Transactions of the American Ophthalmological Society Volume CXI

One Hundred and Forty-Ninth Annual Meeting

The Lodge at Torrey Pines
La Jolla, California
2013

Published for the
American Ophthalmological Society

San Francisco, California 2013

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THE AMERICAN OPHTHALMOLOGICAL SOCIETY 2013

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Melvin G. Alper, MD

By *Steven A. Newman, MD*

On Saturday, February 23, 2013, the American Ophthalmologic Society, generations of Washington trainees, and ophthalmology in general lost Melvin G. Alper. Melvin Gustavus was born in Baltimore, Maryland, on November 13, 1921. He was the oldest of two sons who moved with his parents to rural Wytheville in southwest Virginia at a young age. Growing up in an apartment over his parents' general store, Mel was all boy. After elementary school in Wytheville, he attended junior high school junior school in Baltimore and subsequently, August Military Academy at Fort Defiance, Virginia, for high school. He always considered himself a Virginian and completed his post-graduate education at the University of Virginia. True to his mother's directions, "Alpers always got A's", Mel graduated Phi Beta Kappa from the University of Virginia with a B.A. in 1943, where he was a member of the Raven Society and enjoyed being on the boxing team, and from the University of Virginia School of Medicine in 1945, where he was a member of Alpha Omega Alpha. As many graduates of the University of Virginia before him, including Walter Reed and William Holland Wilmer, Mel chose to obtain his post-graduate training in the Northeast. He did a rotating internship at Philadelphia General Hospital and a surgical internship at Johns Hopkins Hospital, interrupted by a call to military service between 1946 and 1948, rising to Captain and flight surgeon. His service continued as a member of the Society of Military Surgeons and consultant to the Uniform Services Medical University. He completed his general surgery training in Washington, D.C., and following his exposure to the Harvard University basic science course in ophthalmology in 1950 and 1951, he completed his residency in ophthalmology at the University of Pennsylvania with Harold Scheie, who considered him one of the most outstanding residents trained at Penn. He was certified by the American Board of Ophthalmology in 1954.

Returning to Washington, D.C., Mel was one of the founders of what is now the oldest continuous ophthalmology group in Washington: Washington Eye Physicians and Surgeons. His connection with his practice never faltered. Even after he retired, his name stood on the entrance. Those who joined him often remained for decades. In spite of his private practice, Mel never lost his curiosity and academic interests. Experience with neurotrophic keratitis at the University of Pennsylvania led him to perform experiments in monkeys, looking at development of corneal pathology following legions involving the trigenminal nerve, the basis of his AOS thesis, "The Anesthetic Eye and Investigation of Changes in the Anterior Ocular Segment of the Monkey Caused By Interrupting the Trigeminal Nerve at Various Levels Along Its Course."

Mel remained a fundamental part of the ophthalmic education in Washington, D.C. He served as Assistant Clinical Professor at George Washington University Medical Center, Clinical Professor and acting Chairman of the Department of Ophthalmology at George Washington University between 1969 and 1970, and as Clinical Professor until his death. In addition to his connection to George Washington University, he also served as attending ophthalmologist at the Episcopal Eye, Ear, and Throat in Washington, D.C., and attending ophthalmologist at Washington Hospital Center, subsequently becoming Chief of the Glaucoma clinic and Chairman of Neuro-ophthalmology. He had a low key approach to administration, but served as first vice president of the medical staff and a member of the board of trustees at Washington Hospital Center. He also served as president of the section of

ophthalmology for the D.C. Medical society. His service to the medical community was recognized by his receipt of the Gold-Headed Cane Award for Excellence in Medicine in 1986. He further served organized ophthalmology as an instructor for the American Academy of Ophthalmology and associate examiner for the America Board of Ophthalmology.

He was always interested in education, serving as one of the founders of the International Society of Neuro-ophthalmology and the program chairman for the second meeting held at Airlie House in May, 1978. He also helped to host the fourth International Neuro-op meeting in Bermuda in 1982. In 1955, he along with Hugo Rizzoli originated Grand Rounds in Neuro-ophthalmology at the Episcopal Eye, Ear & Throat Hospital. Early speakers included Frank Walsh and Lawton Smith, when he was still a resident at Wilmer. This program was continued when Episcopal Eye, Ear & Throat Hospital combined with two other hospitals to form the Washington Hospital Center. Frank Walsh continued to lecture every May and David Cogan contributed starting in 1973.

