

PROGRAM



2019

45TH ANNUAL MEETING

NANOS

Red Rock Casino, Resort & Spa,
Las Vegas, Nevada

March 16 - 21



NORTH AMERICAN
NEURO-OPHTHALMOLOGY SOCIETY

SCHEDULE-AT-A-GLANCE

SATURDAY, MARCH 16

		LOCATION
8:00 am – 12:00 pm	NANOS Board Meeting.....	Veranda DE
2:00 pm – 7:30 pm	Registration/Help Desk.....	5th floor Registration Desk
3:00 pm – 4:30 pm	Orbital and Sellar Lesions-Neuro-Radiology Pearls and Pitfalls.....	Red Rock Ballroom
6:00 pm – 7:30 pm	Opening Reception (All are welcome!).....	Pavilion Ballroom

SUNDAY, MARCH 17

6:00 am – 6:45 am	Yoga	Pavilion Ballroom
6:30 am – 7:30 am	Breakfast.....	Charleston Ballroom
6:30 am – 5:30 pm	Registration/Help Desk.....	5th floor Registration Desk
7:30 am – 9:30 am	Frank B. Walsh (I).....	Red Rock Ballroom
9:30 am – 10:00 am	Coffee Break	Charleston Ballroom
10:00 am – 12:00 pm	Frank B. Walsh (II).....	Red Rock Ballroom
12:00 pm – 12:30 pm	Lunch	Charleston Ballroom
12:00 pm – 12:30 pm	International Relations Committee Meeting	Veranda E
12:00 pm – 1:00 pm	Fellowship Directors Committee Meeting	Veranda AB
12:30 pm – 2:30 pm	Poster Session I: Clinical Highlights	Red Rock Ballroom A-C
2:30 pm – 3:00 pm	Business Meeting	Red Rock Ballroom
3:00 pm – 5:15 pm	Frank B. Walsh (III).....	Red Rock Ballroom
5:30 pm – 6:00 pm	Walsh Committee Meeting.....	Veranda D
5:45 pm – 6:45 pm	Members-in-Training Reception	Veranda F

MONDAY, MARCH 18

6:00 am – 6:45 am	Yoga	Veranda DE
6:30 am – 7:30 am	Breakfast.....	Charleston Ballroom
6:30 am – 7:30 am	Breakfast with the Novices.....	Charleston Ballroom
6:30 am – 5:00 pm	Registration/Help Desk.....	5th floor Registration Desk
6:30 am – 7:30 am	NOVEL Editorial Board/Curriculum Committee Meeting	Veranda AB
7:30 am – 9:30 am	New Information I Should Know.....	Red Rock Ballroom
9:30 am – 10:00 am	Coffee with Exhibitors (with support from EMD Serono).....	Charleston Ballroom
10:00 am – 12:00 pm	Hot Topics: How do I Treat?.....	Red Rock Ballroom
12:00 pm – 1:00 pm	Lunch	Charleston Ballroom
12:00 pm – 1:00 pm	WIN (lunch provided)- LeadHERship: A Call to Thought and Action.....	Pavilion Ballroom
1:00 pm – 3:00 pm	Scientific Platform Session I.....	Red Rock Ballroom
3:00 pm – 5:00 pm	YONO Forum.....	Pavilion Ballroom
3:15 pm	Optional Excursions (advanced registration required)	
3:15 pm	NANOS Race Car Experience Fundraiser (advanced registration required)	

TUESDAY, MARCH 19

6:00 am – 6:45 am	Yoga	Veranda DE
6:30 am – 7:30 am	Breakfast.....	Charleston Ballroom
6:30 am – 5:00 pm	Registration/Help Desk.....	5th floor Registration Desk
6:30 am – 7:30 am	JNO Editorial Board Meeting	Veranda AB
7:30 am – 10:00 am	Scientific Platform Session II.....	Red Rock Ballroom
10:00 am – 10:30 am	Coffee with Exhibitors (with support from EMD Serono).....	Charleston Ballroom
10:30 am – 12:30 pm	Scientific Platform Session III.....	Red Rock Ballroom
12:30 pm – 1:00 pm	Lunch	Charleston Ballroom
1:00 pm – 3:00 pm	Poster Session II: Scientific Advancements.....	Red Rock Ballroom A-C
3:00 pm – 4:00 pm	Abstract Committee Meeting	Veranda D
3:15 pm	Optional Excursions (advanced registration required)	
4:15 pm – 5:45 pm	Consortium of Pediatric Neuro-Ophthalmologists Meeting (CPNO)- All are welcome to attend.....	Veranda AB

WEDNESDAY, MARCH 20

6:30 am – 7:30 am	Breakfast.....	Charleston Ballroom
6:30 am – 7:30 am	Breakfast with the Novices.....	Charleston Ballroom
6:30 am – 7:30 am	CME Committee Meeting	Veranda D
6:30 am – 5:30 pm	Registration/Help Desk.....	5th floor Registration Desk
7:30 am – 9:30 am	Retinal Microvascular Changes and Neurologic Disorders	Red Rock Ballroom
9:30 am – 10:00 am	Coffee with Exhibitors	Charleston Ballroom
10:00 am – 11:25 am	Dizziness, Vertigo: Just Tell Me What to Do!	Red Rock Ballroom
11:25 am – 12:00 pm	Jacobson Lecture: Leber Hereditary Optic Neuropathy: from Bedside to Bench to Bedside	Red Rock Ballroom
12:00 pm – 12:30 pm	Announcements/JNO/NOVEL Updates.....	Red Rock Ballroom
12:30 pm – 2:00 pm	Lunch Break	
12:30 pm – 2:00 pm	Research Committee Luncheon.....	Veranda AB
2:00 pm – 3:45 pm	EOM/Vestibular Testing Skills Transfer	Red Rock Ballroom
2:00 pm – 3:45 pm	Headache Medicine Update- What a Neuro-Ophthalmologist Needs to Know	Pavilion Ballroom
3:45 pm – 5:30 pm	Reading an OCT Like We Read an MRI.....	Red Rock Ballroom
3:45 pm – 5:30 pm	Worldwide Wonders: Cases Defining the International Language of Neuro-Ophthalmology.....	Pavilion Ballroom
6:30 pm – 12:00 am	NANOS Annual Banquet	Red Rock/Charleston Ballrooms

THURSDAY, MARCH 21

6:30 am – 7:30 am	Breakfast	Charleston Ballroom
6:30 am – 12:00 pm	Registration/Help Desk	5th floor Registration Desk
7:30 am – 9:30 am	How Do I Evaluate? Adult versus Kid: Does it Matter?.....	Red Rock Ballroom
9:30 am – 10:00 am	Coffee Break.....	Charleston Ballroom
10:00 am – 12:00 pm	Current Concepts in Eye Movement Disorders in Kids: Case-based Potpourri	Red Rock Ballroom



NANOS MISSION:

NANOS is dedicated to achieving excellence in care of patients with Neuro-Ophthalmic diseases by the support and promotion of education, research, and the practice of Neuro-Ophthalmology.

Welcome

Hello! On behalf of the North American Neuro-Ophthalmology Society (NANOS), we are excited to welcome you to the 45th Annual Meeting at the Red Rock Casino Resort & Spa in Las Vegas, Nevada!

The NANOS Annual Meeting continues to be the premier meeting for cutting-edge innovation and advances in Neuro-Ophthalmology. This year's meeting will provide a forum for everyone to come together from across the globe to share expertise and advance the field of Neuro-Ophthalmology through case discussions, didactic sessions, and workshop opportunities. We look forward to you being part of it!

In order to accommodate the continual growth of high-quality abstract submissions, NANOS will continue to host two poster sessions during the Annual Meeting. Poster Session I: Clinical Highlights in Neuro-Ophthalmology will take place on Sunday, March 17th from 12:30-2:30 pm. Poster Session II: Scientific Advancements in Neuro-Ophthalmology will take place on Tuesday, March 19th from 1:00-3:00 pm. In addition, all accepted platform and poster presenters have the opportunity to upload an ePoster to maximize attendee viewing for the duration of the meeting. The ePosters can be viewed on the mobile app.

Please join us for the Opening Reception on Saturday, March 16th, from 6:00 –7:30 pm in the Pavilion Ballroom. The reception will feature complimentary cocktails and hors d'oeuvres.

Breakfast for registrants only will be provided daily. Lunch will be provided on Sunday, Monday, and Tuesday. Please see the program for details.

CME instructions can be found on page 3 of the program. Please bring your computer or mobile device to complete the evaluation during the sessions. Complimentary internet will be provided. Instructions for access can be found on page 3 of the program.

