com

Wasatch Photonics provides high-resolution and high-sensitivity optical coherence tomography (OCT) solutions. We provide all the tools necessary for obtaining world class OCT images including full plug and play systems for a variety of applications. Our OCT solutions are specifically developed for research and OEM applications. We also manufacture spectrometers for Hyperspectral Imaging, NIR, UV-VIS, Fluorescence and Raman spectroscopy.

## Exhibitor Descriptions

**WCCT Global Ophthalmology Research Center..... 1639**

Johnny Leng  
5630 Cerritos Ave.  
Cypress, Calif. 90630  
Tel: 562-243-7037; Fax: 714-252-0799; email: johnny.leng@wcct.com  
wcct.com

WCCT Global is Full-Service CRO that owns and operates 5 clinical sites for all phases of research and multiple therapeutic areas. We have a strong focus in Ophthalmology, and have 2 Dedicated out-patients facilities in Santa Ana solely for the conduct of ophthalmic research. In addition, we're able to expand our experience of Ophthalmology research into both of our Phase I units in Cypress and Costa Mesa, CA. Both of these sites have a total of 210 beds with the ability for overnight visits.

**Welch Allyn ..... 1018**

Mary Hart  
4341 State Street Rd., PO Box 220  
Skaneateles Falls, N.Y. 13153  
Tel: 315-685-4100; Fax: 315-685-4091; email: mary.hart@welchallyn.com  
welchallyn.com

The Welch Allyn® VISION FOR ALL initiative is focused on delivering simple and affordable solutions in primary care settings to help eradicate preventable vision loss and blindness due to conditions such as diabetic retinopathy. Stop by our booth to learn more!

**West China-Frontier PhamaTech Co., Ltd. .... 830**

Jiachuan Duan  
GaoPeng Street 28,  
Chengdu Hi-Tech Zone  
Chengdu 610041  
China  
Tel: 86-288-512-5190; email: jiachuanduan@glpcd.com  
glpcd.com

**Wicab, Inc. .... 817**

Bill Conn  
8313 Greenway Blvd., Suite 100  
Middleton, Wisc. 53562  
Tel: 608-829-4504; Fax: 608-829-4501; email: info@wicab.com  
wicab.com

Wicab, Inc. developed and sells the FDA approved BrainPort® Vision Pro vision aid that provides electro-tactile stimulation to aid profoundly blind users in orientation, mobility, and object recognition as an adjunctive device to other assistive methods such as the white cane or a guide dog. BrainPort V100 translates digital information from a wearable video camera into electrical stimulation patterns on the surface of the tongue. Some have described it as "seeing with your tongue."

**Wolters Kluwer Health..... 812**

Joey-Rose Jester  
Two Commerce Sq., 2001 Market St.  
Philadelphia, Pa. 19103  
Tel: 215-521-8300; email: joey-rose.jester@wolterskluwer.com  
shop.lww.com

Wolters Kluwer Health is a leading global provider of information and point of care solutions for the healthcare industry. Our solutions are designed to help professionals build clinical competency and improve practice and patient care. We offer evidence-based medical, nursing and allied health content and clinical decision support tools.

**World Glaucoma Association..... 916**

Mariska van der Veen  
Schipluidenlaan 4  
Amsterdam 1062HE  
The Netherlands  
Tel: 31 20 679 3411; Fax: +31 20 673 7306  
email: vanderveen@worldglaucoma.org  
wga.one/wga

The World Glaucoma Association (WGA) is an independent, impartial, ethical, global organization for glaucoma science and care. WGA's core purpose is to eliminate glaucoma-related disability worldwide. The World Glaucoma Association aspires to be the most important source of education for ophthalmologists and other healthcare providers related to glaucoma. Our bi-annual World Glaucoma Congress is the cornerstone of our knowledge platform, in 2019 taking place in Melbourne, Australia (March 27-30).

**World Precision Instruments..... 1515**

Carmen Raymond  
175 Sarasota Center Blvd.  
Sarasota, Fla. 34240  
Tel: 941-371-1003; Fax: 941-377-5428; email: sales@wpiinc.com  
wpiinc.com

WPI is a leading global laboratory product manufacturer focused on providing scientists with cutting edge laboratory instruments at cost-effective prices. Our popular ARVO display items will feature: surgical / microdissection instrumentation, surgical accessories, loupes and our UltraMicroPump (UMP3) with Nanofil for microinjection.

**WuXi AppTec - Laboratory Testing Division..... 1726**

Nicole Niu  
101 Morgan Lane  
Plainsboro, N.J. 08536  
Tel: 609-917-0047; email: nicole\_niu@wuxiapptec.com  
labtesting.wuxiapptec.com

WuXi AppTec Laboratory Testing Division, Toxicology department has established a professional ophthalmology laboratory so as to provide various services for ophthalmological studies. The provided services include comparative ophthalmologic examination in varieties of toxicity studies, eye irritation, new ocular drug toxicity and toxicokinetics, pharmacodynamics and pharmacokinetics.

**Z**

**Zeiss ..... 1019**

Kati Spencer  
5160 Hacienda Dr.  
Dublin, Calif. 94568  
Tel: 925-557-4803; Fax: 925-557-4427; email: katalin.spencer@zeiss.com  
zeiss.com/us

Uncovering the undiscovered relies on collaboration. At ZEISS, a new era in open collaboration is bringing clinicians, researchers and scientists together to explore the future of Swept-Source OCT Angiography and multimodality imaging solutions , to better support vision care around the world, today and into the future.

### Visit the Exhibitor Presentation Area at Booth 1800 in the Exhibit Hall

#### Sunday, April 29

##### 10:30am

Carl Zeiss Meditech: *Reshaping Disease Management with Meaningful Innovation*

##### 11:15am

Phoenix Technology Group: *Visualizing the Brain through the Eye: Recent Neurological Disease Research*

##### 1:15pm

EyeKor Inc.: *Management of Large Complex Image Files in Preclinical and Clinical Ocular Drug and Device Development*

##### 2pm

Getson & Schatz: *Green Cards for Scientific Researchers: How to Win your EB-1/NIW Case!*

#### Monday, April 30

##### 10am

National Eye Institute: *NEI History Video Series and Virtual Reality Demonstration*

##### 1pm

MEDGENOME: *Genomics of Ophthalmological Diseases*

##### 1:45pm

Diagnosys: *Next Generation Rodent ERG Testing*

##### 2:30pm

Metrovision: *Applications of MonCvONE Multifunction Perimeter to Clinical Research*

##### 3:15pm

Nemera: *The Future of Ophthalmic Delivery: Preservative-Free and Connected Devices*

#### Tuesday, May 1

##### 10am

National Eye Institute: *NEI History Video Series and Virtual Reality Demonstration*

##### 11am

National Eye Institute: *The NEI 3-D Retina Organoid Challenge 2020: Building the Vision*

## Tuesday, May 1 (continued)

1pm

Aptar: *Trends and Technologies in Ophthalmic Drug Delivery – Significance of Microbiological Safety and Intuitive Design*

1:45pm

Syneos Health: *A Vertically-Integrated Delivery Model for Retina Clinical Studies*

2:30pm

Medical Innovation Partners: *Re-One, Disposable Sterile Device to Transport, Examine, Whole Eye Globes for Ophthalmology Research and Cornea Procurement*

## Wednesday, May 2

10am

Diagnosys: *Advanced PERG and VEP*

**ARVO gratefully acknowledges our Exhibitor Presentation participants**

**Aptar**  
pharma

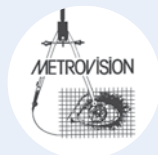
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**GETSON  
&  
SCHATZ**

**MEDGENOME**

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International



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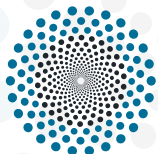
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RESEARCH LABS

**NIH**  
National Eye Institute

**Syneos.**  
Health

**ZEISS**





# NEI 50 YEARS

of Advances in Vision Research

## Activities at ARVO

**MONDAY**

4/30

10:00<sup>AM</sup>

**NEI History Video Series**

Exhibitor Presentation Area

**TUESDAY**

5/01

10:00<sup>AM</sup>

**NEI History Video Series**

Exhibitor Presentation Area

11:00<sup>AM</sup>

**NEI 3-D Retina Organoid  
Challenge 2020: Building  
the Vision**

Exhibitor Presentation Area

7:00<sup>PM</sup>

**ARVO Evening Session:  
Bringing Regenerative  
Medicine Therapies to  
the Clinic**

Ballroom A

**Visit us at Booth 1427** to meet extramural staff and try out our new virtual reality experience.



National Eye Institute

[nei.nih.gov/NEIat50](http://nei.nih.gov/NEIat50) | #NEIat50

## Saturday, April 28 ■ Education Courses\*

Time	Session	Title	Location
8am – 4:30pm	001	Big Data: Principles to practical application	313A
	002	Gene Editing Using CRISPR/Cas Technology: From Discovery to Therapy	316B
	003	Inherited retinal diseases: Divergent viewpoints of pathogenesis and treatment	316A
8am – 12:30pm	004	Introduction to AMD: Current research and therapeutics	316C

\* Education Courses require separate registration



**ARVO 2019**  
APRIL 28 – MAY 2 | VANCOUVER, BC

**Make plans to join us in Vancouver!**  
Abstract submission: Oct. 15 – Dec. 7, 2018

**ARVO.org/AM**

Sunday, April 29 ■ Symposia, papers, workshops/SIGs, lectures and events

Time	Session	Title	Location
8:15 – 10:15am	101	<b>Proteostasis networks: challenges and therapeutic opportunities for ocular diseases</b> [BI, CO, GEN, GL, LE, PH, RC, RE] #1-5	310
	102	<b>Ocular and Systemic Circadian Rhythms: Implications in Vision Research</b> [VI, EY, BI, IM, PH, RC, VN] #6-11	311
	103	<b>Retinal architecture and function: new insights</b> [AP, BI, RC, RE, VI, VN] #12-16	Ballroom A
10:45 – 11:30am	115	Proctor Award and Lecture #338-339	Ballrooms BC
11:45am – 12:30pm	116	Friedenwald Award and Lecture #340	Ballrooms BC
1 – 2:30pm	117	Retinal microglia in degenerative diseases: Why function matters — SIG [AP, IM, RE, RC, GEN]	Room 301AB
	118	A Matter of Life or Death: Regulation of RGC Survival by Glia and Interneurons — SIG [AP, BI, GL, PH, RE, VN]	310
	119	Update on clinical gene therapy trials for inherited retinal diseases — SIG [CL, GEN, RE]	311
	120	Extracellular Vesicles and the Anterior Segment —SIG [CO]	312
	121	Towards Guidelines for Mouse Electroretinography (ERG) — SIG [BI, GEN, PH, RE, RC, VN]	313A
	122	Pizza with the experts*	313BC
	124	Biomarkers and Surrogate Endpoints in Ophthalmic Clinical Research — SIG [CL, CO, GL, IM, RE, MOI]	316A
	125	Experimental design for optimal animal research in the age of the 'reproducibility crisis'	316B
	126	Grant writing: How to get your proposals funded	316C
	127	Delivery of therapeutics to ocular tissues — SIG [CO, GL, PH, RE, GEN]	Ballroom A
	3:15 – 5pm	144	Pathogens harbouring in the eye [IM] #716-720
145		Neuro-ophthalmology [EY] #721-727	306AB
146		Novel imaging techniques and applications [VI] #728-734	310
147		Diabetic Retinopathy Clinical [RE] #735-741	311

Symposia and minisymposia highlighted in **boldface**

\* Registration required

# Daily Program

Sunday, April 29 ■ Minisymposia, papers, lectures and events

Time	Session	Title	Location
3:15 – 5pm (continued)	148	Keratoconus: Corneal Biomechanics and Imaging [CO] #742-748	312
	149	Visual Cues and Signaling in Myopia [AP] #749-755	313A
	150	<b>Primate retina and visual brain — Minisymposium [EY, RC, VI, VN] #756-760</b>	314
	151	Retinal ischemia and mechanisms of vascular remodeling [RC] #761-767	315
	152	AMD [PH] #768-774	316A
	153	Genetic Epidemiology [CL] #775-781	316B
	154	Macular Diseases Excluding AMD [RE] #782-788	316C
	155	Biochemistry and Molecular Biology of AMD [BI] #789-795	320
3:15 – 4pm	156	GL-Epstein Award Session [GL] #796-797	Ballroom A
5:15 – 6pm	169	Weisenfeld Award and Lecture #1135	Ballrooms BC

