

41ST Annual NANOS MEETING PROGRAM

February 21-26, 2015
Hotel del Coronado | San Diego, CA



Saturday, February 21

10:00 a.m. – 4:00 p.m.	San Diego Zoo Safari Park Excursion
2:00 p.m. – 8:00 p.m.	Registration
6:30 p.m. – 8:00 p.m.	Opening Reception (all are welcome)

Sunday, February 22

6:00 a.m. – 6:45 p.m.	Yoga Class
6:30 a.m. – 5:30 p.m.	Registration
6:30 a.m. – 7:45 a.m.	Breakfast
6:30 a.m. – 3:30 p.m.	Exhibits
7:45 a.m. – 5:00 p.m.	FRANK B. WALSH SESSION [7.25 CME] <i>Co-Chairs: Benjamin J. Frishberg, MD & Howard R. Krauss, MD</i> <i>Neuroradiologist: John Rhee, MD</i> <i>Neuropathologist: Yuki Takasumi, MD</i> <i>Additional Experts:</i> <i>Neurosurgeon: Daniel Kelly, MD</i> <i>Otorhinolaryngology/Head & Neck Surgeon: Chester Griffiths, MD, FACS</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. Necropsy, surgical pathology, and neuroimaging will help illuminate clinical points. Cases will be discussed from clinical, anatomic, radiologic and pathologic aspects with emphasis on diagnosis, pathophysiology and management. Audience participation is encouraged.

Upon completion of this program, 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) Effectively use radiologic procedures in diagnosis; 4) Recognize both the value and limitations of neuropathology; and 5) Discuss newly described diseases and their connection to Neuro-Ophthalmology.

11:50 a.m. – 1:10 p.m.	Lunch (Included)
12:15 p.m. – 1:15 p.m.	Membership Retention and Recruitment Meeting
5:15 p.m. – 5:45 p.m.	Frank B. Walsh Committee Meeting
5:15 p.m. – 5:45 p.m.	Fellowship Directors Meeting
5:45 p.m. – 6:15 p.m.	Fellowship Committee Meeting
5:30 p.m. – 6:30 p.m.	Members-in-Training Program and Reception (All Students, Residents and Fellows are encouraged to attend)
Evening	Dinner on your own

Monday, February 23

6:00 a.m. – 6:45 p.m.	Yoga Class
6:30 a.m. – 12:30 p.m.	Registration
6:30 a.m. – 7:30 a.m.	Breakfast
6:30 a.m. – 12:15 p.m.	Exhibits
7:00 a.m. – 7:30 a.m.	NOVEL Editorial Board/NOVEL Curriculum Committee
7:00 a.m. – 7:30 a.m.	Finance Committee Meeting
9:30 a.m. – 10:00 a.m.	Coffee Break
7:30 a.m. – 9:30 a.m.	Journal Club [2.0 CME] <i>Moderators: Rudrani Banik, MD & Christian Lueck, MD, PhD, FRACP</i>

Clinicians are obliged to keep themselves up to date with what is happening in their various fields of practice. Granted the enormous progress being made in all areas of medicine, keeping abreast of relevant clinical trials and other new developments can be very challenging. This symposium is designed to assist practicing Neuro-Ophthalmologists by providing reviews of recent developments in four different areas: new therapies for multiple sclerosis, the relationship between phosphodiesterase-5 (PDE-5) inhibitors and non-arteritic anterior ischemic optic neuropathy (NAION), the neuro-ophthalmological relevance of bariatric surgery, and obstructive sleep apnea (OSA). Each expert will present a critical review followed by a summary of take-home points, leaving time available for audience comments, questions and discussion.

Upon completion of this course, attendees will have the evidence base to allow them to understand: 1) The roles and relative positioning of the many new agents which have appeared (and some which are soon to appear) to treat multiple sclerosis; 2) The relationship between PDE-5 inhibitors and NAION; 3) Who should be referred for bariatric surgery and what complications may arise; and 4) The potential relevance of obstructive sleep apnea to Neuro-Ophthalmic conditions including idiopathic intracranial hypertension and NAION, how to detect OSA, and what to do if it is suspected.

The course is designed to address the following desirable physician attributes: Medical knowledge, practice-based learning and improvement, and patient care.