Be sure to attend the Business Meeting on Sunday, March 17th, at 2:30 pm in the Red Rock Ballroom. We will be reviewing Society business and your input is needed.

Join colleagues for a fun, casual evening of socializing, dining and dancing at the NANOS Annual Banquet! Dinner will take place in the Red Rock Ballroom, followed by dancing in the Charleston Ballroom. This event is complimentary for registered attendees. Guests must purchase a ticket for \$100 per person.

I want to personally thank the Scientific Program Committee, Walsh Committee and Organizers, Abstract Committee, Development Committee, CME Committee, NANOS Board of Directors, Meeting Faculty, and everyone else who has generously donated their time and efforts to put together this outstanding meeting.

I hope you enjoy the 2019 NANOS Annual Meeting and your stay at the Red Rock Casino Resort & Spa!

Andrew G. Lee, MD
NANOS President



2019 45TH ANNUAL MEETING
NANOS
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GENERAL INFORMATION

EXHIBITOR HOURS:

This year's Exhibit Hall is located in the Charleston Ballroom. The Exhibit Hall will be open during the days and times listed below. All breakfasts, breaks and lunches will be held in the Charleston Ballroom, so be sure to take advantage and visit the exhibitors as they help make this meeting possible!

Monday, March 18	6:30 am – 2:00 pm
Tuesday, March 19	6:30 am – 2:00 pm
Wednesday, March 20	6:30 am – 10:00 am

Back Again This Year! 2019 NANOS Exhibitor Raffle

Don't forget to get your raffle card stamped as you visit with the exhibitors. Once your raffle card is complete, drop it off at the Registration Desk by 12:00 pm on Wednesday and you will be eligible for prize drawings.

NANOS REGISTRATION/HELP DESK HOURS:

Location:	5th floor Registration Desk
Saturday:	2:00 pm – 7:30 pm
Sunday:	6:30 am – 5:30 pm
Monday:	6:30 am – 5:00 pm
Tuesday:	6:30 am – 5:00 pm
Wednesday:	6:30 am – 5:30 pm
Thursday:	6:30 am – 12:00 pm

NANOS MOBILE MEETING APP:

To access the NANOS Mobile App:

1. Visit your smartphone's app store and search for "NANOS Meetings"
2. Download and open the mobile app.
OR Scan the QR code to the right.

Features:

- Full Program Schedule
- Faculty Listing
- Exhibitor and Support List
- Poster and Platform Abstracts
- Helpful Information
- Audience Response System
- ePosters
- Session Evaluations



How to Claim CME for the 2019 NANOS Annual Meeting

Claiming CME is as easy as 1-2-3:

1. Download the NANOS Meetings mobile app from your device's app store.
2. Select the "NANOS 2019" app and click "Download".
3. On the main dashboard, click the 3 lines in the upper left-hand corner to setup your profile. Type in your name, e-mail, title and institution.

4. Once you have set up your profile, you can begin rating Sessions. Go to the Sessions icon on the dashboard and select the Session you would like to rate. Click the "Rate Session" bar at the top of the page. Please note, you can only rate a Session once the Session has begun. You must click on each individual session to complete the rating/evaluation, and you must complete the session rating/evaluation for all sessions for which you intend to claim CME credit.

You may also complete the individual session evaluations on the mobile app desktop website:

<https://plan.core-apps.com/nanos2019>

5. At the conclusion of the meeting, visit <https://www.surveymonkey.com/r/NANOS2019CME> to complete the overall meeting evaluation and claim CME Credit. Deadline to complete the evaluation is April 12th. Upon completion of the evaluation, you will receive a link to download your CME Certificate.

Total Annual Meeting Credits: 29.25 Credit(s)[™]

ABPN Self-Assessment CME

The American Board of Psychiatry and Neurology has reviewed the NANOS 45th Annual Meeting and has approved this program as part of a comprehensive program, which is mandated by the ABMS as a necessary component of Maintenance of Certification. Complete information regarding the ABPN Self-Assessment CME Maintenance of Certification requirements are available at www.abpn.com.

ABO Self-Assessment CME

This activity meets the Self-Assessment CME requirements defined by the American Board of Ophthalmology (ABO). Please be advised that the ABO is not an accrediting body for purposes of any CME program. ABO does not sponsor this or any outside activity, and ABO does not endorse any particular CME activity. Complete information regarding the ABO Self-Assessment CME Maintenance of Certification requirements are available at www.abop.org.

WIFI Instructions:

Wifi network/SSID: Nanos
Security key/password: Meet2019
**case sensitive*



1. Select wifi network/SSID **Nanos**
2. Click Connect/Join
3. Enter security key/password **Meet2019**

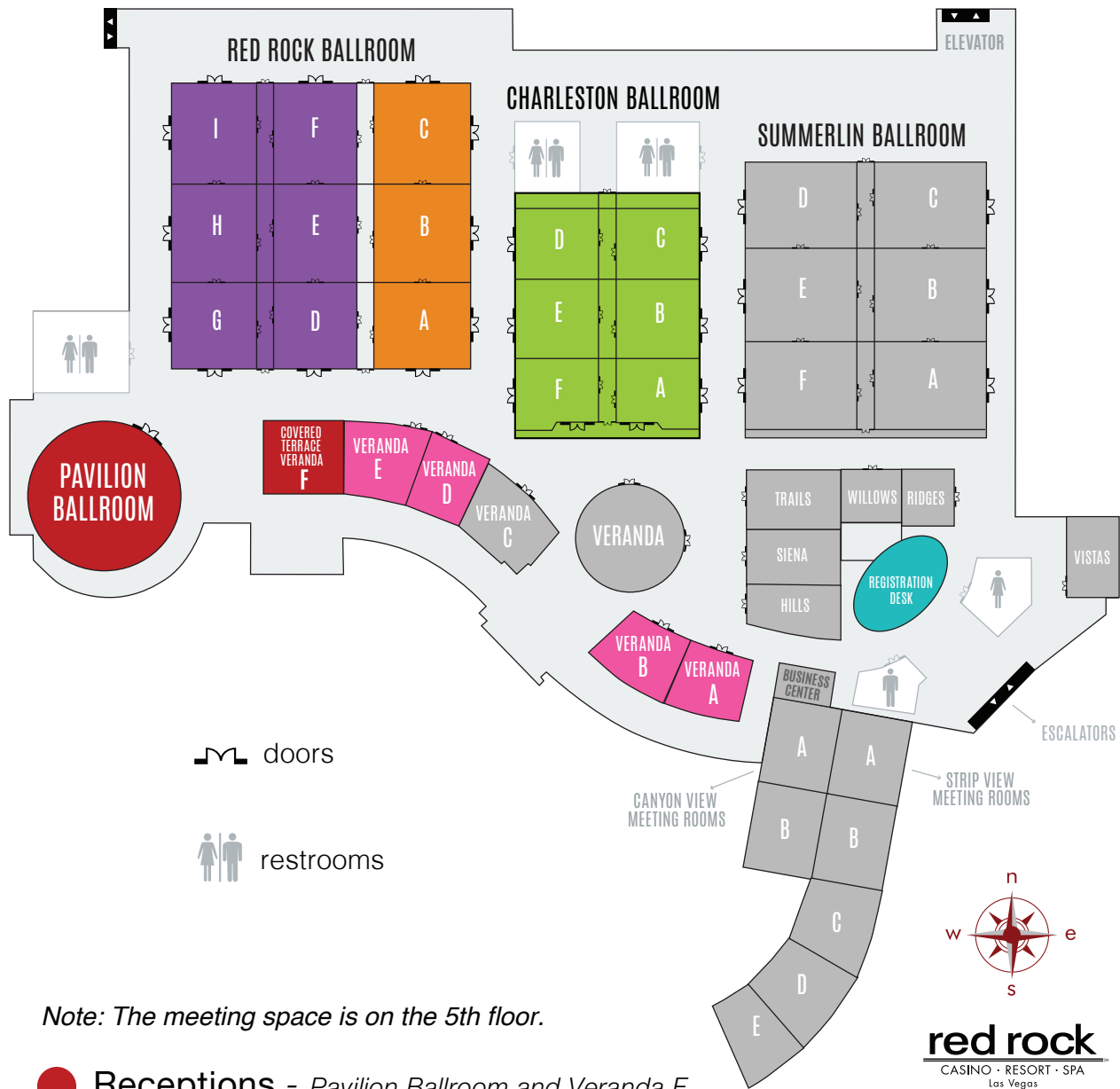
Social Media

Follow us on social media and use #NANOS2019 to share your annual meeting experience.



#NANOS2019

5TH FLOOR



Note: The meeting space is on the 5th floor.