Symposia and minisymposia highlighted in **boldface**



**Visit  
the Gift Shop  
in ARVO Central  
in the Exhibit  
Hall**

## Sunday, April 29 ■ Posters

Time	Session	Title	Program #	Board #
8:15 –10am	104	Retinitis pigmentosa (clinical) [RE]	17 - 55	A0048 - A0086
	105	AMD and Retinal Therapies Excluding Anti-VEGF [RE]	56 - 82	A0103 - A0129
	106	Eyelids: evaluation, analysis and therapeutics [EY]	83 - 99	A0246 - A0262
	107	Lacrimal and adnexal diseases [EY]	100 - 114	A0263 - A0277
	108	Ocular surface health and disease [CO, AP]	115 - 162	B0029 - B0076
	109	Pediatric ophthalmology [CL]	163 - 189	B0317 - B0343
	110	Diabetic retinopathy [PH]	190 - 207	C0001 - C0018
	111	AMD [PH]	208 - 246	C0019 - C0057
	112	Presbyopia and IOL [VI]	247 - 268	C0106 - C0127
	113	OCT - New Biomarkers and Technical Improvements [MOI]	269 - 300	C0170 - C0201
	114	Ocular structures in development, health, and disease [AP]	301 - 337	C0234 - C0270
1 – 2:45pm	128	Biochemical and molecular mechanisms of age-related macular degeneration [BI]	341 - 373	A0001 - A0033
	129	Gene editing: methods and outcomes in ocular cells [BI]	374 - 386	A0034 - A0046
	130	Macular Edema [RE]	387 - 402	A0087 - A0102
	131	Uveitis and Scleritis: Therapeutics [IM]	403 - 427	A0221 - A0245
	132	Cataract Surgery Procedures I [LE]	428 - 449	A0288 - A0309
	133	Surgery and Wound Healing I [GL]	450 - 493	A0310 - A0353
	134	Infection and Immunology [IM]	494 - 521	B0001 - B0028
	135	Corneal Stroma and Keratocytes [CO]	522 - 534	B0137 - B0149
	136	Stem Cell Therapy [RC]	535 - 559	B0150 - B0174
137	New Insights on Retinogenesis from Organoids [RC]	560 - 575	B0175 - B0190	

Poster board numbers correspond to poster location in Exhibit Hall; A = Poster Area A, B = Poster Area B and C = Poster Area C.

## Sunday, April 29 ■ Posters

Time	Session	Title	Program #	Board #
3:15 – 5pm	138	Retinal Development [RC]	576 - 597	B0191 - B0212
	139	Outer Retina Function [VN]	598 - 607	B0270 - B0279
	140	Neuro-ophthalmology [EY]	608 - 627	B0280 - B0299
	141	Vision Rehabilitation Devices and Training [LV, CL, VN]	628 - 643	C0062 - C0073
	142	AO, OCT and imaging techniques and applications [PH, VI, VN]	644 - 675	C0202 - C0233
	143	Insights into myopia - animal models to human studies [AP]	676 - 715	C0271 - C0310
	157	AMD and Anti-VEGF I [RE]	798 - 841	A0130 - A0173
	158	Vitreoretinal Surgery: Clinical Science [RE]	842 - 888	A0174 - A0220
	159	Lens Development and Cell Biology [LE]	889 - 898	A0278 - A0287
	160	Ocular Surface Disease Microbiome [CO]	899 - 908	B0077 - B0086
	161	Dry Eye Clinical I [CO]	909 - 958	B0087 - B0136
	162	Photoreceptor Degeneration [RC]	959 - 986	B0213 - B0240
	163	Retinal degeneration: models and repair strategies [RC]	987 - 1015	B0241 - B0269
	164	Strabismus: Basic and Clinical [EY]	1016 - 1032	B0300 - B0316
	165	Diabetic eye disease screening and management [CL]	1033 - 1060	B0344 - B0371
	166	Low Vision and Vision Rehabilitation Services [LV, CL]	1061 - 1072	C0074 - C0085
167	Normal and Aging Vision - Measurement [VI]	1073 - 1092	C0086 - C0105	
168	OCT - Clinical Application [MOI]	1093 - 1134	C0128 - C0169	

Poster board numbers correspond to poster location in Exhibit Hall;  
 A = Poster Area A , B = Poster Area B and C = Poster Area C.

Monday, April 30 ■ Papers, minisymposia, workshops/SIGs, lectures and events

Time	Session	Title	Location
8:15 –10am	201	Clinical Uveitis: Etiology, Complications and QoL [IM] #1136-1141	301AB
	202	EOM and associated tissues: Disease and Development [EY] #1142-1148	306AB
	203	Advances in imaging of retinal disease [VI] #1149-1155	310
	204	Vitreoretinal Interface and Retinal Detachment [RE] #1156-1162	311
	205	Ocular surface biology, disease, surgery [CO] #1163-1169	312
	206	New Perspectives in Human Myopia Research [AP] #1117-1176	313A
	207	Discoveries in Glaucoma and Associated Endophenotypes [GEN, GL] #1177-1183	314
	208	RPE physiology [RC] #1184-1189	315
	209	Gene therapy [PH] #1190-1196	316A
	210	<b>Implementation science in ophthalmology</b> — Minisymposium [CL, LV, RE] #1197-1201	316B
	211	Signaling and Cell Biology [LE] #1202-1207	316C
	212	Biochemistry and Molecular Biology of Diabetic Retinopathy [BI] #1208-1213	320
	213	Biomechanics [GL] #1214-1220	Ballroom A
	214	Deep Learning Highlights [MOI] #1221-1227	Ballrooms BC
10:15 –11am	201a	IM Section Business Meeting [IM]	301AB
	202a	EY Section Business Meeting [EY]	306AB
	203a	VI Section Business Meeting [VI]	310
	204a	RE Section Business Meeting [RE]	311
	205a	CO Section Business Meeting [CO]	312
	206a	AP Section Business Meeting [AP]	313A
	207a	VN Section Business Meeting [VN]	314
	208a	RC Section Business Meeting [RC]	315
	209a	PH Section Business Meeting [PH]	316A
	210a	CL Section Business Meeting [CL]	316B
	211a	LE Section Business Meeting [LE]	316C
	212a	BI Section Business Meeting [BI]	320
	212a	GL Section Business Meeting [GL]	Ballroom A

Symposia and minisymposia highlighted in **boldface**

Monday, April 30 ■ Papers, minisymposia, workshops/SIGs and events

Time	Session	Title	Location
11:15am – 1pm	224	New Insights into Bacterial Keratitis [IM] #1544-1550	301AB
	225	Strabismus [EY] #1551-1557	306AB
	226	<b>20/20 Visual acuity is not enough – again</b> — Minisymposium [VI] #1558-1562	310
	227	Inherited Retinal Diseases [RE] #1563-1569	311
	228	Cornea surgery, non-refractive [CO] #1570-1576	312
	229	Anatomical changes during ocular development and disease [AP] #1577-1583	313A
	230	<b>Circadian clocks in retinal health and diseases</b> — Minisymposium [RC, RE, VN] #1584-1588	315
	231	Retina I [PH] #1589-1595	316A
	232	Healthcare Delivery [CL] #1596-1601	316B
	233	Posterior capsular opacification (PCO) [LE] #1602-1607	316C
	234	<b>Targeting mitochondrial dysfunction in retinal and optic nerve disease</b> — Minisymposium [BI, RC, RE] #1608-1612	320
	235	<b>What's new in glaucoma imaging?</b> — Minisymposium [GL, MOI] #1613-1617	Ballroom A
	236	AMD and Anti-VEGF [RE] #1618-1624	Ballrooms BC
1:30 – 3pm	249	Telemedicine and Artificial Intelligence using Deep Learning Systems to Screen and Monitor Diabetic Retinopathy, Glaucoma and Age-related Macular Degeneration using Different Imaging Modalities — SIG [GL, IM, RE]	301AB
	250	Phagocytic mechanisms in ocular tissues: from physiological to pathological processes — SIG [BI, CO, IM, PH, RC, RE, VN, GEN]	306AB
	251	Omega-3 Fatty Acid Supplementation for Dry Eye Disease: Data on Efficacy and Safety from the Dry Eye Assessment and Management (DREAM©) Study — SIG [CO, CL]	310
	252	Managing Patients with Diabetic Macular Edema, Diabetic Retinopathy, Neovascular and Non-Neovascular AMD, and Retinal Vein Occlusion: How to Best Utilize the Latest Data from Clinical Trials — SIG [CL, CO, IM, PH, VI, VN, RE, GEN, MOI]	311
	253	MOI Group — Visible Light OCT [MOI]	313A
	254	China-ARVO Networking Forum	313BC

Symposia and minisymposia highlighted in **boldface**



## Monday, April 30 ■ Papers, minisymposia, workshops/SIGs, Keynote and events

Time	Session	Title	Location
1:30 – 3pm (continued)	255	EVER/ARVO Workshop: Multi-omics, mechanisms and stratification – paradigms for understanding and targeting immune responses in disease	314
	256	Keys to writing manuscripts and determining where to publish	316A
	257	NIH-CSR workshop on the peer review of grant applications	316B
	258	Civic and community engagement for stronger science: Effective communication strategies	316C
	259	Eye and Brain - the interrelationship and pathology — SIG [BI, EY, GL, IM, RE, VN, MOI]	320
	260	Membrane dynamics in RPE health and disease — SIG [BI, IM, PH, RC, RE]	Ballroom A
	261	The Lasker/IRRF Initiative for Innovation in Vision Science: Glaucoma and Diabetic Retinopathy — SIG [BI, GL, RC]	Ballrooms BC
3:30 – 5:15pm	262	Functional Vision and Visual Function [LV] #1942-1947	306AB
	263	Accommodation and Binocular Vision [VI] #1948-1954	310
	264	Diabetic Macular Edema Clinical [RE] #1955-1961	311
	265	Dry Eye Clinical [CO] #1962-1968	312
	266	Highlights of Imaging Technologies [MOI] #1969-1975	313A
	267	Photosensitive cells [VN] #1976-1982	314
	268	Stem Cells: from retinal organoids to transplantation [RC] #1983-1989	315
	269	<b>From optics to electronics: New technologies for improving vision in health and disease</b> — Minisymposium [PH] #1990-1994	316A
	270	IOP Measurement, Clinical Trials and Drug Studies [GL] #1995-2001	316C
	271	<b>Corneal regeneration in health and disease</b> — Minisymposium [CO, EY, RC, VI] #2002-2007	320
	272	Neurodegeneration [GL] #2008-2014	Ballroom A
5:30 – 6:45pm	292	ARVO/Alcon Keynote Session: CRISPR-Cas gene editing: biology, technology and ethics	Ballrooms BC
7 – 8:30pm	293	Special Session: Military Relevant Priorities and Strategies for Injury Diagnostics and Treatments #2556-2559	Ballroom A

Symposia and minisymposia highlighted in **boldface**

## Monday, April 30 ■ Posters

Time	Session	Title	Program #	Board #
8:15 – 10am	215	Clinical Trials and Drug Studies [GL]	1228 - 1258	A0069 - A0099
	216	Visual function- beyond clinical VA and CSF [VI, VN, LV]	1259 - 1293	A0294 - A0328
	217	Corneal Surgery non-refractive [CO]	1294 - 1349	B0001 - B0056
	218	Corneal Endothelium I [CO]	1350 - 1382	B0110 - B0142
	219	Corneal Biomechanics [CO]	1383 - 1417	B0160 - B0194
	220	Genetics of AMD and Macular dystrophies [GEN]	1418 - 1438	B0337 - B0357
	221	AMD and Anti-VEGF II [RE]	1439 - 1475	C0001 - C0037
	222	Retinal glia: cell biology [RC]	1476 - 1500	C0218 - C0242
	223	Clinical Imaging Retina [RE, RC]	1501 - 1543	C0342 - C0384
11:15am – 1pm	237	Retinoblastoma: From Bench to Bedside [AP, BI]	1625 - 1647	A0001 - A0023
	238	Aqueous humor dynamics, IOP [PH]	1648 - 1665	A0024 - A0041
	239	Image Processing and Interpretation [MOI]	1666 - 1703	A0187 - A0224
	240	Machine Learning on Imaging [MOI, VI]	1704 - 1741	A0225 - A0262
	241	Contact Lens [CO, AP]	1742 - 1794	B0057 - B0109
	242	Corneal Neuropathy [CO]	1795 - 1811	B0143 - B0159
	243	Genetic and Retinal disease epidemiology [CL]	1812 - 1846	B0273 - B0307
	244	Ganglion Cells and Beyond [VN, VI]	1847 - 1862	C0151 - C0166
	245	Inner Retinal circuits [VN]	1863 - 1874	C0167 - C0178
	246	Visual Disease Models and Restoration [VN]	1875 - 1884	C0179 - C0188
	247	Diabetic Retinopathy: Clinical [RE]	1885 - 1913	C0285 - C0313
	248	Diabetic Retinopathy: Imaging [RE]	1914 - 1941	C0314 - C0341