7:30 a.m. – 7:50 a.m.	New Therapies for Multiple Sclerosis, Ari Green, MD
7:50 a.m. – 8:00 a.m.	Q & A
8:00 a.m. – 8:20 a.m.	The Relationship Between PDE-5 Inhibitors and NAION, Howard Pomeranz, MD, PhD
8:20 a.m. – 8:30 a.m.	Q & A
8:30 a.m. – 8:50 a.m.	Bariatric Surgery and the Neuro-Ophthalmologist, Heather Moss, MD, PhD
8:50 a.m. – 9:00 a.m.	Q & A
9:00 a.m. – 9:20 a.m.	Obstructive Sleep Apnea and Neuro-Ophthalmic Conditions, Clare Fraser, MD
9:20 a.m. – 9:30 a.m.	Q & A
9:30 a.m. – 10:00 a.m.	Coffee Break
10:00 a.m. – 12:00 p.m.	Hot Topics: To Boldly Go Where No Neuro-Ophthalmologist has Gone Before [2 CME] <i>Moderators: Marc Dinkin, MD & Rod Foroozan, MD</i>

With every new observation and new technology comes the question: Should Neuro-Ophthalmologists change their understanding of a disease or their practice patterns or stick with the tried and true teachings of old? The purpose of this Hot Topics session is to address some of the more controversial questions of Neuro-Ophthalmology practice: Is

there really a distinct syndrome of chronic relapsing inflammatory optic neuropathy? Is ocular fundus photography the wave of the future or are Neuro-Ophthalmologists better off teaching emergency room physicians old-fashioned direct ophthalmoscopy? Can Neuro-Ophthalmologists use the results of pharmacologic testing and examination findings to focus their imaging protocol for patients with Horner syndrome or should they maximize sensitivity with a “kitchen sink” approach? And finally, does the discovery of optic disc edema in astronauts undergoing long-duration space flight reflect a localized increase in retrolaminar pressure due to microgravity, and if so, can this knowledge inform the management of earth-bound patients with papilledema?

Upon conclusion of this program, participants should be able to: 1) Approach the diagnosis and treatment of the clinical entity of chronic relapsing inflammatory optic neuropathy (CRION); 2) Understand the data supporting the use of ocular fundus photography in the diagnosis and management of neuro-ophthalmological disorders in the emergency room and other clinical settings; 3) Outline an approach to imaging of patients with Horner syndrome; and 4) Understand the changes affecting the optic nerve in the settings of high altitude and long-duration space flight.

This course is designed to procure the following desirable physician attributes: Employ evidence-based practice, work in interdisciplinary teams, and medical knowledge.

10:00 a.m. – 10:20 a.m. **Autoimmune Optic Neuropathies (Sorting it All Out)**, *Leonard Levin, MD, PhD*

10:20 a.m. – 10:30 a.m. **Q&A**

10:30 a.m. – 10:50 a.m. **Non-Mydriatic Fundus Photography**, *Beau Bruce, MD*

10:50 a.m. – 11:00 a.m. **Q&A**

11:00 a.m. – 11:20 a.m. **Imaging of Horner Syndrome**, *Grant Liu, MD*

11:20 a.m. – 11:30 a.m. **Q&A**

11:30 a.m. – 11:50 a.m. **Neuro-ophthalmic Complications of High Altitude and Space**, *Andrew Lee, MD*

11:50 a.m. – 12:00 p.m. **Q&A**

12:15 p.m. – 12:45 p.m. Archives Committee Meeting

12:15 p.m. – 1:30 p.m. Women in Neuro-Ophthalmology (WIN) Meeting

An optional lunch selection will be available. All are welcome to attend even without the purchase of a lunch.

3:00 p.m. – 5:00 p.m. Young Neuro-Ophthalmologist (YONO) Forum

3:00 p.m. – 4:00 p.m. **All you ever wanted to know about becoming a Neuro-Ophthalmologist: For trainees, residents, and fellows**

4:00 p.m. – 5:00 p.m. **So now I have a job, where do i go from here? For junior attendees in private practice or academics in their first 5 years out of training**

While all are welcome to attend, this forum is specifically designed for residents, fellows and Neuro-Ophthalmologists in the early years of their career. The YONO Committee has incorporated last year's positive, constructive feedback and present a re-vamped format. The revised forum will have multiple rotating roundtable discussions in small groups facilitate by YONOs, who have just walked in your footsteps, to mid-career folks, who can shed light on the next steps ahead.

1:30 p.m. – 3:30 p.m. Optional Symposium: International Neuro-Ophthalmology [2 CME]

Moderators: Christian Lueck, MD, PhD, FRACP and Klara Landau, MD

In recent years, about 20% of the attendees at NANOS meetings live and practise in parts of the world outside North America. “International” neuro-ophthalmology differs from “North American” neuro-ophthalmology in several ways. For

Monday, February 23 (continued)

example, the patterns and prevalence of the various diseases vary with geographic location and, there is enormous variability in local facilities for clinical service delivery and research.

This symposium is designed to showcase international aspects of neuro-ophthalmology. It will focus on several different areas including the different profiles of neuro-ophthalmic disease in other parts of the world and the variable levels of service provision and education, particularly in the developing world. The symposium will provide the opportunity to foster international collaboration and increase the involvement of NANOS members at an international level.

The course is designed to address the following desirable physician attributes: medical knowledge, patient care, interpersonal communication, and professionalism.