- **Receptions** - Pavilion Ballroom and Veranda F
- **General Session** - Red Rock Ballroom D-I
- **Registration** - Registration Desk
- **Committee Meetings** - Veranda A,B,D,E
- **Exhibits/Coffee Breaks/Meals** - Charleston Ballroom
- **Posters** - Red Rock Ballroom A-C

PROGRAM

SATURDAY, MARCH 16

8:00 am – 12:00 pm	NANOS Board Meeting.....	Veranda DE
2:00 pm – 7:30 pm	Registration/Help Desk	5th floor Registration Desk
3:00 pm – 4:30 pm	Orbital and Sellar Lesions-Neuro-Radiology Pearls and Pitfalls	Red Rock Ballroom
	<i>Moderator: Madhura Tamhankar, MD</i>	

This session is designed to provide participants working in multi-disciplinary programs with important points of information regarding selection of appropriate imaging modalities and sequences within those modalities, as well as strategies for image analysis to precisely evaluate pathology involving the optic nerves and other cranial nerves that affect vision. This session will: 1) review MR and CT imaging protocols for intra-orbital pathology, pathology of the visual pathway, and other cranial nerves 2) discuss the evaluation of intra-orbital neoplasia including primary orbital tumors and tumors/pathology that secondarily involve the orbit through direct growth from surrounding areas (paranasal sinuses, bone), perineural spread, and metastatic disease and 3) discuss sellar and parasellar pathology that may involve/compress the visual pathway and/or extend to the cavernous sinuses.

Upon completion of this session, participants should be able to: 1) determine if cross-sectional imaging is necessary 2) select the best test when imaging is necessary 3) describe their role in communicating with their neuroradiologists to optimize protocol selection 4) identify when specialized high resolution MR imaging is necessary 5) identify MR protocols and sequences for evaluating sellar and parasellar disease and 6) discuss imaging findings that distinguish neoplastic from inflammatory disease.

3:00 pm – 4:30 pm **Orbital and Sellar Lesions- Neuro-Radiology Pearls and Pitfalls, Laurie Loevner, MD**

6:00 pm – 7:30 pm **Opening Reception (All are welcome!) Pavilion Ballroom**

SUNDAY, MARCH 17

6:00 am – 6:45 am	Yoga	Pavilion Ballroom
6:30 am – 7:30 am	Breakfast.....	Charleston Ballroom
6:30 am – 5:30 pm	Registration/Help Desk	5th floor Registration Desk
7:30 am – 9:30 am	Frank B. Walsh (I)	Red Rock Ballroom
	<i>Co-Chairs: Madhura Tamhankar, MD and Grant Liu, MD</i>	
	<i>Walsh Host Committee: Kenneth Shindler, MD, PhD, Robert Avery, DO, MSCE,</i>	
	<i>Ahmara Ross, MD, PhD, and Ali Hamedani, MD, MHS</i>	
	<i>Neuro-radiologist: Laurie Loevner, MD</i>	
	<i>Neuro-pathologist: Zissimos Mourelatos, MD</i>	

This session is designed to present a wide variety of neuro-ophthalmic cases to an audience of physicians with varying neuroscience backgrounds who have a common intellectual interest in the broad range of conditions that impact the human visual pathways and ocular motor systems.

The format is a clinicopathologic conference. Clinical cases will be presented by neuro-ophthalmologists with comments by a neuroradiologist, neuropathologist and other selected experts. Neuroimaging, laboratory and surgical pathology data will help illustrate clinical point. Cases will be discussed from clinical, anatomic, radiologic and pathologic aspects with emphasis on diagnosis, pathophysiology and management. Audience participation is encouraged.

SUNDAY, MARCH 17 *(Continued)*

Upon completion of this course, participants should be able to: 1) recognize the varied presentations of neuro-ophthalmic disease 2) correlate the anatomic localization and histopathologic appearance with the clinical presentations 3) use radiologic procedures in diagnosis effectively 4) recognize both the value and limitations of neuropathology and 5) discuss newly described diseases and their connection to neuro-ophthalmology.

Moderators: Kenneth Shindler, MD, PhD and Ahmara Ross, MD, PhD

7:30 am – 7:45 am	Welcome and Intro to Mobile App
7:45 am – 8:05 am	A Zebra Among Zebras , Peter W. Mortensen, MD
8:05 am – 8:25 am	The Great Masquerade , Bart K. Chwalisz, MD
8:25 am – 8:45 am	Chalky Pallid Edema , Daniel L. Kornberg, MD
8:45 am – 9:05 am	A-deno What's Going On! Christine Greer, MD
9:05 am – 9:25 am	Go with your Gut Feeling , Paul R. Freund, MD, MSc, FRCSC
9:25 am – 9:30 am	Wrap-up

9:30 am – 10:00 am	Coffee break.....	Charleston Ballroom
10:00 am – 12:00 pm	Frank B. Walsh (II)	Red Rock Ballroom
<i>Moderators: Grant Liu, MD and Robert Avery, DO, MSCE</i>		

10:00 am – 10:20 am	Fire and Ice , Mary D. Maher, MD
10:20 am – 10:40 am	Unexplained Becomes Explained , Jinu Han, MD
10:40 am – 11:00 am	A Trip Through the Wormhole , Anne Kao, MD
11:00 am – 11:20 am	Three's a Crowd , Kanwal S. Matharu, MD
11:20 am – 11:40 am	Don't Drink the Water , Devon A. Cohen, MD
11:40 am – 11:45 am	Morning Wrap-up

12:00 pm – 12:30 pm	Lunch	Charleston Ballroom
12:00 pm – 12:30 pm	International Relations Committee Meeting.....	Veranda E
12:00 pm – 1:00 pm	Fellowship Directors Committee Meeting	Veranda AB
12:30 pm – 2:30 pm	Poster Session I: Clinical Highlights.....	Red Rock Ballroom A-C

12:30 pm – 1:30 pm	Odd Numbered Posters
1:30 pm – 2:30 pm	Even Numbered Posters

2:30 pm – 3:00 pm	Business Meeting	Red Rock Ballroom
3:00 pm – 5:15 pm	Frank B. Walsh (III)	Red Rock Ballroom
<i>Moderators: Madhura Tamhankar, MD and Ali Hamedani, MD, MHS</i>		

3:00 pm – 3:20 pm	Every Rose Has Its Thorn , William J. Anderson, BS
3:20 pm – 3:40 pm	Not the Rolling Stones , Ari A. Shemesh, MD
3:40 pm – 4:00 pm	Fooled Thrice , Jonathan A. Micieli, MD, CM
4:00 pm – 4:20 pm	At the Crossroads , Konstantinos Douglas, MD, DVM, MBA
4:20 pm – 4:40 pm	Just the Two of Us , Dan Milea, MD, PhD
4:40 pm – 5:00 pm	Turbulence Fluid Waves and the Black Hole , Stella Y. Chung, MD, MS
5:00 pm – 5:15 pm	Closing Remarks

5:30 pm – 6:00 pm	Walsh Committee Meeting.....	Veranda D
5:45 pm – 6:45 pm	Members-in-Training Reception	Veranda F
(All students, residents and fellows-in-training are encouraged to attend.)		



MONDAY, MARCH 18

6:00 am – 6:45 am	Yoga	Veranda DE
6:30 am – 7:30 am	Breakfast.....	Charleston Ballroom
6:30 am – 7:30 am	Breakfast with the Novices.....	Charleston Ballroom

Join us in the reserved YONO area at breakfast for table discussions led by senior members and /or YONOs to discuss topics relevant to aspiring or current YONOs.

6:30 am – 5:00 pm	Registration/Help Desk	5th floor Registration Desk
6:30 am – 7:30 am	NOVEL/Editorial Board/Curriculum Committee Meeting	Veranda AB
7:30 am – 9:30 am	New Information I Should Know.....	Red Rock Ballroom
<i>Moderators: Christian Lueck, PhD, FRACP, FAAN and Claire Sheldon, MD, PhD</i>		

There have been enormous advances in neuroimmunology over the last two decades relating to both diagnosis and treatment of disease. For example, novel disease entities such as neuromyelitis optica spectrum disorder (NMOSD), chronic ataxic neuropathy, ophthalmoplegia, IgM monoclonal gammopathy, cold agglutinins and disialosyl antibodies (CANOMAD), and various autoimmune encephalitides have been described. Similarly, there has been an explosion of immunomodulatory therapies and monoclonal antibodies for the treatment of many conditions, some of which are autoimmune (e.g. multiple sclerosis and NMOSD), and some which are not (e.g. migraine). This session will provide an update of neuroimmunology as it relates to the practicing neuro-ophthalmologist. Following an introduction with an approach to the developing field of neuroimmunology, particular topics will include: 1) autoimmune encephalopathies 2) peripheral neuropathies 3) new treatments for multiple sclerosis and 4) novel immunomodulatory therapies for migraine.