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## Monday, April 30 ■ Posters

Time	Session	Title	Program #	Board #
3:30 – 5:15pm	273	Biomechanics [GL]	2015 - 2041	A0042 - A0068
	274	Surgery and Wound Healing II [GL]	2042 - 2078	A0100 - A0136
	275	Imaging: Posterior Segment I [GL]	2079 - 2128	A0137 - A0186
	276	Optics, imaging, biometry and function in normal and myopic eye growth [AP]	2129 - 2159	A0263 - A0293
	277	Eye Movements [EY]	2160 - 2173	A0329 - A0342
	278	Neuro-ophthalmology [EY]	2174 - 2187	A0343 - A0356
	279	Neuro-ophthalmology Intracranial HTN and papilledema [EY]	2188 - 2197	A0357 - A0366
	280	Cataract Surgery - IOLs [LE]	2198 - 2218	A0367 - A0387
	281	Cataract Surgery Procedures II [LE]	2219 - 2240	A0388 - A0409
	282	Corneal Development, Cell and Molecular Biology [CO]	2241 - 2293	B0195 - B0247
	283	Trauma [CL, AP]	2294 - 2318	B0248 - B0272
	284	Genetics of Retinal dystrophies and Functional Genomics [GEN]	2319 - 2347	B0308 - B0336
	285	Proteostasis and systems biology approaches for ocular cellular profiling [BI]	2348 - 2371	B0358 - B0381
	286	Neovascular AMD [RE]	2372 - 2405	C0038 - C0071
	287	Dry AMD [RE, RC]	2406 - 2431	C0072 - C0097
	288	Early and Atrophic AMD [RC]	2432 - 2459	C0098 - C0125
	289	Disease modeling and potential therapies [RC]	2460 - 2484	C0126 - C0150
	290	Neuroprotection [RC]	2485 - 2513	C0189 - C0217
	291	Inflammatory Disease Processes in Humans and Experimental Models [IM]	2514 - 2555	C0243 - C0284

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Tuesday, May 1 ■ Papers, minisymposia, workshops/SIGs, business meeting

Time	Session	Title	Location	
8:15 – 10am	301	Near Tasks and Reading with Vision Impairment [LV, VI] #2560-2565	306AB	
	302	Retinal Vascular Diseases I [RE] #2566-2572	311	
	303	Corneal Neovascularization and Immunology [CO] #2573-2579	312	
	304	<b>The nuts and bolts of novel drug development</b> — Minisymposium [AP, GL, RE, VN] #2580-2584	313A	
	305	Ganglion cells and beyond [VN] #2585-2591	314	
	306	Retinal Development [RC] #2592-2598	315	
	307	Diabetic eye disease and other retinal diseases [CL] #2599-2605	316B	
	308	<b>Molecular and cellular insights into lens and cornea regeneration</b> — Minisymposium [CO, LE] #2606-2611	316C	
	309	Neuroprotection [GL] #2612-2618	Ballroom A	
	310	AMD Imaging I [RE] #2619-2625	Ballrooms BC	
10:15 – 11am	324	General Business Meeting	320	
11:15am – 1pm	325	<b>Metabolic regulation of ocular immune responses</b> — Minisymposium [IM, BI, CO, LE, PH, RE] #2970-2974	301AB	
	326	Lens optics and IOLs [VI] #2975-2981	310	
	327	Retinal Gene Therapy and Stem Cell Transplantation [RE] #2982-2987	311	
	328	Corneal epithelium [CO] #2988-2994	312	
	329	Bipolar, Horizontal and Amacrine cells [VN] #2995-3001	314	
	330	Diabetic retinopathy: Molecular mechanisms and novel therapeutic targets [RC] #3002-3008	315	
	331	Nutrition and Eye Disease [CL] #3009-3015	316B	
	332	Functional Genomics and Epigenetics in Ocular Disease [GEN] #3016-3022	316C	
	333	New Ideas [GI] #3023-3029	Ballroom A	
	1:30 – 3pm	347	Objective Quantification of Intraocular Inflammation: Using Newer Technologies to Overcome an Old Challenge — SIG [CL, IM, RE, MOI]	301AB
		348	Next-Gen autofluorescence imaging — let's get ready — SIG [BI, RC, RE, MOI]	306AB
		349	Immune tolerance in steady state and ocular surface/corneal diseases — SIG [CO, IM]	310

Symposia and minisymposia highlighted in **boldface**

Tuesday, May 1 ■ Papers, minisymposia, workshops/SIGs

Time	Session	Title	Location
1:30 – 3pm (continued)	350	Molecular Imaging of the Retina in Health and Disease — SIG [AP, BI, IM, PH, RC, RE, VI, VN, MOI]	311
	351	Optical Coherence Tomography Angiography of the Eye — SIG [AP, GL, RE, MOI]	312
	352	GEN Group - Making good on the promise of genetics for eye diseases: The successes and challenges along the translational pathway [GEN]	313A
	353	Bridging and bootstrapping in today's risk averse environment	314
	354	Gene therapy of glaucoma — SIG [GL]	315
	355	Clinician-Scientist Forum: How to become a successful clinician-scientist	316A
	356	Addressing global blindness and eye diseases through international research collaborations	316B
	357	How to promote vision research to patients and policymakers in different regions of the world	316C
	358	Lipid and Lipid Targeted Therapies for Eye Diseases- past, present and future — SIG [BI, CO, EY, PH, RE, RC]	320
	359	The Lasker/IRRF Initiative for Innovation in Vision Science: Restoring Vision to the Blind and Amblyopia — SIG [GL, RC, VN, NT]	Ballrooms BC
3:30 – 5:15pm	360	<b>Vergence eye movements and strabismus</b> — Minisymposium [EY] #3430-3434	306AB
	361	Corneal Imaging and Topography [CO] #3435-3441	310
	362	Diabetic Retinopathy Imaging [RE] #3442-3448	311
	363	Corneal Development and Regenerative Medicine [CO] #3449-3455	312
	364	Surgery and Wound Healing [GL] #3456-3462	313A
	365	Neovascularization and Vascular Permeability [RE] #3463-3468	314
	366	AMD pathogenesis and preclinical studies [RC] #3469-3475	315
	367	Anterior segment, ion channels, IOP [PH] #3476-3482	316A
	368	Lens Biochemistry [LE] #3483-3488	316C

Symposia and minisymposia highlighted in **boldface**

Tuesday, May 1 ■ Papers, minisymposia, award lectures and special sessions

Time	Session	Title	Location
3:30 – 5:15pm (continued)	369	Regulation of Ocular Gene Expression and Epigenetics [BI] #3489-3495	320
	370	Imaging Posterior Segment and Progression [GL] #3496-3502	Ballroom A
5:30 – 6:30pm	383	ARVO/Champalimaud Award Lecture	Ballrooms BC
5:30 – 7pm	384	MIT Outstanding Poster Award Competition	Exhibit Hall
7 – 8:30pm	385	Special Session: Bringing Regenerative Medicine Therapies to the Clinic #3903-3907	Ballroom A

Symposia and minisymposia highlighted in **boldface**

## MIT Outstanding Poster Competition

Tuesday, May 1, 5:30 – 7pm, Exhibit Hall

MIT First Authors of the top five scored poster abstracts from each Scientific Section and Cross-sectional Group will participate in the MIT Outstanding Poster Award Competition. One award recipient from each Scientific Section and Cross-sectional Group will be selected by the MIT Committee. Award recipients will be selected based on how well a poster displays the abstract's research and on how effectively the MIT First Author discusses the research with the judges and with meeting participants.

*All meeting participants are invited to view the competing posters and presentations.*

## Tuesday, May 1 ■ Posters

Time	Session	Title	Program #	Board #
8:15 – 10am	311	Neovascular AMD [RC]	2626 - 2639	A0131 - A0144
	312	Retinal vascular biology [RC]	2640 - 2651	A0145 - A0156
	313	Toxicology, anti-inflammatory, antibiotics [PH]	2652 - 2667	A0379 - A0394
	314	Anterior segment [PH]	2668 - 2679	A0395 - A0406
	315	IOP [GL]	2680 - 2720	B0001 - B0041
	316	Glaucoma risk factors, progression and management [CL]	2721 - 2745	B0100 - B0124
	317	ROP 1 [RE, VI]	2746 - 2788	B0125 - B0167
	318	OCT Angiography - Clinical Applications [MOI]	2789 - 2841	B0207 - B0259
	319	OCT Angiography - Experimental Applications and Technical Improvements [MOI]	2842 - 2887	B0260 - B0305
	320	Corneal Endothelium II [CO]	2888 - 2914	C0185 - C0211
	321	Genetics of Corneal dystrophies [GEN]	2915 - 2927	C0212 - C0224
	322	Strabismus: Therapy [EY]	2928 - 2939	C0250 - C0261
	323	Accommodation and Binocular Functions [VI, VN, EY]	2940 - 2969	C0262 - C0291
	11:15am – 1pm	334	Lens Biochemistry, Physiology and Biomechanics [LE]	3030 - 3044
335		Biochemistry and molecular biology of the retina/RPE [BI, VN]	3045 - 3094	A0016 - A0065
336		Retinal Cell and Developmental Biology [RC]	3095 - 3122	A0103 - A0130
337		Macular diseases excluding AMD [RE, GEN, LV, BI]	3123 - 3165	A0240 - A0282
338		Melanoma: Basic and Translational [AP]	3166 - 3188	A0309 - A0331
339		Blood flow, ischemia [PH]	3189 - 3206	B0189 - B0206
340		AMD imaging [RE]	3207 - 3256	B0306 - B0355
341		AMD basic research [RE]	3257 - 3272	B0356 - B0371

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## Tuesday, May 1 ■ Posters

Time	Session	Title	Program #	Board #
11:15am – 1pm (continued)	342	Dry eye non-clinical I [CO]	3273 - 3306	C0067 - C0100
	343	Corneal Neovascularization and Immunology [CO]	3307 - 3342	C0149 - C0184
	344	Neuro-ophthalmology: Optic neuropathy excepting glaucoma [EY]	3343 - 3367	C0225 - C0249
	345	Refractive error epidemiology and management [CL]	3368 - 3407	C0292 - C0331
	346	Functional Impacts of Vision Impairment [LV, VI]	3408 - 3429	C0332 - C0353
3:30 – 5:15pm	371	Biochemical processes and disease mechanisms involved in glaucoma [BI]	3503 - 3539	A0066 - A0102
	372	Diabetic retinopathy - Cell Biology [RC]	3540 - 3572	A0157 - A0189
	373	Diabetic retinopathy - preclinical studies [RC]	3573 - 3591	A0190 - A0208
	374	Diabetic Macular Edema Anti-VEGF [RE]	3592 - 3621	A0210 - A0239
	375	Melanoma: Clinical Innovations [AP]	3622 - 3647	A0283 - A0308
	376	Epidemiology, Treatments, and Outcomes of Infection [IM]	3648 - 3694	A0332 - A0378
	377	Neurodegeneration [GL]	3695 - 3752	B0042 - B0099
	378	ROP 2 [RE]	3753 - 3773	B0168 - B0188
	379	Cataract, cornea and ocular surface disease [CL]	3774 - 3805	C0001 - C0032
	380	Dry eye non-clinical II [CO]	3806 - 3839	C0033 - C0066
	381	Corneal epithelium [CO]	3840 - 3887	C0101 - C0148
	382	Profound Low Vision and Low-vision Clinical Trials [LV, VI]	3888 - 3902	C0354 - A0368

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Wednesday, May 2 ■ Papers, minisymposia, workshops/SIGs and events