1:30 p.m. – 2:00 p.m.	Neuro-Ophthalmology in South East Asia , <i>John Crompton MBBS FRANZCO FRACS</i>
2:00 p.m. – 2:12 p.m.	Neuro-Ophthalmology in Europe (France) , <i>Caroline Tilikete, MD PhD</i>
2:12 p.m. – 2:24 p.m.	Neuro-Ophthalmology in Africa (East Africa) , <i>Mike Burdon FRCOphth FRCP (Edin)</i>
2:24 p.m. – 2:36 p.m.	Neuro-Ophthalmology in the Middle East (Israel) , <i>Ruth Huna-Baron MD</i>
2:36 p.m. – 2:48 p.m.	Neuro-Ophthalmology in South America (Brazil) , <i>Mário Monteiro MD PhD</i>
2:48 p.m. – 3:00 p.m.	Neuro-Ophthalmology in Asia (Japan) , <i>Satoshi Kashii MD</i>
3:00 p.m. – 3:10 p.m.	The history of the International Neuro-Ophthalmology Society , <i>Klara Landau, MD FEBO</i>
3:10 p.m. – 3:30 p.m.	Q & A

2:30 p.m. – 4:30 p.m. **Optional Symposium: Hands on Workshop Utilizing the Prism Cover Test and Prism Therapeutics for the Diplopic Patient [2 CME]**
Moderator: Mitchell Strominger, MD

Evaluation and treatment of the diplopic patient is time consuming and demanding. Understanding how to perform the prism cover test, determining fusional amplitudes, differentiating phoria from tropia, use of the prism adaptation test, placing press on prisms, and prescribing prisms is an art. Unfortunately, many Neuro-Ophthalmologists have limited training in this area. During this workshop, short cases of patients with diplopia will be presented. Afterwards, the audience will divide up into stations run by strabismologists and orthoptists demonstrating the prism cover test, alternate prism cover test, manipulation of basic and complex prisms, prism adaptation testing, prescribing and placement of press on or ground in prisms, and indications for strabismus surgery as it pertains to each case.

Upon completion of this program, participants should be able to: 1) Understand the evaluation of diplopic patients where prisms are useful in diagnosis and treatment; 2) Gain knowledge about the different types of prisms available and their utility in examining and treating patients with diplopia; and 3) Obtain practical knowledge of the different prism cover tests and their use in differentiating phoria from tropia.

2:30 p.m. – 2:35 p.m.	Introduction of the Faculty and Review of Symposia Learning Objectives , <i>Mitchell Strominger, MD</i>
2:35 p.m. – 2:45 p.m.	The Prism Cover Yest , <i>Shelley Klein, CO</i>
2:45 p.m. – 2:55 p.m.	Prescribing incorporated or Fresnel Prisms , <i>Mitchell Strominger, MD</i>
2:55 p.m. – 3:00 p.m.	Brief case presentations: Divergence Insufficiency, Convergence Insufficiency, 4th Nerve Palsy, 6th Nerve Palsy, Thyroid Orbitopathy, Post Cataract Extraction Vertical Diplopia , <i>Mitchell Strominger, MD</i>
3:00 p.m. – 4:30 p.m.	Break-Out Stations with Hands-On Case Demonstrations , <i>Mitchell Strominger, MD, Shelley Klein, CO, Paul Phillips, MD, David Granet, MD, Shira Robbins, MD, and Erika Castro, CO</i>

Monday, February 23 (continued)

2:00 p.m. – 4:30 p.m.

Consortium of Pediatric Neuro-Ophthalmologists Meeting (CPNO)

Facilitator: Grant Liu, MD

The Consortium of Pediatric Neuro-Ophthalmologists (CPNO) was created to promote and advance pediatric neuro-ophthalmology by performing multi-center studies, providing a forum for research and clinical topics, and creating a sense of community to those specializing in pediatric neuro-ophthalmology. The meeting is open to anyone interested in children with neuro-ophthalmic problems. During this session multi-center research studies will be discussed, and cases relevant to these projects will be presented.

5:00 p.m. – 7:00 p.m.

SCIENTIFIC PLATFORM PRESENTATIONS: SESSION I [2 CME]

Tuesday, February 24

6:00 a.m. – 6:45 p.m.

Yoga Class

6:30 a.m. – 12:30 p.m.

Registration

6:30 a.m. – 7:30 a.m.

Breakfast

6:30 a.m. – 12:15 p.m.

Exhibits

6:30 a.m. – 7:30 a.m.

JNO Editorial Meeting

7:00 a.m. – 7:30 a.m.

YONO Committee Meeting

7:00 a.m. – 7:30 a.m.

CME Committee Meeting

7:30 a.m. – 12:00 p.m.

SCIENTIFIC PLATFORM PRESENTATIONS: SESSION II [3.75 CME]

9:15 a.m. – 9:30 a.m.

Update: The Journal of Neuro-Ophthalmology

Lanning Kline, MD, Editor-in-Chief & Jason Roberts, PhD, Managing Editor

9:30 a.m. – 10:00 a.m.