Upon completion of this session, participants should be able to: 1) formulate a detailed framework of neuro-immunological disease 2) identify and describe neuroimmune diseases and 3) use immunotherapies appropriately.

7:30 am – 7:42 am	Neuro-Immunology, a New Specialty - Classifications of Disorders , <i>Jeffrey Bennett, MD, PhD</i>
7:42 am – 8:09 am	Autoimmune Encephalitis: GFAP, DPPX, Other , <i>Eric Eggenberger, DO</i>
8:09 am – 8:36 am	Ganglioside-Related Disorders (GQ1b; Miller-Fisher Syndrome; CANOMAD) , <i>Umapathi Thirugnanam, MBBS</i>
8:36 am – 9:03 am	New Treatments for Multiple Sclerosis , <i>Sashank Prasad, MD</i>
9:03 am – 9:30 am	New Treatments for Migraine , <i>Kathleen Digre, MD</i>

9:30 am – 10:00 am	Coffee with Exhibitors (with support from EMD Serono)	Charleston Ballroom
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MONDAY, MARCH 18 (Continued)

10:00 am – 12:00 pm **Hot Topics: How do I Treat?..... Red Rock Ballroom**
Moderators: Vivek Patel, MD and Klara Landau, MD

This session is designed to provide the audience with a practical, evidence-based discussion of how to manage important clinical scenarios, which are of specific and contemporary interest to the neuro-ophthalmic community. Five “hot topics” will be presented by established experts and thought-leaders for the respective conditions. The chosen topics are important clinical scenarios. As a community, our understanding of how to optimally manage these challenging presentations is currently evolving.

Upon completion of this session, participants should be able to: 1) recognize the various etiologies of headache in IIH patients 2) distinguish MOG positive optic neuritis from other forms of optic neuritis and 3) identify possible treatment options for radiation induced optic neuropathy.

10:00 am – 10:24 am	Ischemic Optic Neuropathy from GCA , <i>Fiona Costello, MD, FRCP</i>
10:24 am – 10:48 am	Ocular Myasthenia Gravis , <i>Michael Lee, MD</i>
10:48 am – 11:12 am	MOG- IgG Optic Neuritis , <i>John Chen, MD, PhD</i>
11:12 am – 11:36 am	Headaches in IIH , <i>Deborah Friedman, MD, MPH</i>
11:36 am – 12:00 pm	Radiation Optic Neuropathy , <i>Norah Lincoff, MD</i>

12:00 pm – 1:00 pm **Lunch Charleston Ballroom**
12:00 pm – 1:00 pm **WIN - LeadHERship: A Call to Thought and Action (lunch provided)..... Pavilion Ballroom**

Please join the Women in Neuro-Ophthalmology (WIN) for an exciting networking event. Dr. Kimberly Winges will share what she learned through the inaugural NANOS Pilot Grant for Leadership Development, followed by small group discussions regarding leadership and empowerment in the workplace. All are welcome!

1:00 pm – 3:00 pm **Scientific Platform Session I..... Red Rock Ballroom**
Moderators: Melinda Chang, MD and Timothy J. McCulley, MD

1:00 pm – 1:15 pm	An Epidemiological Study of LHON Using a Large International Sample of Affected Individuals , <i>Alexander L. Pearson, BA</i>
1:15 pm – 1:30 pm	Neuro-Ophthalmic Manifestations of Collapsin Response- Mediator protein-5 (CRMP5) Autoimmune Neuropathy , <i>Devon A. Cohen, MD</i>
1:30 pm – 1:45 pm	Associations Between Pattern Electroretinogram and Intra-retinal Layer Thicknesses in Patients Multiple Sclerosis , <i>Hong Jiang, MD, PhD</i>
1:45 pm – 2:00 pm	Presentation of NAION in a Global Treatment Trial , <i>Mark J. Kupersmith, MD</i>
2:00 pm – 2:15 pm	Characterization of Visual Pathway Abnormalities in Infants with Congenital Zika Syndrome Using CT and MRI , <i>Amanda D. Henderson, MD</i>
2:15 pm – 2:30 pm	A Prospective Outcomes Study of Pediatric Optic Neuritis , <i>Stacy Pineles, MD, MS</i>
2:30 pm – 2:45 pm	Long-term OCT Follow-up in Children with Optic Disc Drusen , <i>Lasse Malmqvist, MD, PhD</i>
2:45 pm – 3:00 pm	Progressive Neurodegeneration of the Retinal Nerve Fiber Layer in Veterans with Mild Traumatic Brain Injury , <i>Randy H. Kardon, MD, PhD</i>

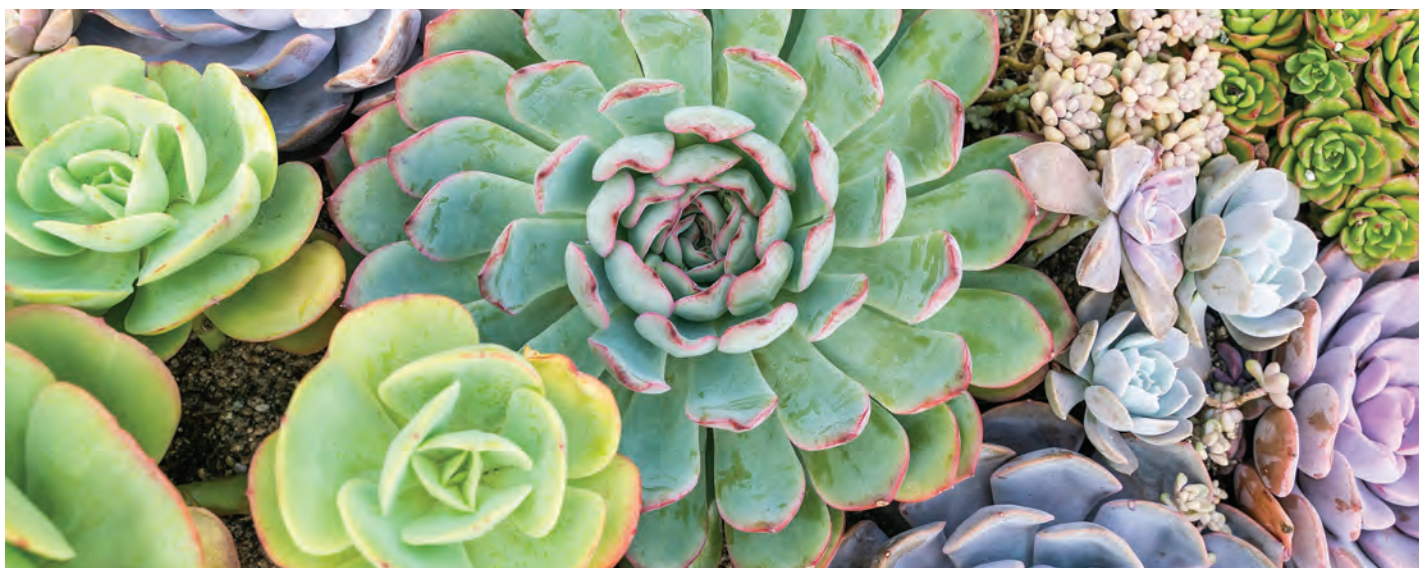
3:00 pm – 5:00 pm **YONO Forum Pavilion Ballroom**

All are welcome to attend this 2 hour session catering to students, residents, fellows and neuro-ophthalmologists in the early years of their career. The first hour will consist of brief 10 minute prepared talks delivered by knowledgeable speakers in the field of neuro-ophthalmology on topics of interest for aspiring neuro-ophthalmologists and young neuro-ophthalmologists. The next hour will include small group discussions led by these same speakers allowing participants more time to ask questions.

3:15 pm **Optional Excursions (advanced registration required)**
3:15 pm **NANOS Race Car Experience Fundraiser (advanced registration required)**

A once-in-a-lifetime opportunity to ride in a Porsche GT3 Cup race car at the Las Vegas Motor Speedway. Powered by Dr. Preston Calvert, Neuro-Ophthalmologist and professional race car driver. Funds raised at this event will support NANOS educational offerings.