Ever curious, in 1973, Mel Alper obtained access to one of the first of the three CT scanners installed in the United States (Mayo Clinic, Mass General, and Washington Hospital Center). Although crude by present standards, it was Mel who recognized that not just for neurosurgery and neurology but for orbital surgery, the advent of computerized imaging was the greatest advance since Roentgen since it completely revolutionized the ability to deal with orbital pathology. For decades following the publication of Walter Dandy's monograph in 1941 suggesting a trans-cranial approach to orbital pathology, controversy had roiled over the best approach to orbital pathology. By a second set of articles, Mel could appropriately point out that with CT provided localization, there was no best approach; that orbital surgery could be tailored to the location of the lesion with the orbit, in particular with reference to the optic nerve. The importance of his contributions was recognized by his inclusion in the Harvey Cushing Society and his award from the Cushing Society for his evaluation of unilateral exophthalmos.

With Mel's beloved Harvard professor Dave Cogan's move to the National Institutes of Health in 1974, he met a kindred spirit and gracious host in Mel Alper. David could often be found sitting in the front row taking notes on 3 x 5 cards at the neuro-ophthalmology grand rounds that Mel had initiated. He and David would also travel to the Homestead for the AOS meetings together and Davis was a guest of his at his home in Bermuda. Mel was elected to the AOS in 1975 and attended 23 meetings most recently in 2007. He published 6 articles in the Transactions, two with Lorenz Zimmerman. He also was the primary discussant of 3 papers presented at the Annual meetings.

First and foremost, Mel was devoted to his family, his wife Jane, his daughters Nancy and Susan, and his son John and three grandchildren. When he lost Susan to a car accident, his testimony was establishing the Susan Alper Memorial Lecture to continue education in neuro-ophthalmology. His integration in the Washington community included his membership in the Cosmos Club and his strong support for the Smithsonian Institute, the Corcoran Gallery, and the Phillips Gallery. He continued to enjoy tennis, runner up in doubles at the AOS in 1990, well after most of his contemporaries had retired to more sedate practices.

In addition to his interest in clinical ophthalmology, Mel was one of the founders of the Orbital Society and remained a devoted member of the American Ophthalmic History Society, initiated by Dave Cogan in 1987. He attended the annual History meetings devotedly including his delivery of the Snyder Lecture in 1994 until he became too ill to attend. His influence on Ophthalmology and the medical community in Washington, D.C. will continue as his legacy.

Leonard Apt, MD

By *J. Bronwyn Bateman, MD*
Joseph L. Demer, MD, PhD
Sherwin J. Isenberg, MD
Bradley R. Straatsma, MD, JD

Leonard Apt, M.D., founder of academic pediatric ophthalmology in the United States, clinician – scientist of the highest stature and Professor Emeritus of Ophthalmology at the University of California Los Angeles (UCLA), died on February 1, 2013 after a brief cardiac illness.

Dr. Apt was born in Philadelphia on June 28, 1922. He attended the University of Pennsylvania, graduated with highest honors from Jefferson Medical College in1945 and trained in hematology, pathology and pediatrics at the University of Cincinnati and Harvard University. While a faculty member in the Department of Pediatrics at Harvard, he sensed the need to bring together the fields of pediatrics and ophthalmology.

To unite pediatrics and ophthalmology, Dr. Apt completed an ophthalmology residency at Wills Eye Hospital, Philadelphia, was the first National Institutes of Health Fellow in Pediatric Ophthalmology and became the first physician to be specialty board certified in both pediatrics and ophthalmology. Dr. Apt joined the UCLA ophthalmology faculty in 1961 and founded the first Division of Pediatric Ophthalmology in the United States.

Leonard Apt is probably best known among physicians worldwide for the Apt Test, which distinguishes fetal from maternal blood in newborn stool. He developed this test, which remains in widespread use today, while a pediatrician at Harvard. Dr. Apt also is credited with the first description of agammaglobulinemia, a genetic defect of the immune system, and the first report of mothball anemia, a loss of blood cells produced when children eat naphthalene-containing mothballs.

Dr. Apt's early ophthalmological investigations involved nematode endophthalmitis in children and pediatric uveal melanoma. He also studied allergies to catgut sutures then used in pediatric eye surgery. He demonstrated that severe allergic reactions could be predicted, and thus prevented, by placing a suture in the forearm skin prior to surgery. His greatest contribution was research conducted with Sherwin J. Isenberg, M.D. throughout three decades to demonstrate the safety and efficacy of povidone-iodine for antiseptic preparation of the ocular surface prior to surgery or intraocular injection. Povidone-iodine is now used for preoperative and pre-injection preparation of the ocular surface throughout the world. Extending this research, Apt and Isenberg conducted international studies that demonstrated the clinical value and cost- effectiveness of povidone-iodine for prophylaxis of ophthalmia neonatorum and for treatment of bacterial and fungal infections of the conjunctiva and cornea.