Coffee Break

12:15 p.m. – 4:15 p.m.

The USS Midway Tour

12:15 p.m. – 4:15 p.m.

San Diego Zoo Excursion

12:15 p.m. – 5:15 p.m.

Balboa Park/Museums Excursion

12:15 p.m. – 5:00 p.m.

NANOS Board Meeting

6:00 p.m. – 9:30 p.m.

POSTER SESSION

Guests are welcome. Event is complimentary for attendees but guests must purchase tickets. Tickets are available for purchase for \$50 per person.

Wednesday, February 25

6:30 a.m. – 12:30 p.m.

Registration

6:30 a.m. – 7:30 a.m.

Breakfast

7:00 a.m. – 7:30 a.m.

Annual NANOS Business Meeting (all encouraged to attend)

7:30 a.m. – 9:30 a.m.

Sizzling Hot Topic: The IIHTT: What Have We Learned? [2 CME]

Moderators: Michael Wall, MD & Kathleen Digre, MD

This symposium is designed to give NANOS members detailed results and discussion of the IIHTT. The primary and secondary study outcomes including adverse events and treatment failures will be discussed. The 6 month outcome of

Wednesday, February 25 (continued)

changes in the OCT and quality of life measures will be presented along with the effects of weight loss in the context of all of the findings.

Upon completion of this course, participants should be able to: 1) Discuss the four main outcomes to the IIHTT (visual field MD, papilledema grade, QoL and CSF pressure; 2) Know when acetazolamide-plus-diet should be considered as a treatment; 3) Know 3 side effects to be aware of in recommending acetazolamide therapy; 4) Describe key OCT findings in IIH; 5) Recommend weight loss to patients with IIH and understand its importance in treatment of IIH; and 6) List 3 aspects of quality of life that will need to be addressed in patients with IIH.

7:30 a.m. – 8:10 a.m. **Primary Outcome, OCT, and Major Take Home Messages, Michael Wall, MD**

8:00 a.m. – 8:10 a.m. **Q&A**

8:10 a.m. – 8:20 a.m. **Quality of Life at 6 months, Kathleen Digre, MD**

8:20 a.m. – 8:25 a.m. **Q&A**

8:25 a.m. – 8:35 a.m. **Treatment Failures, Julie Falardeau, MD**

8:35 a.m. – 8:40 a.m. **Q&A**

8:40 a.m. – 8:50 a.m. **Side Effects and SAEs, Martin ten Hove, MD, MEng, FRCS(C)**

8:50 a.m. – 8:55 a.m. **Q&A**

8:55 a.m. - 9:05 a.m. **Weight Loss Outcomes, Betty Kovacs, MS, RD**

9:05 a.m. – 9:10 a.m. **Q&A**

9:10 a.m. – 9:30 a.m. **Panel Discussion**

9:30 a.m. – 9:45 a.m. Coffee Break

9:45 a.m. – 11:00 a.m. Mechanical Causes of Strabismus [1.25 CME]

Moderators: Stacy Pineles, MD & Nicholas Volpe, MD

This symposium will present a case initiated discussion of a variety of topics covering the entire spectrum of mechanical, non-neurogenic strabismus in adults and children. Speakers will discuss various broad etiologic categories of mechanical strabismus, focusing on recent literature, state-of-the-art diagnostic techniques, favorite methods of distinguishing mechanical and neurogenic strabismus, anecdotal experience, and treatment options. Topics will be introduced by a short clinical case illustrating the overlap of mechanical and neurogenic strabismus with careful emphasis on differential diagnosis.

Upon completion of this course, attendees will have an increased understanding of mechanical causes of strabismus and understand how to differentiate mechanical from neurological causes of strabismus. Specifically, they will understand: 1) Emerging concepts in the pathogenesis of “divergence insufficiency” esotropia as a form of mechanical strabismus; 2) How various ocular surgeries can be complicated by post-operative restrictive strabismus; 3) Pathological processes of the eye muscles that can cause vertical and horizontal restrictive strabismus; 4) The presentation of various congenital processes that cause mechanical strabismus in children and adults; and 5) How strabismus from orbital and peri-orbital disease presents and differs from neurologic causes of strabismus.

9:45 a.m. – 10:15 a.m. **Sagging Eye Syndrome and Mechanical Causes of Distance Esotropia in the Elderly, Joseph L. Demer MD, PhD**

Case: Vertical Strabismus after Glaucoma Valve – Is it a Skew Deviation?

10:15 a.m. – 10:24 a.m. **Pathological Processes of Eye Muscles That Result in Mechanical Strabismus, Stacy Pineles, MD**

Case: Bilateral Upgaze Restriction from CFEOM – is it Supranuclear Upgaze Palsy?