1 lap - \$75 2 lap - \$125 3 lap - \$175 Video recording of the race - \$20



TUESDAY, MARCH 19

6:00 am – 6:45 am	Yoga	Veranda DE
6:30 am – 7:30 am	Breakfast.....	Charleston Ballroom
6:30 am – 5:00 pm	Registration/Help Desk	5th floor Registration Desk
6:30 am – 7:30 am	JNO Editorial Board Meeting	Veranda AB
7:30 am – 10:00 am	Scientific Platform Session II.....	Red Rock Ballroom

Moderators: Michael Vaphiades, DO and Kimberly K. Gokoffski, MD, PhD

7:30 am – 7:45 am	Adduction-induced Deformations of the Optic Nerve Head Evokes Peripapillary Folds in Papilledema, Patrick A. Sibony, MD
7:45 am – 8:00 am	Tree Shrew Spontaneous Retinal Venous Pulsation Changes Due to Changes in the Translaminar Pressure Difference, Michael Dattilo, MD, PhD
8:00 am – 8:15 am	Near Infrared Videography versus Direct Ophthalmoscopy for the Detection of Spontaneous Venous Pulsations, Perry J. Thompson, BA
8:15 am – 8:30 am	Quantitative Optical Coherence Tomography Angiography (OCTA) and Visual Field Defects in Idiopathic Intracranial Hypertension, Melinda Chang, MD
8:30 am – 8:45 am	Detection of Visual Loss in IIH with Static Automated Perimetry: Temporal Wedge Defects, Michael Wall, MD
8:45 am – 9:00 am	Artificial Intelligence for Detection and Classification of Abnormal Optic Discs on Fundus Photographs, Dan Milea, MD, PhD
9:00 am – 9:15 am	The Untuned Visuo-temporal Cortex in Patients with Visual Snow, Ghislaine L. Traber, MD
9:15 am – 9:30 am	Object Recognition in Acquired and Developmental Prosopagnosia: Is it Really Just About Faces? Jason S. Barton, MD, PhD, FRCPC
9:30 am – 9:45 am	eMULES in concussion: A quantitative ‘Look’ at the Eye Movements, Todd E. Hudson, PhD
9:45 am – 10:00 am	Positional Testing in Acute Vestibular Syndrome: A Transversal and Longitudinal Study, Joao Lemos, MD, PhD

10:00 am – 10:30 am	Coffee with Exhibitors (with support from EMD Serono)	Charleston Ballroom
10:30 am – 12:30 pm	Scientific Platform Session III.....	Red Rock Ballroom

Moderators: Jeffrey Bennett, MD, PhD and Heather Moss, MD, PhD

10:30 am – 10:45 am	rAAV2/2-ND4 Treatment of Leber Optic Neuropathy: 72-Week Data from the REVERSE Phase III Clinical Trial, Nancy J. Newman, MD
10:45 am – 11:00 am	Efficacy of Chronic Immunotherapy for Myelin Oligodendrocyte Glycoprotein-IgG Disease, John J. Chen, MD, PhD
11:00 am – 11:15 am	Amnion-derived Multipotent Progenitor Cells Attenuate Optic Nerve and Spinal Cord Demyelinating Disease, Kenneth S. Shindler, MD, PhD

TUESDAY, MARCH 19 (Continued)

11:15 am – 11:30 am	MEK Inhibitor Treatment Promotes Retinal Ganglion Cell Preservation without Preventing Retrobulbar Demyelination in Neurofibromatosis Mice , <i>Steven F. Stasheff, MD, PhD</i>
11:30 am – 11:45 am	Melanopsin: Targeted Ectopic Expression for Optogenetic Visual Restoration , <i>Michael J. Gilhooley, MA, MB, BChir, FRCOphth</i>
11:45 am – 12:00 pm	The Stressed Optic Nerve at High Altitude and Treatment with Chemical Chaperon , <i>Yaping (Joyce) Liao, MD, PhD</i>
12:00 pm – 12:15 pm	Physiologic Electrical Fields Direct Retina Ganglion Cell Axon Growth , <i>Kimberly K. Gokoffski, MD, PhD</i>
12:15 pm – 12:30 pm	Visual Impairment in Patients with Giant Cell Arteritis Treated with Tocilizumab in Real-World Clinical Practice , <i>Timothy J. McCulley, MD</i>
12:30 pm – 1:00 pm	Lunch Charleston Ballroom
1:00 pm – 3:00 pm	Poster Session II: Scientific Advancements Red Rock Ballroom A-C
1:00 pm – 2:00 pm	Odd Numbered Posters
2:00 pm – 3:00 pm	Even Numbered Posters
3:00 pm – 4:00 pm	Abstract Committee Meeting Veranda D
3:15 pm	Optional Excursions (advanced registration required)
4:15 pm – 5:15 pm	Consortium of Pediatric Neuro-Ophthalmologists Meeting (CPNO) - All are welcome to attend Veranda AB <i>Facilitator: Paul Phillips, MD</i>



WEDNESDAY, MARCH 20

6:30 am – 7:30 am	Breakfast Charleston Ballroom
6:30 am – 7:30 am	Breakfast with the Novices Charleston Ballroom

Join us in the reserved YONO area at breakfast for table discussions led by senior members and /or YONOs to discuss topics relevant to aspiring or current YONOs.

6:30 am – 7:30 am	CME Committee Meeting Veranda D
6:30 am – 5:30 pm	Registration/Help Desk 5th floor Registration Desk

7:30 am – 9:30 am	Retinal Microvascular Changes and Neurologic Disorders..... Red Rock Ballroom <i>Moderators: Beau Bruce, MD, PhD and Oana Dumitrascu, MD, MSc</i> <i>Invited Speaker: Tien Yin Wong, MD, MBBS, MMED (Ophth), MPH, PhD, FRCSE, FRANZCO, FAMS</i>
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Retinal microvascular changes are increasingly recognized as diagnostic and prognostic indicators in neurologic diseases. In this session, a comprehensive overview of the epidemiology of retinal microvascular changes in relation to acute and chronic neurologic diseases will be reviewed and established and developing methodologies of evaluating those changes will be discussed. Latest advances and current challenges behind their implementation in routine clinical practice will be addressed.

Upon completion of this session, participants should be able to: 1) describe the diagnostic and prognostic significance of retinal microvascular changes in acute and chronic neurologic diseases, 2) discuss state-of-the-art concepts in hypertensive retinopathy and 3) describe current and emerging technologies for evaluating the retinal microvasculature.

7:30 am – 7:45 am	Retinal Vascular Changes in Acute Neurological Disorders, Beau Bruce, MD, PhD
7:45 am – 8:25 am	Current Concepts in Retinal Vascular Imaging, <i>Tien Yin Wong, MD, MBBS, MMED (Ophth), MPH, PhD, FRCSE, FRANZCO, FAMS</i>
8:25 am – 8:40 am	Retinal Vascular Abnormalities in Cerebrovascular and Neurodegenerative Disorders, <i>Oana Dumitrascu, MD, MSc</i>
8:40 am – 9:00 am	Artificial Intelligence in Retinal Imaging, <i>Tien Yin Wong, MD, MBBS, MMED (Ophth), MPH, PhD, FRCSE, FRANZCO, FAMS</i>
9:00 am – 9:30 am	Q&A

9:30 am – 10:00 am	Coffee with Exhibitors Charleston Ballroom
10:00 am – 11:25 am	Dizziness, Vertigo: Just Tell Me What to Do! Red Rock Ballroom <i>Moderators: Dan Gold, DO and David Newman-Toker, MD, PhD</i>

This session will provide a practical approach to the diagnosis and treatment of patients with vestibular disorders. The session will be separated into two parts – dizziness & vertigo in the emergency department and dizziness & vertigo in the clinic. The most common vestibular disorders in each setting will be discussed, with a particular focus on how the history should be approach in addition to the role of the bedside ocular-motor and vestibular examination.

Upon completion of this session, participants should be able to: 1) describe the HINTS exam and its correct application 2) interpret results of the HINTS exam correctly, including central and peripheral patterns 3) apply the diagnostic Dix-Hallpike and supine roll positional maneuvers 4) interpret positionally-triggered nystagmus to localize the affected canal 5) describe the Triage-TiTrATE-Test method and 6) apply the Triage-TiTrATE-Test method to correctly diagnose the etiology of dizziness or vertigo.

10:00 am – 10:30 am	Dizziness & Vertigo in the ED - When to Worry, When to Image, When to Admit, <i>David Newman-Toker, MD, PhD</i>
10:30 am – 11:15 am	Dizziness & Vertigo in the Clinic - When to Test, When to Treat, When to Refer, Dan Gold, DO
11:15 am – 11:25 am	Q&A

11:25 am – 12:00 pm	Jacobson Lecture: Leber Hereditary Optic Neuropathy: from Bedside to Bench to Bedside..... Red Rock Ballroom <i>Speaker: Nancy J. Newman, MD</i>
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This lecture will trace the story of our growing understanding of Leber hereditary optic neuropathy (LHON) from clinical recognition, to the first demonstration of a point mutation in the mitochondrial DNA associated with a human disease, to ground-breaking attempts at gene therapy.