Dr. Apt published more than 300 articles in the medical and ophthalmic literature. He received numerous prestigious awards including the American Academy of Pediatrics Lifetime Achievement Award, the Distinguished Alumnus Award from Jefferson Medical College, the UCLA Alumni Association Award for Excellence and the UCLA Dickson Emeritus Professorship Award. In his honor, the American Academy of Pediatrics created the biennial "Leonard Apt Lecture." In 2010, he was honored as "National Physician of the Year" by vote of physicians throughout the United States.

Dr. Apt was co-founder of the UCLA Center to Prevent Childhood Blindness, a preschool vision-screening program. He was a

generous philanthropist, endowing both a professorship and a fellowship in pediatric ophthalmology and strabismus at UCLA. He was a founder of the John Wooden UCLA Athletic Center, a member of the UCLA Coaches Round Table, a sponsor of musical performances at UCLA Royce Hall, an officer of the UCLA Hammer Museum of Graphic Arts and a supporter of UCLA student scholarships. Personally, he was a connoisseur of fine food and wines.

Leonard Apt is survived by nephews Kenneth Rappaport and Robert Hirsch. He is also survived by thousands of colleagues, students and friends, and by millions of patients who benefited greatly from his wisdom and scientific work. We respect and admire the legacy of Leonard Apt.

Goodwin M. Breinin, MD

By *Edward L. Raab, MD*

Dr. Goodwin M. Breinin, AOS member since 1960, passed away after a long illness on December 14, 2011 at the age of 93 years. He was a longtime prominent member of the New York ophthalmology community, including 41 years as Daniel B. Kirby Professor and Chair of the Department of Ophthalmology of New York University. This position included directorship of the Ophthalmology Service at its University Hospital.

Dr. Breinin, known as "Dud", was born in New York City. Emory University in Atlanta was the site of his medical training and his studies for a Master's degree. His ophthalmology residency was done at New York University/Bellevue Hospital following service in the United States Army during World War II. He remained active as a full professor at NYU until his retirement in 2006, six years beyond his tenure as Chair, at which time he was honored by the establishment of a visiting professorship bearing his name. Although he began as chair of a primarily clinical department, he devoted great effort to establishing a research component and recruiting a very productive group of highly reputed investigators.

He was noted for his pioneering research employing electromyography of the extraocular muscles, and his achievements resulted in his being awarded the Knapp Medal of the American Medical Association in 1957. He also served as Chair of that organization's Section of Ophthalmology, as well as Chair of the same component of the New York Academy of Medicine. He received the Emory Medal in 1993 for his achievements in medicine and contributions to Emery University. Ocular motility was not the only area of his professional interest; he performed and reported perhaps the first studies of carbonic anhydrase inhibitors for the treatment of glaucoma.

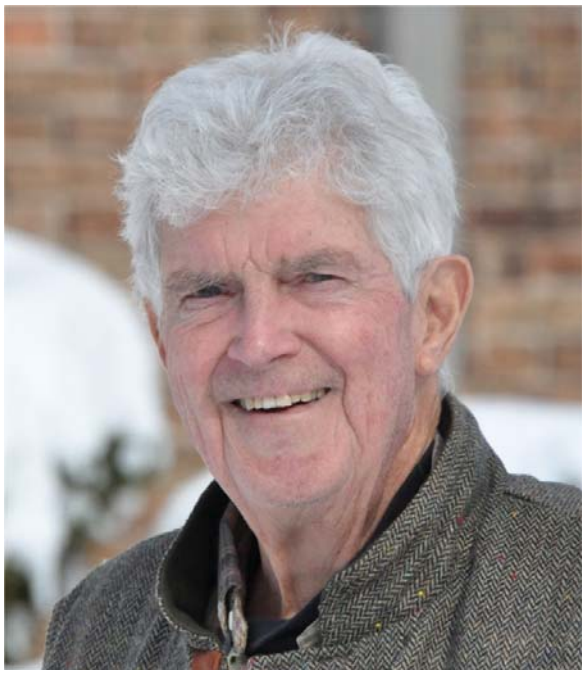
Dr. Breinin served on the Board of Directors of the American Academy of Ophthalmology and on the American Board of Ophthalmology, and authored more than 100 scientific articles and several books. He was a regular and prominent panelist at the very valuable strabismus conferences held at NYU with other well known figures such as AOS members Harold W. Brown, Philip Knapp, and Edward Dunlap. At the time, these ophthalmologists, including Dr. Breinin, were numbered among the giants in the field. Their sessions were a constant learning experience for those of us who were younger and less-experienced members of this subspecialty. Although he might not have described himself as a "children's eye doctor", Dr. Breinin is recognized as a Charter Member of the American Association for Pediatric Ophthalmology and Strabismus.