Wednesday, February 25 (continued)

10:24 a.m. – 10:33 a.m. **Mechanical Strabismus After Ocular Surgery**, *Michael Siatkowski, MD*

Case: Acquired Esotropia with Abduction Deficit in an adult from Thyroid Disease – Is it a Sixth Nerve Palsy?

10:33 a.m. – 10:42 a.m. **Congenital Processes that Result in Restrictive Strabismus**, *Gena Heidary MD, PhD*

Case: Hypertropia Worse in Contralateral Gaze from a Mucocele – Is it a Fourth Nerve Palsy?

10:42 a.m. – 10:51 a.m. **Orbital and Periorbital Disease Resulting in Mechanical Strabismus**,
Nicholas Volpe, MD

10:51 a.m. – 11:00 a.m. **Panel Discussion**

11:00 a.m. – 11:10 a.m. NOVEL Update

11:10 a.m. – 12:00 p.m. Jacobson Lecture [1 CME]
Presenter: Thomas Slamovits, MD

12:15 p.m. – 1:30 p.m. Research Committee Meeting Luncheon

1:30 p.m. – 3:30 p.m. Optional Symposium: IIHTT-Weight Loss: Myths to Reality [2 CME]
Moderator: Kathleen Digre, MD
Speaker: Betty Kovacs, MS, RD

The recently published idiopathic intracranial hypertension treatment trial (IIHTT) recommends weight loss along with acetazolamide to treat idiopathic intracranial hypertension. While most Neuro-Ophthalmologists advise weight loss to patients who are overweight or obese, most are unsure of what to recommend for achieving this. Successful weight loss and maintenance requires diet, physical activity, and behavior modification, along with a strong support system. Most diets fail to provide this and doctors are not trained to address all of these so patients are unsuccessful with long-term maintenance. This session will review the basic principles of weight loss including the physiology, the roles of diet, exercise, and behavior modification. Differences between the facts vs fiction of weight loss and maintenance will be discussed. The session will finally review evidence-based weight loss strategies and programs with the goal that each Neuro-Ophthalmologist has a practical action plan that fits their type of clinic population.

At the conclusion of this program participants will be able to: 1) Understand basic principles of weight loss—the myths and realities behind them; 2) Address what the IIHTT taught us about weight loss and what works for women and men with IIH; 3) Be able to list reputable weight loss strategies and programs and find these resources; and 4) Have a practical action plan on how to approach weight loss in their practice setting (private practice, academic, multi-specialty).

2:30 p.m. – 5:30 p.m. Optional Symposium: Eye Movement and Vestibular Skills Transfer Session [3 CME]
Moderators: Janet Rucker, MD and David Newman-Toker, MD, PhD

Dizziness and visual symptoms resulting from abnormal eye movements are common chief complaints in a Neuro-Ophthalmology practice and etiologies range from benign to ominous. The examination skill set required for optimal localization and accurate diagnosis demands familiarity with pattern recognition, special techniques for elicitation of exam signs, and identification of subtle abnormalities. Further, the ideal exam skill set for such symptoms encompasses overlapping areas of neuro-ophthalmologic and neuro-otologic expertise. This skills transfer session will provide a hands-on learning opportunity, supplemented with video examples of pathology, during participant rotation through stations for each of the following skills: vestibular ocular reflex assessment, positional testing of posterior and horizontal semicircular canals, provocative testing techniques for nystagmus elicitation, gaze testing of dynamic eye movements such as saccades and smooth pursuit, and interpretation of nystagmus patterns.

Wednesday, February 25 (continued)

At the conclusion of this program, participants should be able to: 1) Competently perform core neuro-vestibular examination skills; 2) Distinguish peripheral vestibular disorders from brainstem and cerebellar disease based on examination findings; and 3) Correctly identify nystagmus patterns.

2:30 p.m. – 2:55 p.m.	Introduction to the Vestibular Exam (with ARS), <i>David Newman-Toker, MD</i>
2:55 p.m. – 4:50 p.m.	Hands-on Training Sessions (6 station rotations, 15 minutes each / 2 minutes to rotate with additional time to revisit stations after formal rotations) VOR Testing, <i>David Newman-Toker, MD, PhD and John Pula, MD</i> Positional Testing of Posterior Semicircular Canals, <i>Eric Eggenberger, DO and Preston Calvert, MD</i> Positional Testing of Horizontal Semicircular Canals, <i>Luis Mejico, MD and Kevin Kerber, MD</i> Provocative Testing (nystagmus elicitation), <i>Jorge Kattah, MD and Catherine Cho, MD</i> Gaze Testing (ocular alignment, saccades, smooth ocular pursuit, and smooth eye-head tracking), <i>Janet Rucker, MD and Matthew Thurtell, MD</i> Nystagmus Interpretation, <i>Mark Dinkin, MD and Mark Morrow, MD</i>
4:50 p.m. – 5:30 p.m.	Unknown Case Presentation and Summary, <i>Jorge Kattah, MD</i>
4:30 p.m. – 5:30 p.m.	Abstract Committee Meeting
4:30 p.m. – 5:30 p.m.	International Relations Committee Meeting
6:45 p.m. – 10:00 p.m.	Annual NANOS Reception and Banquet Event is casual.