Upon completion of this session, participants should be able to: 1) recognize the various clinical phenotypes associated with Leber hereditary optic neuropathy (LHON) 2) apply the appropriate testing to make the diagnosis of LHON and 3) identify the potential treatment options for LHON.

WEDNESDAY, MARCH 20 (Continued)

12:00 pm – 12:30 pm **Announcements/JNO/NOVEL Updates** Red Rock Ballroom

12:00 pm – 12:05 pm **Announcements, Valérie Biousse, MD**

12:05 pm – 12:15 pm **JNO Update, Laura Balcer, MD**

12:15 pm – 12:25 pm **NOVEL Update, Kathleen Digre, MD**

12:30 pm – 2:00 pm **Lunch Break**

12:30 pm – 2:00 pm **Research Committee Luncheon** Veranda AB

2:00 pm – 3:45 pm **EOM/Vestibular Testing Skills Transfer (advanced registration required - sold out) ...** Red Rock Ballroom

Moderators: Dan Gold, DO and David Newman-Toker, MD, PhD

Facilitators: Shannon Beres, MD, Anthony Brune, DO, Marc Dinkin, MD, Eric Eggenberger, DO,

Christopher Glisson, DO, MS, Joao Lemos, MD, PhD, Jorge Kattah, MD, Luis Mejico, MD,

Mark Morrow, MD, Mark Moster, MD, Kannan Narayana, MD, MBBS, Sashank Prasad, MD,

John Pula, MD, Veeral Shah, MD, PhD, Caroline Tilikete, MD, PhD, and Konrad P. Weber, MD

This session will provide a practical ocular-motor/vestibular hands-on experience. With the help of NANOS members with expertise in the field, there will be 8 stations: VOR testing, Positional Testing of Posterior Semicircular Canals, Positional Testing of Horizontal Semicircular Canals, Provocative Testing (nystagmus elicitation), Gaze Testing (ocular alignment, saccades, smooth ocular pursuit, and smooth eye-head tracking), Nystagmus Interpretation, Peds Eye Movement, and Cases.

Upon completion of this session, participants should be able to: 1) perform the HINTS exam (head impulse [VOR], nystagmus [naming and interpretation], test of skew [alignment]) 2) perform other ocular motor (saccades, pursuit, eye-head tracking) and provocative testing (head-shaking) to aid in localization 3) apply the diagnostic Dix-Hallpike and supine roll positional maneuvers with proper technique and 4) select the most appropriate therapeutic maneuver and apply this treatment.

2:00 pm – 3:45 pm **Headache Medicine Update - What a Neuro-Ophthalmologist Needs to Know** Pavilion Ballroom

There is a large overlap between neuro-ophthalmology and headache medicine. Advances in the understanding of migraine pathophysiology have evolved from bench to bedside with novel medications and devices for patient care. This session will review relevant migraine pathophysiology, focusing on calcitonin gene-related peptide (GCRP) and anatomic pathways targeted by neuromodulation devices, discuss the evidence of efficacy of agents targeting GCRP and neuromodulation devices in the treatment of migraine and cluster headache, and update attendees on visual snow, eye pain and photophobia.

Upon completion of this session, participants should be able to: 1) describe the role of calcitonin-gene related peptide (CGRP) in the pathogenesis of migraine and cluster headache 2) recommend new treatments and devices to patients as appropriate 3) list ophthalmic and neurologic causes of photophobia and 4) explain the role of intrinsically photosensitive retinal ganglion cells in the pathophysiology of photophobia.

2:00 pm – 2:25 pm **Who, What, and Where: Insights into Migraine Pathophysiology and New Therapeutic Targets,**
Benjamin Frishberg, MD

2:25 pm – 2:55 pm **Designer Drugs and Neuromodulation for Migraine and Cluster Headache,**
Deborah Friedman, MD MPH

2:55 pm – 3:35 pm **Clinical Conundrums in Migraine: Eye Pain, Photophobia, and Visual Snow,**
Kathleen Digre, MD

3:35 pm – 3:45 pm **Q&A**

3:45 pm – 5:30 pm Reading an OCT Like We Read an MRI Red Rock Ballroom

OCT is capable of the highest resolution images of the retina and optic nerve clinically available of the eye, yet when clinicians examine its output, they frequently rely upon a few quantitative measures to determine whether the nerve fiber layer or ganglion cell complex is thinning or thickening. Reviewing the automated segmentation, signal strength and centering of the study and how they may compare to prior studies is critical, as is looking at where the retinal vessels enter the disc when trying to understand local nerve fiber layer thickness as the nerve fiber layer follows the retinal vessels embryologically. The examination of the visual field side by side with the OCT of the nerve fiber layer and ganglion cell complex lends authority to conclusions when they reinforce one another. The recognition of papilledema from its OCT appearance and its separation from other causes of disc swelling e.g. drusen, NAION, optic nerve meningioma and hypotony will be addressed and the importance of the peripapillary RPE Burch's membrane conformation on axial OCTs and the recognition of folds on in face images.

Upon completion of this session, participants should be able to: 1) read an OCT like a radiologist reads an MRI 2) distinguish amongst swollen discs when interpreting an OCT and 3) recognize retinal patterns in an OCT.

3:45 pm – 3:50 pm	Welcome and Introduction, Jeffrey G. Odel, MD
3:50 pm – 4:30 pm	Reading an OCT Like We Read an MRI, Donald Hood, PhD
4:30 pm – 5:10 pm	Transverse Axial / en Face OCT in the Assessment of Optic Disc Edema and Pseudopapilledma, Patrick A. Sibony, MD
5:10 pm – 5:25 pm	Cases, Jeffrey G. Odel, MD
5:25 pm – 5:30 pm	Q&A

3:45 pm – 5:30 pm Worldwide Wonders: Cases Defining the International Language of Neuro-Ophthalmology Pavilion Ballroom
Moderators: Clare Fraser, FRANZCO and Susan Mollan, FRCOphth

In this global community, where travel to and from countries outside America is becoming more frequent, it is increasingly likely that doctors will be seeing patients with diseases that would otherwise not be common in their country or have a different phenotype to those typically seen in one's locality. This session is designed to introduce five conditions where regional differences may make a difference in the recognition or management of the condition.

Each presenter will highlight a challenging case from their practice, update us on the current thoughts of how to diagnose, investigate and manage that condition and highlight regional differences.

Upon completion of this session, participants should be able to: 1) recognize and distinguish five common diseases that affect the central nervous system and eye 2) plan an appropriate series of investigations and evaluate the results and 3) recommend a treatment plan.

3:45 pm – 3:50 pm	Introduction
3:50 pm – 4:15 pm	Optic Neuritis: a Worldwide View, Simon Hickman, PhD, FRCP
4:15 pm – 4:40 pm	Two Cases from a Tick Country, Steffen Hamann, MD, PhD
4:40 pm – 5:05 pm	In Vitreous Veritas, Pedro Fonseca, MD
5:05 pm – 5:30 pm	Non-idiopathic Intracranial Hypertension with Happy Ending, Ruth Huna-Baron, MD

6:30 pm – 12:00 am Banquet Red Rock and Charleston Ballrooms

Join colleagues for a fun, casual evening of socializing, dining and dancing at the NANOS Annual Banquet! Dinner will take place in the Red Rock Ballroom, followed by dancing in the Charleston Ballroom. This event is complimentary for registered attendees; guests must purchase tickets for \$100 per person. Guest tickets are available for purchase at the Registration Desk.





THURSDAY, MARCH 21

6:30 am – 7:30 am	Breakfast.....	Charleston Ballroom
6:30 am – 12:00 pm	Registration/Help Desk	5th floor Registration Desk
7:30 am – 9:30 am	How Do I Evaluate? Adult versus Kid: Does it Matter?	Red Rock Ballroom
	Moderator: Stacy Pineles, MD, MS and Anthony Arnold, MD	

This session will focus on the management of four neuro-ophthalmic disorders (Horner syndrome, isolated optic neuritis, 3rd cranial nerve palsy, and papilledema) that occur both in pediatric and adult patients. For each topic, an expert for each age group will discuss management, with recommendations based on recent literature and highlight new or controversial data.

Upon completion of this session, participants should be able to: 1) recognize key differences in differential diagnosis 2) utilize correct diagnostic modalities and 3) apply age-appropriate treatments.