Time	Session	Title	Location
6:45 – 8:15am	401	Breakfast with the Experts*	313BC
8:15 –10am	402	Vision Rehabilitation [LV] #3908-3913	306AB
	403	<b>Treatment on the horizon for Fuchs endothelial corneal dystrophy — Minisymposium [CO] #3914-3919</b>	310
	404	OCT Angiography Update [MOI] #3920-3926	311
	405	Contact Lens [CO] #3927-3933	312
	406	Retinopathy of Prematurity [RE] #3934-3938	313A
	407	Retinal glial and immune responses [RC] #3939-3945	315
	408	Retina II [PH] #3946-3952	316A
	409	Myopia prevalence, progression and risk factors [CL] #3953-3959	316B
	410	Gene Therapies [BI] #3960-3966	320
	411	Trabecular Meshwork [GL] #3967-3972	Ballroom A
	412	Retinal Prostheses [RE, LV] #3973-3978	Ballrooms BC
	10:15 –11am	428	Cogan Award and Lecture #4405
11:15am – 1pm	429	<b>Why cancer inflames the eye — Minisymposium [AP, IM] #4406-4410</b>	301AB
	430	Eye Movements and Nystagmus [EY] #4411-4417	306AB
	431	Corneal wound healing [CO] #4418-4424	310
	432	Vitreoretinal Surgery and Endophthalmitis [RE] #4425-4431	311
	433	Corneal Endothelium and Fuchs Corneal Dystrophy [CO] #4432-4438	312
	434	ERG: Advances, Disease and Injury [VN] #4439-4445	314
	435	Gene function and neural protection [RC, LV] #4446-4452	315
	436	Drug delivery [PH] #4453-4459	316A
	437	Impact of vision impairment [CL] #4460-4465	316B
	438	Novel genes found through methods old and new [GEN] #4466-4472	316C
	439	Capillaries, Blood Flow, OCT Angiography [GL] #4473-4479	Ballroom A
	440	AMD Imaging II [RE] #4480-4485	Ballrooms BC

Symposia and minisymposia highlighted in **boldface**

\* Registration required

Wednesday, May 2 ■ Papers, minisymposia, workshops/SIGs and events

Time	Session	Title	Location
1:30 – 3pm	455	Animal Models of Ocular Trauma — SIG [EY, RC, RE]	301AB
	456	LV Group — Implementing low vision service [LV]	306AB
	457	Biobanking with a Purpose: Advancing Research in Ophthalmology — SIG [AP, BI, CO, GL, IM, LE, RE, RC, VN, GEN]	310
	458	Regenerative Medicine Wnt Signaling and Retinal vascular Disease — SIG [RE]	311
	459	Optical Coherence Tomography and Ophthalmic Surgery: New Visualizations, Functional Analysis, and Enabling Robotic Assistance — SIG [CO, GL, RE, MOI]	312
	460	Patient report outcome measures (PROMs) in clinical glaucoma research: refining current tools, exploring new opportunities and improving means of data capture and analysis. — SIG [GL]	313A
	461	Understanding the NEI Granting Process (NEI Extramural Roundtable)	313BC
	462	Data sharing: Clinical science in the era of artificial intelligence	314
	463	Ontology and Common Data Elements for Collaborative Research in Ophthalmology — SIG [CO, CL, EY, GL, LE, RE, RC, VI, GEN, LV]	316A
	464	Making ARVO more accessible: Experience from countries with emerging vision-oriented research agenda	316B
	465	The path from bench to bedside: Professional development and entrepreneurship	316C
	466	Phagocytosis in the outflow pathway: what we can learn from other ocular tissues — SIG [PH, GL]	320
	3:30 – 5:15pm	467	Mechanisms and Therapies for Corneal Endothelial Dysfunction — SIG [CO]
468		Mechanisms and Therapy for Viral Infection [IM] #4931-4936	301AB
469		Refractive Error and Visual Function [VI] #4937-4943	310
470		AMD Clinical Research [RE] #4944-4950	311
471		Dry Eye Non-clinical [CO] #4951-4957	312
472		Basic Innovations in Oncology [AP] #4958-4963	313A

Symposia and minisymposia highlighted in **boldface**

Wednesday, May 2 ■ Papers, minisymposia, workshops/SIGs and events

Time	Session	Title	Location
3:30 – 5:15pm (continued)	473	Signaling in retinal degeneration [RC] #4964-4970	315
	474	Accommodation and cataractogenesis [LE] #4071-4976	316C
	475	Biochemistry and Molecular Biology of the Retina [BI] #4977-4983	320
	476	Structure-Function Relationships [GL] #4984-4990	Ballroom A
	477	Clinical Posterior Segment Imaging [RE] #4991-4997	Ballrooms BC
5:30 – 7pm	490	Special Session: Clinical Trial Design and Endpoints for Choroideremia Clinical Trials	Ballroom A

Symposia and minisymposia highlighted in **boldface**

## Happening Tonight ...

### ARVO Classical Concert

Wed., May 2, 8 – 10pm  
Hilton Hawaiian Village | 2005 Kalia Road

ARVO members perform some of the best-known classical selections at this popular concert event. Sit back, relax, and enjoy the chamber music. No admission fee.



### ARVO Karaoke

Wed., May 2, 9pm – 12midnight  
Sheraton Princess Kaiulani | 120 Kaiulani Avenue  
(admission ticket required\*)

Show your vocal talents or cheer on your favorite performer at ARVO's annual Karaoke Night! Come out for light snacks, great drinks, and an awesome time! Cash bar and light snacks provided. You must be 21 years or older to attend this event. Cost: \$10.00 (includes admission and one drink).

\*Tickets: Sat. – Registration; Sun. – Wed. – ARVO Central.

## Wednesday, May 2 ■ Posters

Time	Session	Title	Program #	Board #
8:15 – 10am	413	RPE [RC, LE]	3979 - 4007	A0104 - A0132
	414	RPE: metabolism [RC]	4008 - 4038	A0133 - A0163
	415	Color vision and photoreceptors [VI]	4039 - 4052	A0246 - A0259
	416	Imaging: Posterior Segment II [GL]	4053 - 4090	B0048 - B0085
	417	Prevalence of vision impairment [CL]	4091 - 4109	B0216 - B0234
	418	Ambyopia [EY]	4110 - 4131	B0273 - B0294
	419	Neuro-ophthalmology: Pediatrics and Pupillometry [EY, AP]	4132 - 4142	B0295 - B0305
	420	Patient reported outcomes, methods and reporting of research [CL, LV]	4143 - 4158	B0366 - B0381
	421	Clinical Uveitis and Scleritis: Epidemiology, Diagnosis and Outcomes [IM]	4159 - 4217	C0001 - C0059
	422	Retinal Detachment: Basic and Clinical Science [RE, LV]	4218 - 4256	C0060 - C0098
	423	Retinal vascular diseases I (excluding diabetes) [RE, LV]	4257 - 4296	C0128 - C0167
	424	Ocular complications of therapy: trends, imaging, treatment [AP, PH]	4297 - 4313	C0271 - C0287
	425	Pathology and Omics [AP, GEN, BI]	4314 - 4327	C0288 - C0301
	426	Corneal wound repair and healing [CO]	4328 - 4377	C0376 - C0425
	427	Keratoconus and Collagen Crosslinking [CO]	4378 - 4404	C0426 - C0452
11:15am – 1pm	441	Molecular mechanisms of retinal function and retinal disease [BI]	4486 - 4521	A0001 - A0036
	442	Ocular gene therapies and chemical therapeutics [BI]	4522 - 4553	A0037 - A0068
	443	Retinal prostheses [RE]	4554 - 4574	A0083 - A0103
	444	Stem Cells: New Approaches and Disease Modelling [RC]	4575 - 4591	A0164 - A0180
	445	Inflammatory/immune responses in retinal diseases [RC]	4592 - 4617	A0181 - A0206

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## Wednesday, May 2 ■ Posters

Time	Session	Title	Program #	Board #
11:15am – 1pm (continued)	446	Imaging Technologies and Applications I [MOI, AP]	4618 - 4664	A0260 - A0306
	447	Imaging Technologies and Applications II [MOI]	4665 - 4699	A0307 - A0341
	448	Trabecular Meshwork [GL]	4700 - 4733	B0124 - B0157
	449	High and pathological myopia: characteristics and treatment [AP]	4734 - 4747	B0235 - B0248
	450	Refractive Error — Myopia and Astigmatism [VI]	4748 - 4771	B0249 - B0272
	451	Cataract Surgery Outcomes and Epidemiology [LE]	4772 - 4809	B0382 - B0419
	452	Diabetic Macular Edema Clinical Research [RE]	4810 - 4856	C0168 - C0214
	453	Dry Eye Clinical II [CO]	4857 - 4905	C0302 - C0350
	454	Tear Film, Lacrimal gland, Meibomian Gland [CO]	4906 - 4930	C0351 - C0375
	3:30 – 5:15pm	478	Retina/RPE transplantation (clinical) [RE]	4998 - 5011
479		Human electrophysiology [VN]	5012 - 5034	A0208 - A0230
480		ipRGCs and Circadian Rhythms [VN]	5035 - 5049	A0231 - A0245
481		Capillaries, Blood Flow, OCT Angiography [GL]	5050 - 5096	B0001 - 50047
482		Electrophysiology and Visual Fields [GL]	5097 - 5134	B0086 - B0123
483		Genetics of Glaucoma [GEN]	5135 - 5161	B0158 - B0184
484		Consequences of and associations with vision impairment [CL]	5162 - 5192	B0185 - B0215
485		Pediatric Ophthalmology [EY]	5193 - 5214	B0306 - B0327
486		Healthcare delivery [CL]	5215 - 5252	B0328 - B0365
487		PVR and Vitreoretinal Interface [RE, BI, RC]	5253 - 5281	C0099 - C0127
488		Retina [PH]	5282 - 5309	C0215 - C0242
489		Retina, drugs [PH]	5310 - 5337	C0243 - C0270

Poster board numbers correspond to poster location in Exhibit Hall;  
A = Poster Area A , B = Poster Area B and C = Poster Area C.

Thursday, May 3 ■ Keynote, symposia, minisymposia, papers, and lectures

Time	Session	Title	Location	
8:15 – 10:15 am	501	<b>In Galileo's Footsteps: visualizing immunity</b> [IM, CO, RE] #5338-5342	311	
	502	<b>Neuronal Health in AMD and Glaucoma: Lifestyle-based Therapies to Live Long and Prosper</b> [GL, RE, CL, BI, LV] #5343-5348	Ballroom A	
11am – 12:45pm	524	Advances in Clinical Therapeutics for Uveitis [IM] #5948-5953	301AB	
	525	Amblyopia [EY] #5954-5960	306AB	
	526	Visual psychophysics in color and complex vision [VI, VN] #5961-5967	310	
	527	Retinal Vascular Diseases II [RE] #5968-5974	311	
	528	Cornea Refractive Surgery [CO] #5975-5981	312	
	529	Clinical Innovations in Oncology [AP] #5982-5987	313A	
	530	Diseases and Protection [VN] #5988-5994	314	
	531	<b>Retinal lipid and glucose metabolism in health and disease</b> — Minisymposium [RC, BI, RE] #5995-6000	315	
	532	Retina III [PH] #6001-6007	316A	
	533	AMD Epidemiology and Treatment [CL] #6008-6013	316B	
	534	Cataract Surgery, epidemiology and clinical outcomes [LE] #6014-6019	316C	
	535	Genome: Structure, Function and Editing [BI] #6020-6026	320	
	536	Visual Fields, Vision Function, Psychophysics [GL] #6027-6033	Ballroom A	
	537	Pharmacological Interventions and Cellular Mechanisms [GL] 6034-6040	Ballrooms BC	
	1 – 2pm	546	Beckman-Argyros Award in Vision Research	Ballrooms BC
	2:15 – 3:45pm	547	ARVO/Alcon Keynote Session: Principles of gene repair in human embryos	Ballrooms BC

Symposia and minisymposia highlighted in **boldface**

## Thursday, May 3 ■ Posters

Time	Session	Title	Program #	Board #
8:15 – 10am	503	Molecular mechanisms of diabetic retinopathy [BI]	5349 - 5379	A0001 - A0031
	504	Gene variants and regulation of ocular genes expression in health and disease [BI]	5380 - 5422	A0032 - A0074
	505	Retinal vascular diseases II (excluding diabetes) [RE]	5423 - 5460	A0092 - A0129
	506	Retinal ischemia, angiogenesis and vascular remodeling [RC]	5461 - 5492	A0130 - A0161
	507	Ganglion Cells: Metabolism and response to injury [RC]	5493 - 5517	A0162 - A0186
	508	Animal electrophysiology [VN]	5518 - 5532	A0210 - A0224
	509	AMD Epidemiology and outcomes [CL]	5533 - 5550	A0225 - A0242
	510	AMD: immunobiology [IM]	5551 - 5564	A0243 - A0256
	511	Conjunctival Allergic Disease [IM]	5565 - 5576	A0257 - A0268
	512	Lymphoma, hemangioma, surface, orbit, and eyelid tumors [AP]	5577 - 5611	A0296 - A0330
	513	Thyroid and orbital diseases [EY]	5612 - 5631	A0331 - A0350
	514	Cataractogenesis and PCO [LE]	5632 - 5653	A0351 - A0372
	515	Gene therapy, implants [PH]	5654 - 5674	A0373 - A0393
	516	Drug and gene delivery systems [PH]	5675 - 5713	A0394 - A0432
	517	Corneal Imaging and Topography [CO]	5714 - 5744	C0001 - C0031
	518	Cornea Surgery; Refractive [CO]	5745 - 5781	C0032 - C0068
	519	Fixational Eye Movements and Nystagmus [EY]	5782 - 5796	C0069 - C0083
	520	Image Quality and Vision [VI]	5797 - 5815	C0084 - C0102
	521	Animal Imaging [MOI, BI]	5816 - 5858	C0103 - C0145
	522	Innovations in Imaging [MOI]	5859 - 5883	C0146 - C0170
523	Imaging: Anterior Segment [GL]	5884 - 5912	C0171 - C0199	

Poster board numbers correspond to poster location in Exhibit Hall; A = Poster Area A, B = Poster Area B and C = Poster Area C.