Thursday, February 26

6:30 a.m. – 12:30 p.m.	Registration
6:30 a.m. – 7:30 a.m.	Breakfast
8:05 a.m. – 11:30 a.m.	Glaucoma: The Other Optic Neuropathy [4 CME] <i>Moderators: Helen Danesh-Meyer, MBChB, MD, FRANZCO & Mark Moster, MD</i>

This symposium is a combined program of AGS (American Glaucoma Society) and NANOS aiming to clarify the relationship between glaucoma and other optic neuropathies.

The structure of the symposium is divided into 3 sections: 1) Establishing whether there is a difference between high tension glaucoma and normal tension glaucoma. This section will explore the contribution of intraocular pressure to glaucoma as well other factors that might be contributory; 2) Differentiating glaucoma from other optic neuropathies and deciding whom to image with MRI; and 3) Looking at glaucoma as a neurodegenerative disorder and reviewing issues of neuroprotection and neuroregeneration.

Upon completion of this symposium, attendees should be able to: 1) Identify important contributions to glaucomatous damage other than intraocular pressure; 2) Identify which glaucoma patients should be evaluated for other causes of optic neuropathy; and 3) Identify areas of research ripe for collaboration between glaucoma and neuro-ophthalmologic researchers.

8:05 a.m. – 8:10 a.m.	Introduction
8:10 a.m. – 9:42 a.m.	IOP and Other Issues in Glaucoma
8:10 a.m. – 8:17 a.m.	Case: Is it Glaucoma, <i>Marlene Moster, MD</i>
8:17 a.m. – 8:25 a.m.	What is Glaucoma: Clinically, Functionally, and Pathologically?, <i>Paul Kaufman, MD</i>

Thursday, February 26 (continued)

- 8:25 a.m. – 8:33 a.m. **The Role of IOP in Glaucoma**, Roy Wilson, MD, MS
8:33 a.m. – 8:41 a.m. **Is Normal Tension Different than High Tension: Phenotypic Differences**, Jonathan Myers, MD
8:41 a.m. – 8:49 a.m. **Vascular/Autonomic Dysfunction**, Lou Pasquale, MD
8:49 a.m. – 8:57 a.m. **Genetic/Epidemiologic Factors**, Janey Wiggs, MD, PhD
8:57 a.m. – 9:05 a.m. **Role of Intracranial Pressure in Glaucoma**, Timothy McCulley, MD
9:05 a.m. – 9:13 a.m. **Miscellaneous (Autoimmune, Scleral Factors/Myopia, Sleep Apnea)**, Matin Wax, MD
9:13 a.m. – 9:27 a.m. **Pro and Con Debate**, Pro: Robert Weinreb, MD; Con: Robert Ritch, MD
9:27 a.m. – 9:42 a.m. **Discussion**

9:42 a.m. – 10:12 a.m. Break

10:12 a.m. – 11:17 a.m. Clinical Differences Between Glaucoma and Other Optic Neuropathies

- 10:12 a.m. – 10:20 a.m. **The Morphological Difference Between Glaucoma and Other Optic Neuropathies**, Claude Burgoyne, MD
10:20 a.m. – 11:17 a.m. **Case Presentations**, Helen Danesh Meyer, MD, MBChB, FRANZCO and Mark Moster, MD
Panel: Peter Savino, MD, Valerie Biousse, MD, Anne Coleman, MD, PhD, and Richard Lee, MD, PhD

11:17 a.m. – 12:32 p.m. The Neurology of Glaucoma

- 11:17 a.m. – 11:25 a.m. **Glaucoma as a Neurological Disease**, Helen Danesh-Meyer, MD, MBChB, FRANZCO
11:25 a.m. – 11:33 a.m. **The Visual Brain in Glaucoma and Other Optic Neuropathies**, David Calkins, PhD
11:33 a.m. – 11:41 a.m. **What are the Common Neurodegenerative Pathways Relevant to Glaucoma?** Stuart McKinnon, MD, PhD
11:41 a.m. – 11:49 a.m. **Neuro-Protection in Glaucoma: Where are We Going?** Leonard Levin, MD, PhD
11:49 a.m. – 11:57 a.m. **Is Neuroregeneration a Viable Treatment for Glaucoma**, Jeffrey Goldberg, MD, PhD
11:57 a.m. – 12:05 p.m. **Mitochondrial Disease and Glaucoma**, Alfredo Sadun, MD, PhD
12:05 p.m. – 12:19 p.m. **Debate: Non-IOP Lowering Therapies will be the Future of Glaucoma Management.** Pro: Harry Quigley, MD; Con: Chris Girkin, MD
12:19 p.m. – 12:32 p.m. **Q & A**