7:30 am – 8:00 am	Horner Syndrome , Aki Kawasaki, MD, PhD and Grant Liu, MD
8:00 am – 8:30 am	Isolated Optic Neuritis , Christopher Glisson, DO, MS and Jason Peragallo, MD
8:30 am – 9:00 am	Third Nerve Palsy , Karl Golnik, MD, MEd and Paul Phillips, MD
9:00 am – 9:30 am	Papilledema , Collin McClelland, MD and Robert Avery, DO, MSCE

9:30 am – 10:00 am	Coffee Break	Charleston Ballroom
10:00 am – 12:00 pm	Current Concepts in Eye Movement Disorders in Kids: Case-based Potpourri.....	Red Rock Ballroom
	Moderators: Mark Borchert, MD and Gena Heidary, MD, PhD	

This session will review current concepts in strabismus and gaze abnormalities in pediatric patients. The session will focus on providing a framework for differentiating amongst supranuclear, neuromuscular, genetic, and mechanical causes of strabismus. Specifically, we seek to provide novel insights into pathophysiology of disease, genetic classifications of disease, and the nuances of the clinical presentation which will promote a deeper understanding of eye movement disorders in children. Topics will cover essential infantile esotropia, congenital oculomotor apraxia, Duane syndrome, congenital cranial dysinnervation disorders, Moebius syndrome, and neuromuscular diseases that affect oculomotor function in children.

Upon completion of this session, participants should be able to: 1) differentiate amongst supranuclear, neuromuscular, and mechanical etiologies of pediatric strabismus and 2) apply the appropriate diagnostic testing regarding each and 3) describe novel concepts underlying infantile strabismus.

10:00 am – 10:20 am	Essential Infantile Esotropia , Michael Brodsky, MD
10:20 am – 10:35 am	Congenital Ocular Motor Apraxia , Jane Edmond, MD
10:35 am – 10:50 am	Duane Syndrome , Mark Borchert, MD
10:50 am – 11:10 am	Congenital Cranial Dysinnervation Disorders , Gena Heidary, MD, PhD
11:10 am – 11:25 am	Moebius Syndrome , Shannon Beres, MD
11:25 am – 11:45 am	Neuromuscular Disorders , Veeral Shah, MD, PhD
11:45 am – 12:00 pm	Panel Discussion and Audience Questions

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*Advanced registration required for excursions

SATURDAY, MARCH 16



EXCURSION: Hoover Dam Tour

8:00 am – 12:00 pm



Your tour guide will narrate your journey as you travel from the glitter of Vegas to the roaring water of the Hoover Dam. On the way, observe the vintage charm of Boulder City that was built for the construction of Hoover Dam, and gaze upon the vast waters of Lake Mead sparkling beneath the sun. Your Hoover Dam tour really begins when you step inside of the auditorium. Professional audio and film presentations uncover the Hoover Dam's history and science as well as the plan that led to the building of the Dam. Jump into interactive exhibits inside the Visitor Center that explain the Hoover Dam's engineering mysteries. Now it's off to your tour of the Hoover Dam Power Plant. Learn about what went into its construction and what operational maintenance keeps the Hoover Dam running today.

Tour includes: Transportation, professional guides, all taxes and gratuities, and bottled water for each guest.

Timing: Depart hotel lobby: 8:00 am; Return to hotel: 12:00 pm

What to wear: Guests should wear comfortable clothes and closed toed shoes.

Opening Reception

6:00 pm – 7:30 pm

Location: Pavilion Ballroom



Please join us for the Opening Reception in Pavilion Ballroom. All are welcome to attend the opening reception, which features complimentary cocktails and hors d'oeuvres.

SUNDAY, MARCH 17

Members-in-Training Reception

5:45 pm – 6:45 pm

Location: Veranda F



New to Neuro-Ophthalmology? All students, residents and fellows-in-training are encouraged to attend!

MONDAY, MARCH 18



EXCURSION: NANOS Race Car Experience Fundraiser

3:15 pm – 7:00 pm



A once-in-a-lifetime opportunity to ride in a Porsche GT3 Cup race car at the Las Vegas Motor Speedway. Powered by Dr. Preston Calvert, Neuro-Ophthalmologist and professional race car driver. Funds raised at this event will support NANOS educational offerings.

The Porsche GT3 Cup cars are factory-built race cars maintained by a professional race team. Dr. Calvert and another professional race car driver will be your drivers, and will provide all necessary safety instructions and explanations of the cars and track. Each ride will be at a quick, but very safe pace, and will still feel extremely fast and different from street driving. Participants will wear a helmet and be professionally strapped into a race seat that provides a secure location in the car.

Transportation: Shuttles to the Speedway will be provided.

Timing: Depart hotel lobby: 3:15 pm; Return to hotel: approx. 7:00 pm

Pricing: Pricing is based on number of laps around the track.

1 lap - \$75

2 lap - \$125

3 lap - \$175

Video recording of the race - \$20



EXCURSION: Red Rock Canyon Jeep Experience

3:30 pm – 7:30 pm

* ADVANCED
REGISTRATION
REQUIRED

Red Rock Canyon National Conservation Area, only minutes from the Strip, exhibits scenery so beautiful and dramatic that it's often chosen as a backdrop for movies and commercials. You'll see the blazing red Spring Mountain Range, part of the 65-million-year-old Keystone Thrust, fossilized sand dunes, and the brilliantly colored Calico Hills. A brief stop at the Visitor Center allows you to explore fascinating exhibits and interactive learning tools, as well as a well-stocked gift store. This tour includes stunning geological features, ancient Native American pictographs, and diverse vegetation.

Tour includes: On/off road experience to remote locations, Certified Tour guides through the National Park Service, bottled water for each guest, and all taxes and gratuities.

Timing: Depart hotel lobby: 3:30 pm; Return to hotel: 7:30 pm

EXCURSION: VIP Foodie Tour

6:00 pm – 10:00 pm

* ADVANCED
REGISTRATION
REQUIRED



Las Vegas is home to world-renowned restaurants with the hottest chefs in the industry. With the VIP Foodie Tour, guests will experience a memorable eating adventure to carefully selected top-rated restaurants. At each stop, you will indulge in appetizers, entrées or desserts, which together will comprise a complete meal. You'll also gain a wealth of fun facts along the way. Let the foodie adventure begin as guests enjoy a delectable meal. Guests will be walking to each restaurant so comfortable shoes are suggested.

Tour includes: Round trip transportation, professional food guide, food, beverage package, tax and gratuities.

Timing: Depart hotel lobby: 6:00 pm; Return to hotel: 10:00 pm

TUESDAY, MARCH 19

EXCURSION: Red Rock Canyon Jeep Experience

3:30 pm – 7:30 pm

* ADVANCED
REGISTRATION
REQUIRED

Red Rock Canyon National Conservation Area, only minutes from the Strip, exhibits scenery so beautiful and dramatic that it's often chosen as a backdrop for movies and commercials. You'll see the blazing red Spring Mountain Range, part of the 65-million-year-old Keystone Thrust, fossilized sand dunes, and the brilliantly colored Calico Hills. A brief stop at the Visitor Center allows you to explore fascinating exhibits and interactive learning tools, as well as a well-stocked gift store. This tour includes stunning geological features, ancient Native American pictographs, and diverse vegetation.

Tour includes: On/off road experience to remote locations, Certified Tour guides through the National Park Service, bottled water for each guest, and all taxes and gratuities.

Timing: Depart hotel lobby: 3:30 pm; Return to hotel: 7:30 pm

WEDNESDAY, MARCH 20



NANOS Annual Banquet

6:30 pm – 12:00 am

Join colleagues for a fun, casual evening of socializing, dining and dancing at the NANOS Annual Banquet. Dinner will take place in the Red Rock Ballroom, followed by dancing in the Charleston Ballroom. This event is complimentary for registered attendees; guests must purchase tickets for \$100 per person.

EXHIBITORS

NANOS Exhibitors

EMD Serono

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1

EMD Serono, the biopharmaceutical business of Merck KGaA, Darmstadt, Germany, is committed to transforming lives by discovering, researching and delivering meaningful therapies for people with difficult-to-treat diseases. With a history of vibrant science and technology that advanced treatments for illnesses like multiple sclerosis (MS), infertility and cancer, we're bold in our approach and dedicated to improving lives.

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(412) 963-6649

2

Neuro Kinetics, Inc. (NKI), the leader in clinical eye-tracking has the Science to See™ neuro-functional biomarkers invisible to the naked eye. Since 1984, NKI has supplied sensitive, precise, non-invasive I-Portal® tools for neuro-functional diagnostic testing and assessment to practicing neuro-ophthalmologists, neurologists, ENT's, etc. worldwide. Research interests: mTBI, Diabetic Retinopathy, others.

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3

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 so they can make important decisions on patient care. Our leading product brands include Audio-Digest, Lippincott, Ovid®, UpToDate®, and others.

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4

Teva Pharmaceuticals is a global leader in generic medicines, with innovative treatments in select areas, including CNS, pain and respiratory. We deliver high-quality generic products and medicines in nearly every therapeutic area to address unmet patient needs. We have an established presence in generics, specialty, OTC and API.