## Thursday, May 3 ■ Posters

Time	Session	Title	Program #	Board #
8:15 – 10am (continued)	523a	Vitreoretinal Surgery: Novel Approaches [RE]	5913 - 5947	C0310 - C0344
11am – 12:45pm	538	Potpourri in genetic eye disease [GEN]	6041 - 6057	A0075 - A0091
	539	Retinal diseases and aging: preclinical studies [RC, LV, VI ]	6058 - 6080	A0187 - A0209
	540	Surgery and Wound Healing III [GL]	6081 - 6109	C0200 - C0228
	541	Neuroprotection [GL]	6110 - 6152	C0229 - C0271
	542	Medical education, training and telemedicine [CL]	6153 - 6172	C0272 - C0291
	543	Trauma and Endophthalmitis [RE]	6173 - 6190	C0292 - C0309
	545	Image-guided Laser Applications and Lasers in Retinal Therapy [RE]	6191 - 6202	C0345 - C0356

### For the latest program information

This ARVO Annual Meeting program information is up to date as of **March 30, 2018**. For the latest changes to any program or session, visit the Online Planner at [ARVO.org/AM/Program](http://ARVO.org/AM/Program).

Poster board numbers correspond to poster location in Exhibit Hall;  
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**Statement of need**

Ophthalmic researchers and physicians are many times unaware of and/or have limited exposure to the most recent research advances in vision and ophthalmology. This research continuously evolves toward enhancing the general understanding of the eye and visual systems, which gives rise to new pre-clinical treatment options, and revised standards of practice. Exposure to this new information is a critical first step in enhancing the understanding of basic eye functions and vision disease processes.

**Target audience**

The educational design of this activity addresses the needs of basic researchers, clinician-scientists, ophthalmologists, ophthalmology residents, optometrists, post-doctoral fellows, graduate students, PhD candidates, medical students and research assistants/associates involved in the treatment of patients with eye and vision diseases and disorders.

**Educational objectives**

After participating in this CME activity, participants should be able to:

- Discuss the results of basic and clinical ophthalmology investigations and vision research underway, relevant to my area of interest or practice.
- Describe new models and methods being used by researchers and practitioners in eye and vision science.
- Cite ways in which new research data and methods may influence my research and/or practice.
- Discuss prospective advancements in eye and vision research and/or practice.

**Physician Accreditation Statement**

The Association for Research in Vision and Ophthalmology (ARVO) is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

**Physician Credit Designation**

ARVO designates this live activity for a maximum of 29.25 *AMA PRA Category 1 Credits™*. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

International Attendees: The American Medical Association (AMA) has determined that physicians not licensed in the U.S. who participate in CME activities are eligible for *AMA PRA Category 1 Credit™*.

<b>CME credits and certificate fee</b>	<b>Advance</b>	<b>Onsite</b>
MIT, Student Non-Member	\$29	\$29
Member, Non-Member, Exhibitor (paid full-meeting access badge)	\$49	\$69
Exhibitor (complimentary full- meeting access badge only)	\$89	\$89

**Instructions to receive credit and/or certificates**

Attendees interested in claiming *AMA PRA Category 1 Credits™* for attendance at the ARVO Annual Meeting must pay the CME credits and certificates fee. Payment is collected during the registration process. Upon payment of this amount, an account will be created in our CME credit system allowing you to submit session evaluations and indicate the extent of your participation in each session. You will receive an email from "ARVO 2018 CME" with login information prior to the start of the Annual Meeting or within two business days of your purchase (whichever is later). Only attendees with a paid account will be able to claim credit for the 2018 Annual Meeting.

All requests for credit must be submitted no later than 11:59pm U.S. Eastern Time on Friday, Aug. 31, 2018. Certificates are official. You will not receive additional documentation.

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ARVO is accredited to offer *AMA PRA Category 1 Credits™* to physicians. All other participants may receive a Certificate of Participation that documents the number of CME hours attended\* by following the same instructions listed above and paying the CME credits and certificates fee.

\*Some accrediting agencies may award equivalent Continuing Education (CE) credit when presented with a Certificate of Participation from an activity that offered *AMA PRA Category 1 Credit™*. Check with your accrediting agency for information. Questions? Email: [education@arvo.org](mailto:education@arvo.org)

**Certificate of Attendance**

Certificates of attendance are available free to all attendees. These certificates state that one has attended the Annual Meeting; but does not offer credit tracking. They will be available for pick-up onsite at the meeting registration desk and ARVO Central in the exhibit hall.

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The Annual Meeting provides a forum for the open exchange and discussion of research results and scientific advancements in the field of ophthalmology; however, ARVO makes no representation or warranty as to the truth, originality, or accuracy of the information presented at the meeting or in materials distributed in connection with them.

Nor are the views expressed by the individual speakers necessarily the views of ARVO. ARVO supports the ACCME's policy on evidence-based content and encourages faculty to adhere to these standards when planning a presentation.

Participants have an implied responsibility to use the newly acquired information to enhance patient outcomes and their own professional development. The information presented in this meeting is not meant to serve as a guideline for patient management. Any procedures, medications, or other courses of diagnosis or treatment discussed in this activity should not be used by clinicians without evaluation of patient conditions and possible contraindications or dangers in use, review of any applicable manufacturer's product information, and comparison with recommendations of other authorities.

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Disclosure information for faculty will be provided within initial disclosure slides, prior to the start of their respective presentations. Disclosure for all individuals involved in planning and managing this CME activity are listed here with their relevant disclosure information.

The *planners and managers* reported the following financial relationships or relationships to products or devices that they or their spouse/life partners have with commercial interests related to the content of this CME activity:

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*The following individuals on the AMPC reported financial relationships.*

Name	Commercial interest (nature of the relationship)
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Cintia S. de Paiva, MD, PhD	Parion (C); TFOS (R); Thea Laboratories (R); Shire (F)
Sophie Xiaohui Deng, MD, PhD	Chiesi Farmaceutici (C, P)
Ann E. Elsner, PhD, FARVO	Aeon Imaging, LLC. (F); NIH Grants (I) (P) (R) (S)
Murray Fingeret, OD	Aerie (C); Alcon (C); Allergan (C); Bausch & Lomb (C); Carl Zeiss Meditec (C); Topcon (C,F); Heidelberg Engineering (F)

Name	Commercial interest (nature of the relationship)
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Jennifer J. Hunter, PhD	University of Rochester (P)
Hiroshi Ishikawa, MD	Gobiquity (I)
Tatjana C. Jakobs, MD	Biogen (I); Merck (I); Qiagen (I); Santen Inc. (R)
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Richard W. J. Lee, MRCS, MRCOphth, PhD	Nanomerics (C); Roche (F)
Anthony Realini, MD, MPH	Alcon (C); Aerie (C); Bausch & Lomb (C); Inotek (C); Novartis (C); New World Medical (C); Smith-Nephew (C)
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Donny W. Suh, MD	NIH (Pediatric Eye Disease Investigator Group) (C); UNMC (P)

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**Continuing Medical Education Committee (CME)**

Chair: Marlyn P. Langford, PhD, has reported no financial relationships.

*The following individuals on the CME Committee reported financial relationships.*

Name	Commercial interest (nature of the relationship)
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Anton B. Hommer, MD	Allergan (R); Santen (R)

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*The following activity managers have reported no financial relationships.*

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**CONTINUING MEDICAL EDUCATION SESSIONS**

All Annual Meeting sessions certified as Continuing Medical Education (CME) and eligible for *AMA PRA Category 1 Credit™* are listed below with their associated faculty presenters. Presenters are listed in presentation order. For a complete list of all individuals involved with each research project, refer to the online planner or ARVO 2018 mobile app.

The following 2018 Annual Meeting formats are not certified as Continuing Medical Education (CME) and are not eligible for *AMA PRA Category 1 Credit™*: ALCON/Keynote series, Award lectures, Posters, SiGs, and Special sessions.

**Sunday, April 29, 8:15 – 10:15am**

Session	Session title	Location
101	Proteostasis networks: challenges and therapeutic opportunities for ocular diseases <i>William Balch, Deborah Ferrington, Michael Cheetham, David Zacks, Raquel Lieberman</i>	310
102	Ocular and Systemic Circadian Rhythms: Implications in Vision Research <i>Joseph Takahashi, Samer Hattar, P. Michael Iuvone, Robert Lucas, Beatrix Feigl, Debora Nickla</i>	311
103	Retinal architecture and function: new insights <i>Kevin Briggman, Thomas Euler, Dennis Dacey, Bryan Jones, Thomas Gardner</i>	Ballroom A

**Sunday, April 29, 1 – 2:30pm**

Session	Session title	Location
125	Experimental design for optimal animal research in the age of the 'reproducibility crisis' <i>Abbot Clark, Catherine Bowes Rickman, Mae Gordon, Marie Ortega, Paul Kaufman</i>	316B

**Sunday, April 29, 3:15 – 5pm**

Session	Session title	Location
144	Pathogens harbouring in the eye <i>Francois Paquet-Durand, Eric Romanowski, Ming Zhang, Jessica Shantha, Kumarkrishna Raychaudhuri</i>	301AB
145	Neuro-ophthalmology <i>Hong Jiang, Brandon Macias, Jenny Nij Bijvank, Jurre den Haan, Heather Moss, Ilat Sher-Rosenthal, John Barbur</i>	306AB



Session	Session title	Location
146	Novel imaging techniques and applications <i>Kazuhiro Kurokawa, Niloofar Piri, Furu Zhang, Yiyi Wang, Jesse Schallek, Xiaolin Wang, Rui Guo</i>	310
147	Diabetic Retinopathy Clinical <i>Jennifer Sun, Jason Hsu, Paolo Silva, Stuart Keel, Kaitlin Kogachi, Mohamed Elmasry, Julia Hafner</i>	311
148	Keratoconus: Corneal Biomechanics and Imaging <i>Rabab Sharif, Mariam Khaled, Ruchita Selot, Brecken Blackburn, Peng Shao, Jiansu Chen, Mariya Zyablitskaya</i>	312
149	Visual Cues and Signaling in Myopia <i>Christopher Taylor, Erica Landis, Andrei Tkatchenko, Yan Zhang, Xiangtian Zhou, Kate Thomson, Raymond Najjar</i>	313A
150	Primate retina and visual brain – Minisymposium <i>Austin Roorda, Deniz Dalkara, William Taylor, Paul Martin, Alessandra Angelucci</i>	314
151	Retinal ischemia and mechanisms of vascular remodeling <i>Salome Murinello, Chi-Hsiu Liu, Jeff Gidday, Zhongjie Fu, Sergio Li Calzi, Yanhong Wei, Ye Sun</i>	315
152	AMD <i>Lucian Del Priore, Takashi Ueta, Kannan Rangaramanujam, Cristina Kenney, Jade Gieseke Guevara, Tian Zhou, Chi Yun Doreen Ho</i>	316A
153	Genetic Epidemiology <i>Christopher Hammond, Rupal Shah, Pirro Hysi, Xuejuan Jiang, X. Raymond Gao, Roberto Cordero, Mark Simcoe</i>	316B
154	Macular Diseases Excluding AMD <i>Roger Goldberg, Carolyn Pan, Mark Wieland, Jiro Kogo, Rebecca Silverman, Winston Lee, Etienne Schonbach</i>	316C