2:00 p.m. – 5:30 p.m. Glaucoma/Neuro-Oph Optic Nerve Research Meeting [3.5 CME]

****Please note that the CME credits for this session will be provided through AGS.**

NANOS will be collaborating with AGS for an afternoon session

Make plans to attend the afternoon AGS/NANOS session. The afternoon session will be FREE for NANOS members. In the NANOS registration process, members will have the opportunity indicate whether they wish to attend NANOS/AGS afternoon session. The afternoon AGS session will include access to the scientific session featuring two symposia; 1) The Pathogenesis of Optic Neuropathy: Glaucoma vs. The Rest and; 2) Optic Nerve Imaging: New Parameters and Techniques, a paper presentation session, poster viewing and an afternoon break.

ACCREDITATION: This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education (ACCME) through sponsorship of the North American Neuro-Ophthalmology Society. NANOS is accredited by the ACCME to provide continuing medical education (CME) for physicians. The North American Neuro-Ophthalmology Society NANOS designates this live activity for a maximum of 34.25 *AMA PRA Category 1 Credit(s)*™. Physicians should claim only the credit commensurate with the extent of their participation in the activity. **The CME evaluation will be online only. The link with details will be posted on the attendee portal and can be completed during the meeting or up to one week after the program. Upon completion, an official CME form will be emailed to you two weeks after the meeting.**

REGISTRATION INFORMATION

ON-SITE REGISTRATION HOURS:

Saturday 2:00 p.m. – 8:00 p.m.
Monday–Thursday 6:30 a.m. – 12:30 p.m.

KOSHER: *The Place Catering* offers private Kosher meal options that be delivered directly to the Hotel del Coronado. See information below to learn more about their services and to place your orders.

The Place Catering

P: (858) 549-7000

E: theplace@sandiegokosher.com

W: <http://www.sandiegokosher.com/#services>

SPECIAL REQUIREMENTS: NANOS fully complies with the legal requirements of the Americans with Disabilities Act and the rules and regulations thereof.

GROUND TRANSPORTATION

Travel time between the airport and the hotel is approximately 20 minutes. To arrange for private car transportation, please contact LaCosta Limousine at 1-888-299-5466. Approximate taxi fare from the San Diego International Airport to the Hotel del Coronado is \$30 each way.

[Click HERE](#) for additional transportation options, directions from the airport, and further details.

SOCIAL FUNCTIONS

SATURDAY, FEBRUARY 21

San Diego Zoo Safari Park- \$110

10:00 a.m. – 4:00 p.m.

***Price includes admission and transportation. Departure location will be from the Orange Avenue lawn which is located to the left of the Hotel del Coronado front entrance.**



With over 2,000 acres of wildlife preserve including upwards of 4,000 rare and endangered animals housed in habitats replicating their native homelands, the San Diego Zoo Safari Park is a offering education and entertainment. Nairobi Village is home to two dynamic interactive exhibits: the Hidden Jungle, where you can mingle with exotic butterflies and tropical hummingbirds, and Lorikeet Landing, a walk-through aviary for feeding nectar to rainbow lorikeets. Nairobi Village also features an expansive gorilla grotto for a large troop of lowland gorillas and the Animal Care Center, which encompasses a baby animal nursery, exhibits for koalas and small primates, and a petting corral with exotic deer, antelope, and goats.

The Africa Tram Safari is an experience aboard an open air tram that runs on bio diesel. Complete with an interactive island research station, primate island, giraffe feeding station, and safari surprises, it brings people closer to the animals in a way not even an African safari can replicate! The Journey into Africa tour is designed to give you a glimpse of the amazing diversity found there.

SOCIAL FUNCTIONS (continued)

Opening Reception

6:30 p.m. – 8:00 p.m.

Please join us for the Opening Reception on the Sun Deck at Hotel del Coronado. All are welcome to attend the opening reception, which features complimentary cocktails and several food stations.

SUNDAY, FEBRUARY 22

Members-in-Training Program and Reception

5:30 p.m. – 6:30 p.m.

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

MONDAY, FEBRUARY 23

WIN Luncheon

12:15 p.m. – 1:30 p.m.

Join your colleagues for the Women in Neuro-Ophthalmology (WIN) Luncheon & Meeting. The lunch option listed below will be available for purchase in your registration for \$35; however, all are welcome to attend even without the purchase of a lunch.

WIN Lunch Option:

- California Citrus Salad with Orange Balsamic Vinaigrette
- Vegetable and Cheese Ravioli, Wild Mushrooms and Asparagus Cream, Asiago cheese Sauce
- Fresh Rolls and Butter
- Seasonal Fruit Panna Cotta
- Coffee, Decaffeinated Coffee, Specialty 7 Herbal Teas, Ice Tea

Young Neuro-Ophthalmologist Forum (NEW FORMAT!)