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5

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6

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(510) 402-4020

7

Quark Pharmaceuticals, Inc. is a clinical-stage pharmaceutical company that is a leader in the discovery and development of novel RNAi-based therapeutics.

Mayo Clinic Laboratories

www.mayocliniclabs.com
(800) 533-1710

8

Mayo Clinic Laboratories provides advanced laboratory testing and pathology services to support 4,000 health care organizations around the world. Complemented by collaborations with diagnostic and biotechnology companies, the department maintains a robust diagnostic test-development program, launching more than 150 new tests each year.

Diagnosys LLC

mail@diagnosysllc.com
(978) 458-1600

9

Neural health of the visual system can be judged by efficiency of electrical conduction. VEP & ERG Electrodiagnostics are used to detect problems with the optic nerve and visual pathway. Optic Neuritis, Optic Neuropathy, Tumors, Lesions, and Hypertension slow down transmission rates of Evoked Potentials. Combining VEP with macular Multifocal ERG presents a complete, functional representation of visual pathway conduction.

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electroCore.com
(888) 903-2673

10

electroCore, Inc. is a commercial-stage bioelectronic medicine company dedicated to improving patient outcomes through its platform non-invasive vagus nerve stimulation therapy initially focused on the treatment of multiple conditions in neurology and rheumatology. The company's initial targets are adjunctive use in preventive treatment of cluster headache and acute treatment of pain in migraine and episodic cluster headache.

Nextech

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Increase charting speed, improve workflow and streamline practice productivity. Nextech offers fully integrated, Ophthalmology-specific EMR and Practice Management solutions that allow Ophthalmologists to chart with unmatched speed and specificity. Designed specifically for Ophthalmology workflows, experience Nextech's intuitive navigation, adaptive template technology and enhanced drawing capabilities. Visit www.nextech.com to learn more.

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bebrf@blepharospasm.org
(409) 832-0788

12

The Mission of the Benign Essential Blepharospasm Research Foundation is to fund and promote medical research in the search for the cause and cure of blepharospasm, Meige, and other related disorders of the facial musculature, to provide support, education and referrals to persons with these disorders, and to disseminate information and serve as an authoritative resource to the medical community and the general public.
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13

Eschenbach is a leading manufacturer of vision enhancing products for patients with vision loss, contrast sensitivity or light sensitivity. Our products include magnifiers and contrast-enhancing eyewear which are available in diagnostic kits and allow you to offer solutions to patients who have had a stroke, TBI, macular degeneration or migraines.

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Novartis Pharmaceuticals Company

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Regenera Pharma

jordan@regenerapharma.com
+972-(0)8-931-6304

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Regenera, a clinical stage drug-development company, is developing RPh201 for the treatment of neurological disorders. RPh201 has been observed to restore neurological function in preclinical and clinical studies. Regenera is currently running a Phase 3 trial in NAION and a Phase 2 trial in Alzheimer's disease.

Sanofi Genzyme

17

Genentech

www.Gene.com

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Genentech is a leading biotechnology company that discovers, develops, manufactures and commercializes medicines to treat patients with serious or life threatening medical conditions. We are among the world's leading biotech companies, with multiple products on the market and a promising development pipeline as a proud member of the Roche Group.



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www.nanosweb.org



EDUCATION:

NANOS is the premier source of the Neuro-Ophthalmology education in North America.

- Discounted registration for the Annual Meeting offering up to 30 CME credits
- Access to past Annual Meeting materials
- Access to Neuro-Ophthalmology Curriculum on NOVEL



NETWORKING AND PROFESSIONAL DEVELOPMENT:

NANOS connects medical professionals who practice Neuro-Ophthalmology in their day-to-day clinical practice and provide opportunities for involvement on committees and the Board of Directors.

- Networking opportunities with fellow professionals
- Listing in the member directory
- Posting rights to the scientific discussion listservs, NANOSnet and YONOnet
- Leadership and volunteer opportunities on NANOS committees and the Board
- Voting rights
- Complimentary job postings and career planning tools



RESEARCH:

NANOS provides annual subscription to the Journal of Neuro-Ophthalmology (JNO) and access to Neuro-Ophthalmology Virtual Education Library (NOVEL).

- Subscription to JNO
- Abstract submission and presentation opportunities
- Research Assistance Program
- Research Grant programs



ADVOCACY:

NANOS represents the interests of Neuro-Ophthalmologists in the AMA House of Delegates, collaborates with AAO and AAN, and tackles issues that impact the subspecialty.

- Representation in the AMA House of Delegates, with access to the AMA policy-making bodies to present a unified position on issues pertaining to Neuro-Ophthalmology
- Involvement in the process of creating guidelines for the performance of different Neuro-Ophthalmology procedures in the workup of patients with neuro-ophthalmic disorders
- Advocacy and counsel on Neuro-Ophthalmology issues
- Practice management tips and tools for Neuro-Ophthalmologists.

What do you treasure most in your NANOS membership?

Before joining NANOS, I thought of medicine as something which was an individual endeavor. Since being part of this organization, I recognize we work together to build our specialty and honor the traditions of those who have set the foundation. – *John Pula*

The opportunity to interact with a community that has a practice just like you and hence understands the complexity of care and that sometimes diagnosis is not straightforward. – *A new member of NANOS*

NANOS membership has provided me with unparalleled networking and career-advancement opportunities while providing resources that also benefit my clinical practice. I truly look forward to the annual meeting each year — it's like a career family reunion! – *Devin Mackay*

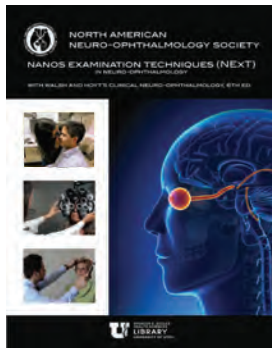
NANOS connects neuro-ophthalmologists not only in North America but all over the world, and informs the members about the new developments by the JNO and Annual Meeting. It also helps to solve difficult and interesting cases by discussing them through the NANOSNET. I am proud of being a member of NANOS. – *An International member of NANOS.*

I always find the annual meetings excellent. So nice to get CME hours that are relevant to what I do every day. – *Marybeth Grazko*

Visit www.nanosweb.org to become a member and get involved with NANOS today!



NANOS Examination Techniques (NExT) for Neuro-Ophthalmology



NANOS Examination Techniques (NExT) for Neuro-Ophthalmology is a structured electronic curriculum and database developed from collaborative efforts of North American Neuro-Ophthalmology Society (NANOS) Curriculum committee, NANOS Neuro-Ophthalmology Virtual Education Library (NOVEL) Committee, NOVEL Editorial Board, Eccles Health Sciences Library (University of Utah) and TDS Health. The goal of NExT is to enhance clinical examination skills of learners at all training levels who evaluate patients with visual and neurological complaints.

NANOS Examination Techniques (NExT) for Neuro-Ophthalmology

- 177 Neuro-Ophthalmology examination techniques across basic, intermediate, and advanced levels
- 14 sections and their sub-sections explain clinical techniques
- Contextual links to *Walsh & Hoyt's Clinical Neuro-Ophthalmology* textbook
- Each section includes text, videos, audio, slides, color figures, and PDFs
- Covers ACGME's 6 Core Competencies
- Applies to a range of healthcare specialties including ophthalmology, optometry, neurology, neurosurgery, otolaryngology, primary care, emergency and rehabilitation medicine

NANOS Illustrated Curriculum for Neuro-Ophthalmology

NANOS Illustrated Curriculum presents the most current information in a digital curation to supplement learning by residents, fellows, researchers, and clinicians. Content is updated quarterly and includes text, videos, audio, PowerPoint slides, color figures, and PDFs.

- Cross-searchability in STAT!Ref with titles such as...
 - *Eye Movement Disorders in Clinical Practice*, Wray
 - *Neuroimaging in Ophthalmology 2nd ed.*, Johnson, Policeni, Lee and Smoker
 - *Neurology of Eye Movements 5th ed.*, Leigh & Zee

Walsh & Hoyt's Clinical Neuro-Ophthalmology 6th Ed.

Walsh & Hoyt's is the most comprehensive reference on diagnosis and treatment of neuro-ophthalmologic diseases. Coverage includes major updates on genetics of diseases, diagnostic techniques, and treatment options.

Ask your librarian to add NExT and NANOS Illustrated Curriculum to their STAT!Ref subscription.

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2020

46TH ANNUAL MEETING

NANOS

Omni Hotels & Resorts
Amelia Island, Florida

March 7-12



NORTH AMERICAN NEURO-OPHTHALMOLOGY SOCIETY