**Monday, April 30, 8:15 – 10am**

Session	Session title	Location
201	Clinical Uveitis: Etiology, Complications and QoL <i>Mohith Shandas, Krati Chauhan, Xiaoxuan Liu, Anthony Hall, Meghan Berkenstock, Oren Tomkins-Netzer</i>	301AB
202	EOM and associated tissues: Disease and Development <i>Fumihito Hikage, Richard Phipps, Curtis Heisel, Kamlung, Kelvin Chong, Fatima Pedrosa Domellof, Alon Kahana, Linda McLoon</i>	306AB

Session	Session title	Location
203	Advances in imaging of retinal disease <i>Aline Astorga CarBallroomo, Bárbara Moura, Jessica Morgan, Ann Elsner, Ayoub Lassoued, Alexander Salmon, Sarah Walters</i>	310
204	Vitreoretinal Interface and Retinal Detachment <i>Colleen Cebulla, Ajay Kuriyan, Christopher Creveling, Margaret Greven, Glenn Yiu, Raul Velez-Montoya, Marianeli Rodriguez</i>	311
205	Ocular surface biology, disease, surgery <i>Dan Wu, Giuseppe Giannaccare, Hon Shing Ong, Darlene Dartt, Sabrina Bergeron, Aihua Hou, Cheng Li</i>	312
206	New Perspectives in Human Myopia Research <i>Aratchaporn Tubtimthong, Frank Schaeffel, Mathias Hansen, Dibyendu Pusti, Amparo Navea, Hannah Burfield, Ranjay Chakraborty</i>	313A
207	Discoveries in Glaucoma and Associated Endophenotypes <i>Jamie Craig, Anthony Khawaja, Helene Choquet, Jibril Hirbo, Eldon Geisert, Argus Athanas-Crannell, Michael Hauser</i>	314
208	RPE physiology <i>Rui Cheng, Mariana Aparecida Rosales, Lei Xu, Sayantan Datta, Fnu Ruchi, Julia Johansson</i>	315
210	Implementation science in ophthalmology – Minisymposium <i>Anne Sales, Rajeev Ramchandran, Dorairajan Balasubramanian, Edith Holloway, Judith Goldstein</i>	316B
211	Signaling and Cell Biology <i>Daisy Shu, Guannan Zhao, Danni Lyu, Rupalatha Maddala, Leonid Zukin, Xingjun Fan</i>	316C
212	Biochemistry and Molecular Biology of Diabetic Retinopathy <i>Patrice Fort, Haoshen Shi, Rahmeh Othman, Josy Augustine, Felix Vazquez-Chona, Ashok Sharma</i>	320
213	Biomechanics <i>Tasneem Sharma, Christopher Girkin, Ian Sigal, Andrew Feola, Arthur Sit, Yik Tung Tracy Ling, Bryn Brazile</i>	Ballroom A

**Monday, April 30, 11:15am – 1pm**

Session	Session title	Location
224	New Insights into Bacterial Keratitis <i>Abby Kroken, Shunbin Xu, Noorjahan Panjwani, Mihaela Gadjeva, Thomas Carion, David Evans, Lingjun Zhang</i>	301AB
225	Strabismus <i>Yonghong Jiao, Joseph Demer, Yumi Song, Clara Mestre, Santoshi Ramachandran, Apoorva Karsolia, Jonathan Holmes</i>	306AB

Session	Session title	Location
226	20/20 Visual acuity is not enough – again – Minisymposium <i>Arthur Shapiro, Kaitlyn Sapoznik, Russell Woods, Geunyoung Yoon, Michael Bach</i>	310
227	Inherited Retinal Diseases <i>Majlinda Lako, Adam Dubis, Peter Charbel Issa, Saddek Mohand-Said, Karl Andersen, Rupert Strauss, Karl Csaky</i>	311
228	Cornea surgery, non-refractive <i>Lucero Pedro Agullar, Paolo Bordin, Juan Carlos Serna-Ojeda, Yujing Yang, Kelley Bohm, Matthew Duggan, Mor Dickman</i>	312
229	Anatomical changes during ocular development and disease <i>Elon Van Dijk, Nevin El-Nimri, Daniel Elefant, Mary Whitman, Hollis Cline, Frank Corapi, Konstantin Kotliar</i>	313A
230	Circadian clocks in retinal health and diseases – Minisymposium <i>Douglas McMahon, Russell Van Gelder, Gianluca Tosini, Maria Grant, Kai Kaarniranta</i>	315
231	Retina I <i>Craig Crosson, Rebekah Warwick, Henri Leinonen, Shahid Husain, Raghu Krishnamoorthy, Khaled Elmasy, Timothy Corson</i>	316A
232	Healthcare Delivery <i>Ronnie George, Roberta McKean-Cowdin, Varshini Varadaraj, Seema Kacker, Laura Edwards, Nathan Congdon</i>	316B
233	Posterior capsular opacification (PCO) <i>Mahbubul Shihan, Bo Ma, Linda Musil, Cheng Pei, Aftab Taiyab, Melinda Duncan</i>	316C
234	Targeting mitochondrial dysfunction in retinal and optic nerve disease – Minisymposium <i>Renu Kowluru, Deborah Ferrington, Robert Nickells, Divya Sinha, Riccardo Natoli</i>	320
235	What's new in glaucoma imaging? – Minisymposium <i>Melissa Skala, Alex Huang, Hiroshi Ishikawa, Alfredo Dubra, M Francesca Cordeiro</i>	Ballroom A

#### Monday, April 30, 1:30 – 3pm

Session	Session title	Location
253	MOI Group - Visible Light OCT <i>Hao Zhang, Francois Delori, Edward Pugh, Acner Camino, Shau Poh Chong, Amani Fawzi</i>	313A

**Monday, April 30, 3:30 – 5:15pm**

Session	Session title	Location
263	Accommodation and Binocular Vision <i>Mary Ann Croft, Yu-Cherng Chang, Marco Ruggeri, Teng Leng Ooi, J Vernon Odom, Aparna Raghuram, Michael Richards</i>	310
266	Highlights of Imaging Technologies <i>Vivek Patel, Tsen-Hsuan Lin, Shaohua Pi, Myeong Jin Ju, Aby Joseph, Taeyoon Son, Florian Beer</i>	313A
267	Photosensitive cells <i>Teemu Turunen, Matthew Yedutenko, Gabriel Peinado, Johan Pahlberg, Jovi Wong, Takesi Matsuyama, Stuart Mangel</i>	314
268	Stem Cells: from retinal organoids to transplantation <i>Kohel Homma, Majed Felemban, Mitra Farnoodian-Tedrick, Edouard Baulier, Hung-Ya Tu, Jie Cheng, Julia Oswald</i>	315
269	From optics to electronics: New technologies for improving vision in health and disease – Minisymposium <i>Carlos Mastrangelo, James Bailey, Pablo Artal, Fabio Benfenati, James Weiland</i>	316A
270	IOP Measurement, Clinical Trials and Drug Studies <i>Leopold Schmetterer, Bianca Nicoleta Susanna, Damien Rodger, Michelle Chan, David Musch, Yann Bouremel, Anita Chan</i>	316C
271	Corneal regeneration in health and disease – Minisymposium <i>Shigeto Shimmura, Shigeru Kinoshita, James Funderburgh, Indumathi Mariappan, Nick Di Girolamo, Sophie Deng</i>	320
272	Neurodegeneration <i>Ying Zhu, Valery Shestopalov, Luca Della Santina, Melissa Cooper, Yiqing Li, Alfred Yu, Min Ji</i>	Ballroom A

**Tuesday, May 1, 8:15 – 10am**

Session	Session title	Location
301	Near Tasks and Reading with Vision Impairment <i>Nicole Ross, Dawn DeCarlo, Yingzi Xiong, Ashley Deemer, Joella Martire, MIYoung Kwon</i>	306AB
302	Retinal Vascular Diseases I <i>Ian Pearce, Charumathi Sabanayagam, Matus Rehak, Phillip Hykin, Kathleen Jee, Xiaowei Sun, Maria Avrutsky</i>	311
304	The nuts and bolts of novel drug development – Minisymposium <i>Timothy Corson, M Francesca Cordeiro, Eyal Banin, Srinivas Satta, Michael Steinmetz</i>	313A

Session	Session title	Location
305	Ganglion cells and beyond <i>Christophe Ribelayga, Chi Zhang, Peter Detwiler, Sammy Lee, Juliette McGregor, Qi Lu, Christian Casanova</i>	314
306	Retinal Development <i>Kristen Kwan, Warlen Piedade, Steven Abcouwer, Jerome Roger, Kun-Che Chang, Melanie Samuel, Anand Swaroop</i>	315
308	Molecular and cellular insights into lens and cornea regeneration – Minisymposium <i>Dr. Jonathan Henry, Ales Cvekl, Qiuli Fu, Kang Zhang, Shukti Chakravarti, Kohji Nishida</i>	316C
309	Neuroprotection <i>Amit Patel, Jessica Agostinone, izhar Livne-bar, Ben Mead, Vicki Chrysostomou, Hu xinxin, Chelsea Guymer</i>	Ballroom A
310	AMD Imaging I <i>John Miller, Steven Bailey, David Xu, Philipp Roberts, Ursula Schmidt-Erfurth, Miaoling Li, Lydia Sauer</i>	Ballrooms BC

#### Tuesday, May 1, 11:15am – 1pm

Session	Session title	Location
325	Metabolic regulation of ocular immune responses – Minisymposium <i>Ashok Kumar, Barry Rouse, Rajendra Apte, Karsten Gronert, Allen Taylor</i>	301AB
326	Lens optics and IOLs <i>Damien Gatinel, Jim Schwiegerling, Ji He, Fabrice Manns, Gabrielle Mesquita, Jason Nguyen, Lilliana Werner</i>	310
327	Retinal Gene Therapy and Stem Cell Transplantation <i>M Dominik Fischer, Wen-Li Deng, Odysseas Georgiadis, Lyndon daCruz, Ratnesh Singh, Baruch Kuppermann</i>	311
328	Corneal epithelium <i>Vivien Coulson-Thomas, Gabriella Rogers, Mijeong Park, Mehrnoosh Saghizadeh, Tulika Chauhan, Koji Kitazawa, Laura Downie</i>	312
329	Bipolar, Horizontal and Amacrine cells <i>Ning Tian, Rachel Care, Rania Masri, Noga Vardi, Yu Jia, Gregory Schwartz, Onkar Sawant</i>	314
330	Diabetic retinopathy: Molecular mechanisms and novel therapeutic targets <i>Julia Busik, Manuela Bartoli, Amirfarbod Yazdanyar, Folami Powell, Michael O'Hare, Weiquan Zhu, Andreia Goncalves</i>	315

Session	Session title	Location
331	Nutrition and Eye Disease <i>Ava Tan, Benedicte Merle, Bamini Gopinath, Gabrielle Buitendijk, Johanna Maria Colijn, Ronald Klein, Sheila Backus</i>	316B
332	Functional Genomics and Epigenetics in Ocular Disease <i>Walter Lukiw, Ebony Liu, Siamak Yousefi, Francesca Pasutto, Adrian Lahola-Chomiak, Aman George, Alice Davidson</i>	316C
333	New Ideas <i>Jessica Jasien, Ryo Asaoka, Mae Gordon, Brad Fortune, Hyungsik Lim, Jessica Tang, Terete Borrás</i>	Ballroom A