1:00 p.m. – 3:00 p.m.

While all are welcome to attend, this forum is specifically designed for residents, fellows and Neuro-Ophthalmologists in the early years of their career. The YONO Committee has incorporated last year's positive, constructive feedback and present a re-vamped format. The revised forum will have multiple rotating roundtable discussions in small groups facilitated by YONOs, who have just walked in your footsteps, to mid-career folks, who can shed light on the next steps ahead.

- 3:00 p.m. – 4:00 p.m. **All you ever wanted to know about becoming a Neuro-Ophthalmologist: For trainees, residents, and fellows**
- 4:00 p.m. – 5:00 p.m. **So now I have a job, where do I go from here? For junior attendees in private practice or academics in their first 5 years out of training**

TUESDAY, FEBRUARY 24

***The USS Midway Tour, San Diego Zoo, and Balboa Park/Museum pricing includes admission, transportation, and a boxed lunch. All excursion will depart from the Orange Avenue lawn which is located to the left of the Hotel del Coronado front entrance.**

USS Midway Tour - \$75

12:15 p.m. – 4:15 p.m.

Guests will have a one-in-a-lifetime opportunity as they step onto a genuine Naval Aircraft Carrier for a fascinating tour of the USS Midway. A coveted opportunity, the privilege of actually boarding one of these impressively immense ships is truly unique. Over ten football fields in length, the USS Midway was built as the largest seagoing vessel in the world—the first ship too big to cross the Panama Canal. Her patriotically inspiring history in service stands as a testament to United States military achievement. Guests will have the opportunity to explore the USS Midway, on a self-guided audio tour featuring 60 exhibits including 24 restored aircraft. The Midway docents, many of who are Midway veterans, will provide interactive, storytelling at many of the areas on the ship. Wear comfortable shoes, suitable for stairs and ladders; a light jacket is recommended on the Flight Deck.



SOCIAL FUNCTIONS (continued)

San Diego Zoo - \$100

12:15 p.m. – 4:15 p.m.

The San Diego Zoo is renowned all over the world for its expansive collection of the rarest animals on earth housed in an intimate setting of exotic botanical foliage. The visit will include a narrated bus safari, taking you into the lush, sweeping canyons and countless animal enclosures. Take a plunge into the arctic as you get a glimpse of the Polar Bears dancing in the cold ice-filled waters. Otherwise, take a stroll through Tiger River, a misty path where along the way you'll encounter hundreds of reptiles and mammals and possibly come with-in a clawing distance of a Sumatran Tiger. See the spectacular Gorilla Tropics, one of the most popular exhibits. Guests can board a thrilling ride on the skyfari aerial tram and enjoy a panoramic, bird's eye perspective. Apart from wildlife, the park houses an extensive and highly acclaimed collection of plants orchids, palms, coral trees, and more.

Balboa Park/Museums - \$110

12:15 p.m. – 5:15 p.m.



Balboa Park is San Diego's premier colonial landmark. Stretching over 1,400 acres nestled in the hills of downtown, this urban park houses 85 cultural and recreational organizations, including seventeen museums. Balboa Park is a cultural Mecca, the largest concentration of museums and cultural institutions outside The Mall in Washington, D.C. A day pass with admission to your choice of any (4) museums – each guest can customize their day and select the museums they personally wish to visit. The museums include: Natural History Museum, Reuben H. Fleet Science Center, Mingei International Art Museum, Museum of Photographic Arts,

Air & Space Museum, Centro Cultural de la Raza; World Beat Center, Hall of Champions Sports Museum, Model Railroad Museum, Automotive Museum, and the Veteran's Memorial Center Museum.

TUESDAY, MARCH 4

Poster Session

6:00 p.m. – 9:30 p.m.

This year's Poster Session will include a reception and dinner. Event is complimentary for attendees, but guests must purchase tickets. Tickets are available for purchase for \$50 per person. The buffet will open at 6:00 p.m. Authors will present their posters between 6:45 p.m. and 8:15 p.m. Odd numbered posters: 6:45 p.m. – 7:30 p.m., Even numbered posters: 7:30 p.m. – 8:15 p.m.

WEDNESDAY, FEBRUARY 25

Annual NANOS Reception and Banquet

6:45 p.m. – 10:00 p.m.

The Annual Meeting Banquet will take place on the Windsor Lawn and beach front of the Hotel del Coronado. Join your colleagues for a fun, casual evening of socializing, dining and beach side bonfires at the NANOS Annual Reception and Banquet. Guests and children are welcome. Event is complimentary for attendees but guests must purchase tickets. Tickets are available for purchase for \$100 per person. Beach appropriate shoes are highly recommended.

GUEST MEETING LOUNGE AREA

Available 9:00 a.m. – 11:00 a.m.

Sunday February 21-Wednesday, February 25

Relax and enjoy the company of other guests in the 'Garden Patio' located in the center of the Hotel del Coronado.