**Tuesday, May 1, 1:30 – 3pm**

Session	Session title	Location
352	GEN Group - Making good on the promise of genetics for eye diseases: The successes and challenges along the translational pathway <i>Rui Chen, Jamie Craig, Stephen Tsang, Paul Baird, Alex Hewitt</i>	313A
356	Addressing global blindness and eye diseases through international research collaborations <i>Rachel Bishop, Gyan Prakash, Pawan Sinha, Ronnie George, Janey Wiggs, Judith West-Mays, Rubens Belfort Jr</i>	316B
357	How to promote vision research to patients and policymakers in different regions of the world <i>James Jorkasky, Jose Sahel, Masayo Takahashi, Dorairajan Balasubramanian, Avril Daly</i>	316C

**Tuesday, May 1, 3:30 – 5:15pm**

Session	Session title	Location
360	Vergence eye movements and strabismus – Minisymposium <i>Alexander Huk, T Rowan Candy, Julie Quinet, Mark Walton, Vallabh Das</i>	306AB
361	Corneal Imaging and Topography <i>Jan Lammer, Berthold Seitz, Viacheslav Mazlin, Jin Kang, Sebastian Bohn, Neslihan Diruba Koseoglu, Juan Bueno</i>	310
362	Diabetic Retinopathy Imaging <i>Yi-Zhong Wang, Dinah Zur, Obaid Kousha, Gavin Tan, Alexander Pinhas, Richard Rosen, Alex Pisiq</i>	311

Session	Session title	Location
363	Corneal Development and Regenerative Medicine <i>Céline Portal, Kohsaku Numa, Heli Skottman, Michel Haagdoorens, Ursula Schlotzer-Schrehardt, Ravand Samaeekia, James Funderburgh</i>	312
364	Surgery and Wound Healing <i>Cynthia Yu-Wai-Man, Tarek Shaarawy, Tony Realini, Stefano Gandolfi, Christine Nguyen, William Hodge, Harry Quigley</i>	313A
366	AMD pathogenesis and preclinical studies <i>Natalie Hudson, Imran Bhutto, Shuntaro Ogura, Sayan Ghosh, Bradley Gelfand, Andrea Cabrera, Sarah Doyle</i>	315
367	Anterior segment, ion channels, IOP <i>Ruiyi Ren, Michael Elliott, Julia Lai, Kayla Ficarrotta, Stanley Li, Alex Phan, Nicholas Delamere</i>	316A
368	Lens Biochemistry <i>Kevin Schey, Noel Ziebarth, Paul Donaldson, Kulandaippan Varadaraj, Shu-Yu Wu, Vasanth Rao</i>	316C
369	Regulation of Ocular Gene Expression and Epigenetics <i>Irene Maumenee, Ximena Corso Diaz, Yvan Arsenijevic, Anne-Mieke Haasnoot, Lewis Fry, Dror Sharon, Issam Al Dirri</i>	320
370	Imaging Posterior Segment and Progression <i>Seung Woo Hong, Christopher Leung, Sasan Moghimi, Qisheng You, Sripad Krishna Devalla, Maria de los Angeles Ramos Cadena, Vivek Trivedi</i>	Ballroom A

### Wednesday, May 2, 8:15 – 10am

Session	Session title	Location
402	Vision Rehabilitation <i>Lorie St-Amour, Hilde van der Aa, Rath Itthipanichpong, Simon Read, Mallika Prem Senthil, Judith Goldstein</i>	306AB
403	Treatment on the horizon for Fuchs endothelial corneal dystrophy – Minisymposium <i>Natalie Afshari, Michael Fautsch, Naoki Okumura, Ula Jurkunas, Albert Jun, Sanjay Patel</i>	310
404	OCT Angiography Update <i>Christian Viehland, Joseph Simonett, Stefan Ploner, Qinqin Zhang, Yongjoo Kim, Xiang Wei, Ruikang Wang</i>	311
406	Retinopathy of Prematurity <i>Aarti Patel, Xi Chen, J. Peter Campbell, Stanford Taylor, James Brown</i>	313A
408	Retina II <i>Jeremiah Lim, Brian Lee, Antonio Longo, Rupesh Agrawal, Osamah Saeedi, Karel Van Keer, Yasmin El Dabagh</i>	316A

Session	Session title	Location
410	Gene Therapies <i>David Wu, John Ash, Ying Hsu, Emmanuelle Clerin, Rajeshwari Koilkonda, Manas Ranjan Biswal, Salvatore Botta</i>	320
411	Trabecular Meshwork <i>Vahitha Shameem Nizamudheen, Rudolf Fuchshofer, David Krizaj, C Ethier, Darryl Overby, Padmanabhan Pattabiraman</i>	Ballroom A

**Wednesday, May 2, 11:15am – 1pm**

Session	Session title	Location
429	Why cancer inflames the eye – Minisymposium <i>Bahram Bodaghi, H Nida Sen, Elon Van Dijk, Martine Jager, Tara McCannel</i>	301AB
430	Eye Movements and Nystagmus <i>Lakshmisahithi Rani, Natela Shanidze, Guan Guo, Ian Erkelens, Samuel Adade, Frank Proudlock, Viral Sheth</i>	306AB
431	Corneal wound healing <i>Victor Guaiquil, Kana Ichikawa, Eduardo Rocha, Medi Eslani, Siva Pramodh Kambhampati, Kira Antonyshyn, Zhiguo HE</i>	310
432	Vitreoretinal Surgery and Endophthalmitis <i>Kunyong Xu, Tatiana Tanaka, Sundaram Natarajan, Thomas Mendel, Mark Alberti, Ryan Shields, Christianne Wa</i>	311
433	Corneal Endothelium and Fuchs Corneal Dystrophy <i>Vinay Swamy, Darpan Malhotra, Keith Baratz, Masakazu Sato, Takashi Miyai, Hamid-Reza Moein, Thomas Fuchsluger</i>	312
435	Gene function and neural protection <i>Jennifer Phillips, Dragana Trifunovic, Thomas Wubben, Casey Keuthan, Chloe Thomas, Bristol Denlinger, James Fadool</i>	315
437	Impact of vision impairment <i>David Lee, Bonnielin Swenor, Joshua Ehrlich, Alberto Diniz-Filho, Fiona Fylan, C Gustavo De Moraes</i>	316B
438	Novel genes found through methods old and new <i>Anil Chekuri, Gavin Arno, Radha Ayyagari, Robert Igo, Kathryn Burdon, Xue-Bi Cai, Kari Branham</i>	316C
439	Capillaries, Blood Flow, OCT Angiography <i>Bang Bui, Luis Alarcon-Martinez, Lorenzo Sala, Patricia Isabel Manalastas, Thanadet Chuangsuwanich, Joao Barbosa-Breda, Alexander Barash</i>	Ballroom A
440	AMD Imaging II <i>Tock Lim, Srinivas Sadda, Rosa Dolz-Marco, Ferdinand Schlanitz, Claus von der Burchard, Gregor Reiter</i>	Ballrooms BC



**Wednesday, May 2, 1:30 – 3pm**

Session	Session title	Location
456	LV Group - Implementing low vision service <i>Jill Keeffe, Kovin Naidoo, Olga Overbury</i>	306AB

**Wednesday, May 2, 3:30 – 5:15pm**

Session	Session title	Location
468	Mechanisms and Therapy for Viral Infection <i>Deepak Shukla, Katherine Lee, Jay Siak, Hongmin Yun, Pawan Kumar Singh, Derek Royer</i>	301AB
469	Refractive Error and Visual Function <i>Carles Otero-Molins, Dmitry Romashchenko, Pablo Artal, Samaneh Delshad, Janet Hrdina, Anna Zolubak, Zhong-Lin Lu</i>	310
470	AMD Clinical Research <i>Deeba Husain, Leon von der Emde, Ines Lains, Panos Christakis, Dante Pieramici, Won Ki Lee, Michael Elman</i>	311
472	Basic Innovations in Oncology <i>Mohamed Abdel-Rahman, Chandrani Chattopadhyay, Wensi Tao, Hardeep Singh, Arkasubhra Ghosh, Lee Sims</i>	313A
473	Signaling in retinal degeneration <i>Bing Ross, Xi-Qin Ding, Fan Yang, Aditi Swarup, Maria Toms, melanie Hermreck, Celso Alves</i>	315
474	Accommodation and cataractogenesis <i>Jie Zhang, Vincent Monnier, Jin Hyoung Park, Xiaohua Gong, Mitchell Nye-Wood, Thomas Slahnke</i>	316C
475	Biochemistry and Molecular Biology of the Retina <i>Dusanka Deretic, Malgorzata Rozanowska, Rob Collin, Celine Brooks, Yong Joon Kim, Kevin Donaldson, Rosa Schellevis</i>	320
476	Structure-Function Relationships <i>Kelvin Wan, Susan Wakil, Kouros Nouri-Mahdavi, Donald Hood, Inas Aboobakar, William Sponset, Giovanni Montesano</i>	Ballroom A
477	Clinical Posterior Segment Imaging <i>Amir Hariri, Katie Litts, David Sarraf, Jorge Andrade Romo, Alec Amram, S. Tammy Hsu, Sally Ong</i>	Ballrooms BC

**Thursday, May 3, 8:15 – 10:15am**

Session	Session title	Location
501	In Galileo's Footsteps: visualizing immunity <i>Dipika Patel, Samantha Dando, Wolfgang Weninger, Jesse Schallek, Michael Hickey</i>	311

Session	Session title	Location
502	Neuronal Health in AMD and Glaucoma: Lifestyle-based Therapies to Live Long and Prosper <i>Diane Bovenkamp, Ian Trounce, Julie Mares, Emily Chew, Louis Pasquale, Johanna Seddon</i>	Ballroom A

**Thursday, May 3, 11am – 12:45pm**

Session	Session title	Location
525	Amblyopia <i>Siva Balasubramanian, Bin Zhang, Siyuan Deng, Fatema Ghasia, Amy Chow, Eileen Birch, Alexandra Kalpadakis-Smith</i>	306AB
527	Retinal Vascular Diseases II <i>Xi Lu, Alex Willoughby, Arnaldo Bordon, Michael Ip, Kareem Sioufi, Belinda Leong, Giulia Corradetti</i>	311
528	Cornea Refractive Surgery <i>Fang Liu, LIUYANG LI, Ryan Smith, Kristin Hirabayashi, Miao He, Pooja Khamar, Ronald Krueger</i>	312
529	Clinical Innovations in Oncology <i>Benjamin King, Oleg Nadiarnykh, Zachary Goldsmith, Chuandi Zhou, Tine Gadegaard Olsen, Amy Scheffler</i>	313A
530	Diseases and Protection <i>Tushar Ganjawala, Doron Hickey, Rebecca Pfeiffer, Rachael Allen, Vickie Wong, Samuel Asanad, Vittorio Porciatti</i>	314
532	Retina III <i>Matias Iglicki, Eleni Beli, Tao Lowe, Ygal Rotenstreich, Laurel Chandler, Gustavo Aguirre, Katrien Remaut</i>	316A
533	AMD Epidemiology and Treatment <i>Jie Jin Wang, Alfred Gan, Tiarnan Keenan, Stacy Meuer, Nichole Joachim, Susan Vitale</i>	316B
535	Genome: Structure, Function and Editing <i>Kevin Mccullough, Benjamin Bakondi, Jason Comander, Lina Zelinger, Jacob Heng, Rinki Ratnapriya, Raquel Silva</i>	320
537	Pharmacological Interventions and Cellular Mechanisms <i>Claire Mitchell, Ramesh Kasetti, Zaman Durani, Abbot Clark, Ian Piitha, Fiona McDonnell, Alex Straiker</i>	Ballrooms BC

# ARVO Social Events

*Everyone is welcome!*

## Luau-themed Sunday Social on the rooftop

Sun., April 29, 6 – 7:30pm

Hawaii Convention Center | Rooftop Garden

Cost \$15.00\* (includes admission and two drinks).



Enjoy an evening full of Hawaiian fun at the Luau-Themed Sunday Social! Join ARVO attendees for great food, drinks, music, dancing and more.

## Student/Trainee Social

Mon., April 30, 7:30 - 9pm

Hawaii Convention Center | Rooftop Garden

Cost: None

Members-in-Training are invited to join us in honoring 2018 travel and research grant recipients. Please come mingle with your colleagues, make new acquaintances and meet members of the ARVO Board of Trustees.



## ARVO Classical Concert

Wed., May 2, 8 – 10pm

Hilton Hawaiian Village | 2005 Kalia Road

Cost: None

ARVO members perform some of the best-known classical selections at this popular concert event. Sit back, relax, and enjoy the chamber music. No admission fee.

## ARVO Karaoke

Wed., May 2, 9pm – 12midnight

Sheraton Princess Kaiulani | 120 Kaiulani Avenue

Cost: \$10.00\* (includes admission and one drink).

Show your vocal talents or cheer on your favorite performer at ARVO's annual Karaoke Night! Come out for light snacks, great drinks, and an awesome time! Cash bar and light snacks provided. You must be 21 years or older to attend this event.

## Vancouver Welcomes ARVO 2019 Kick-Off Reception

Thurs., May 3, 10:15 – 11am

Hawaii Convention Center | Exhibit Hall

Cost: None

Join ARVO and Tourism Vancouver as we look forward to the ARVO 2019 Annual Meeting, April 28 - May 2.

\*Tickets: Sat. – Registration and Sun.– Wed. – ARVO Central.

# Section Business Meetings

**Monday, April 30, 10:15 – 11am**

**AP Section Business Meeting** — Room 313A

1. Trustees Report of Status of Association
2. ARVO Strategic Plan
3. Annual Meeting Program Committee Chairs Report
4. Annual Meeting Program Committee Election Results
5. 2018 Trustee Election Results
6. Other Business

**BI Section Business Meeting** — Room 320

1. Trustees Report of Status of Association
2. ARVO Strategic Plan
3. Annual Meeting Program Committee Chairs Report
4. Annual Meeting Program Committee Election Results
5. Other Business

**CL Section Business Meeting** — Room 316B

1. Trustees Report of Status of Association
2. ARVO Strategic Plan
3. Annual Meeting Program Committee Chairs Report
4. Annual Meeting Program Committee Election Results
5. Increasing CL membership participation
6. Other Business

**CO Section Business Meeting** — Room 312

1. Trustees Report of Status of Association
2. ARVO Strategic Plan
3. Annual Meeting Program Committee Chairs Report
4. Annual Meeting Program Committee Election Results
5. Other Business

**EY Section Business Meeting** — Room 306AB

1. Trustees Report of Status of Association
2. ARVO Strategic Plan
3. Annual Meeting Program Committee Chairs Report
4. Annual Meeting Program Committee Election Results
5. Other Business

**GL Section Business Meeting** — Ballroom A

1. Trustees Report of Status of Association
2. ARVO Strategic Plan
3. Annual Meeting Program Committee Chairs Report
4. Annual Meeting Program Committee Election Results
5. 2018 Trustee Elections Results
6. Other Business

### **IM Section Business Meeting** — Room 301AB

1. Trustees Report of Status of Association
2. ARVO Strategic Plan
3. Annual Meeting Program Committee Chairs Report
4. Annual Meeting Program Committee Election Results
5. IM Section Trustee nomination(s) update
6. Cora Verhagen Award
7. Dr. Raniyah Ramadan Foundation Award
8. Other Business

### **LE Section Business Meeting** — Room 316C

1. Trustees Report of Status of Association
2. ARVO Strategic Plan
3. Annual Meeting Program Committee Chairs Report
4. Annual Meeting Program Committee Election Results
5. Other Business

### **PH Section Business Meeting** — Room 316A

1. Trustees Report of Status of Association
2. ARVO Strategic Plan
3. Annual Meeting Program Committee Chairs Report
4. Annual Meeting Program Committee Election Results
5. Other Business

### **RE Section Business Meeting** — Room 311

1. Trustees Report of Status of Association
2. ARVO Strategic Plan
3. Annual Meeting Program Committee Chairs Report
4. Annual Meeting Program Committee Election Results
5. Other Business

### **RC Section Business Meeting** — Room 315

1. Trustees Report of Status of Association
2. ARVO Strategic Plan
3. Annual Meeting Program Committee Chairs Report
4. Annual Meeting Program Committee Election Results
5. RC Section Trustee nomination(s) update
6. Other Business

### **VI Section Business Meeting** — Room 310

1. Trustees Report of Status of Association
2. ARVO Strategic Plan
3. Annual Meeting Program Committee Chairs Report
4. Annual Meeting Program Committee Election Results
5. VI Section Trustee

### **VN Section Business Meeting** — Room 314

1. Trustees Report of Status of Association
2. ARVO Strategic Plan
3. Annual Meeting Program Committee Chairs Report
4. Annual Meeting Program Committee Election Results
5. Other Business

## Airport Transportation

The Roberts Hawaii Airport Shuttle is pleased to offer meeting attendees a convenient way to get from Daniel K. Inouye International Airport to your accommodation in Waikiki. Visit <https://www.airportshuttlehawaii.com/en/affiliate/ARVO/> for more information.

## Other Transportation Options

Nearly everything you need in Hawaii is within walking distance or a short cab ride of the Hawaii Convention Center. The Visit Hawaii Information Desk in Main Lobby of the Hawaii Convention Center has more information.

## Getting around Honolulu

**The Bus** — Honolulu's public transit is easy to navigate with transit connections, updates and real-time arrivals available at [thebus.org](http://thebus.org).

**Biki** — Honolulu's bikeshare program; a form of public transit using a network of bikes that are available to the public for short trips around town. [Gobiki.org](http://Gobiki.org).



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### Research training for all

Sharpen your knowledge and build essential skills on your own schedule. Choose from:

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- Self-paced modules on scientific and skill building topics
- Presentations of recorded sessions from ARVO Annual Meetings
- Career resources, featuring recordings of senior researchers' tips and advice



## Shuttle Service: Hotels – Convention Center

Consult the ARVO Mobile App for real-time tracking of the buses.

During peak service hours, buses will be making continuous loops on each dedicated route to the convention center. During off-peak service hours, routes will be combined into one route and will service all hotels. Transfer times will be longer during off-peak service.

### Saturday, April 28

Peak Service ..... 6:30am – 6pm

### Sunday, April 29

Peak Service ..... 6:30 – 10:30am | 4:30 – 8pm

Off-Peak Service ..... 10:30am – 4:30pm

### Monday, April 30

Peak Service ..... 6:30 – 10:30am | 4:30 – 9:30pm

Off-Peak Service ..... 10:30am – 4:30pm

### Tuesday, May 1

Peak Service ..... 6:30 – 10:30am | 4:30 – 9pm

Off-Peak Service ..... 10:30am – 4:30pm

### Wednesday, May 2

Peak Service ..... 6:30 – 10:30am | 4:30 – 7:30pm

Off-Peak Service ..... 10:30am – 4:30pm

### Thursday, May 3

Peak Service ..... 6:30am – 4:30pm

#### Route 1

Hilton Hawaiian Village

(see signage in hotel lobby for boarding location)

#### Route 2

Royal Hawaiian (board at Aloha Landing)

Sheraton Waikiki (board at Aloha Landing)

#### Route 3

Courtyard Waikiki (walk to Sheraton Princess Kaiulani)

Moana Surfrider (board curbside on Kaiulani Ave.)

Sheraton Princess Kaiulani (board curbside on Kaiulani Ave.)

#### Route 4

Hilton Waikiki (board curbside on Paoakalani Ave.)

Marriott Waikiki (board curbside on Paoakalani Ave.)



APRIL 28 – MAY 2 | VANCOUVER

## Reserve your ARVO 2019 hotel online before you go home!

Hotel reservations for ARVO 2019 in Vancouver open on Sunday, April 29. All attendees are encouraged to book their hotel for the 2019 Annual Meeting before heading home.

### Two ways to book:

- Stop by the Vancouver booth #1436 in the Exhibit Hall
- Reserve online at [ARVO.org/HOTELS](http://ARVO.org/HOTELS)

Hotels are available in all price ranges and service levels, and your favorite hotel brands are represented.

Please note: ARVO cannot assume responsibility for rooms reserved at hotels outside the ARVO block (either at hotels not listed or booked directly with the hotels). Special requests (i.e., king-size bed, non-smoking) may be noted but cannot be guaranteed. If you require accessible accommodations, contact ARVO's Housing Bureau with details.

[ARVO.org/Hotels](http://ARVO.org/Hotels)

## Future ARVO Annual Meetings

**May 3 – 7, 2020**  
Baltimore, Md.

**April 23 – 27, 2023**  
New Orleans, La.

**May 2 – 6, 2021**  
San Francisco, Calif.

**May 5 – 9, 2024**  
Seattle, Wash.

**May 1 – 5, 2022**  
Denver, Colo.

**May 4 – 8, 2025**  
Austin, Texas



**ARVO and the ARVO Foundation** are grateful to the supporters of the following named travel grants:

### **Travel grants supporters:**

- America Uveitis Society Travel Grant
- ARVO International Travel Grants
- ARVO Foundation Travel Grants
- Elizabeth Anderson Travel Grants<sup>^</sup>
- Joanne G. Angle Travel Grants<sup>^</sup>
- Grant Wood Balkema Memorial Travel Grant<sup>^</sup>
- IRCCS-Fondazione G. B. Bietti per lo Studio e la Ricerca in Oftalmologia-ONLUS Travel Grants
- BrightFocus Foundation Travel Grants
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- NIHR Moorfields Biomedical Research Centre Travel Grants
- Richard Newton Lolley Travel Grant<sup>^</sup>
- Ocular Immunology and Uveitis Foundation Travel Grant
- Overseas Chinese Association for Vision and Eye Research (OCAVER) Travel Grant
- Reader's Digest Partners for Sight Foundation Travel Grants
- Retina Research Foundation/Joseph M. and Eula C. Lawrence Travel Grants
- Societa Italiana Laser in Oftalmologia Travel Grants
- Bosco Tjan Memorial Travel Grant<sup>^</sup>
- Josh Wallman Travel Grant<sup>^</sup>
- Women in Eye and Vision Research (WEAVR) Travel Grants

<sup>^</sup> Supported by memorial donations

<sup>\*</sup> Funding of grants for attendance at this conference was made possible in part by grant 2U13EY002143-40 from NEI. The views expressed in written conference materials or publications and by speakers and moderators do not necessarily reflect the official policies of the DHHS; nor does mention by trade names, commercial practices or organization imply endorsement by the U.S. Government.

### **ARVO Foundation awards & fellowships**

- Alcon Early Career Clinician-Scientist Research Awards
- Dr. David L. Epstein Award (supported by the family of Dr. Epstein)
- Genentech AMD Research Fellowships
- Bert M. Glaser, MD Award for Innovative Research in Retina (supported by the family of Dr. Glaser)
- Oberdorfer Award in Low Vision Research (supported by The Lighthouse Guild)
- Pfizer Ophthalmics Carl Camras Translational Research Awards
- Publications grants
- Dr. Roger Vogel Award for Pharmaceutical Research (supported by Point Guard Partners)
- Ludwig von Sallmann Clinician-Scientist Award

### **ARVO Foundation Developing Country Eye Researcher Travel Fellowships**

- Alcon Foundation
- ARVO Foundation Annual Meeting donors
- ARVO-Asia 2017 Brisbane
- University of Wisconsin — Madison
- Women in Eye and Vision Research (WEAVR)

**ARVO** gratefully acknowledges the generous support for the 2018 Annual Meeting and its programs.

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**Ocular oncogenesis and oncology**

July 18 – 21, 2018

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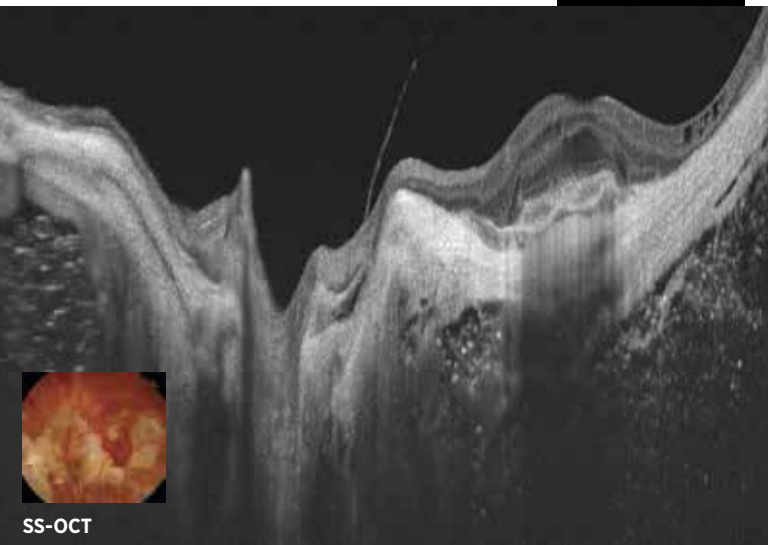


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