Philosophy and the classics were among his many interests. Those close to him, personally and professionally, are aware of the Greek and Latin phrases woven liberally into his conversation.

His wife, Rose-Helen Breinin, predeceased him. He is survived by son Bartley and daughter-in-law Rachel Breinin, daughter Constance Paton and son-in-law Nigel Paton, and 4 grandchildren.

Morton Samuel Cox Jr., MD

By *Froncie Gutman, MD*



Morton Samuel Cox, Jr., affectionately known as Mort, has been my friend for over fifty years. We first met while attending medical school at the University of Michigan. Mort and I were medical school fraternity brothers and served our internships and residencies together. Mort was always a people person. He never met a stranger and had an intimate way of relating to people that put them at ease. He had a great sense of humor and was a good listener. If you had a problem, you sought Mort out for his counsel.

Mort had a wide variety of interests but at the top of that list were sailing, reading and fishing. He loved being at the wheel of his sailing craft on the Great Lakes and in the waters of the Caribbean but was reluctantly forced to power boating in his later years. Non-fiction reading about World War II and naval history were his favorite subjects. He became an excellent fly fisherman and enthusiastically traveled to Idaho and South America in pursuit of catching that next big trout.

Mort had a justifiable, unpretentious pride. Pride in his ability to provide excellent care as a physician and pride in his family. He also had humility. If he had a troubling problem he was facing, he honestly laid out the issue and asked for help. This was true in his personal and professional life. Another side of Mort that some may not have known was his profound love of his God. We shared special, spiritual time together while attending church.

Mort was present for life and lived every day fully. He worked hard and loved to relax with family and friends. The long hours he worked were a byproduct of being a gifted ophthalmologist who was sought out by fellow physicians to manage difficult and complex cases. Mort and Mary Sue, his wife, have always been a team. They were joined at the hip. Their partnership was a love match. Mort would get an idea and Mary Sue would make it happen. If Mort and Mary Sue enjoyed something, they wanted to share it with family and friends - - sailing, fishing, their boat condominium in Charlevoix, their St. Johns' home. If you knew them, you were warmly welcomed and made part of the Cox extended family.

Mort provided me with an example of how to live one's life. His most valued relationships were with family, friends, and colleagues. He taught me that relationships are not just part of life. Relationships are what life is about. Here is a friend's comment upon learning of Mort's death: "Mort was the best, no matter how you measured him. I smiled when I saw Mort coming. He made all of us better."

Mort was born in Indianapolis, Indiana on March 3, 1934. His family's move to Ann Arbor, Michigan predestined his undergraduate and medical school studies at the University of Michigan (U of M). Following his residency at the U of M, Mort served his retinal fellowship at the Massachusetts Eye and Ear Infirmary in Boston before returning to the ophthalmology department at the U of M to establish and direct the retinal service from 1967 to 1979. In 1979, Mort left the U of M and joined the Associated Retinal Consultants, an extraordinary and unique academic private practice group in Royal Oak, Michigan from which he retired in 1999.

Mort was a superb clinician in the diagnosis and management of medical and surgical diseases of the retina. He had a very busy referral practice which provided a rich resource for the training of residents and retinal fellows. He actively participated in national studies, many of which were funded by the National Eye Institute. He authored or co-authored over eighty publications in peer-reviewed journals and was sought out as a visiting professor and guest speaker at professional meetings. He was a recognized

authority on ocular trauma, especially traumatic retinal detachments. His 1980 AOS thesis was focused on retinal breaks caused by blunt non-penetrating trauma and it included animal laboratory studies. He also had a special interest in and lectured on optic nerve pit maculopathy.

After observing Mort performing surgery, a visiting fellow retinal specialist made these comments: "Standing there in the OR watching Mort do that scleral buckle was almost a mystical experience for me. I have operated with many gifted surgeons and I know what it is to be good, but Mort was a true master. Everything flowed perfectly, deftly, and without tension. I remember very well thinking that if I ever have a retinal detachment, I'm getting on a plane to Ann Arbor to have Mort operate on me. It was not just his technical skill, it was the character of the surgeon. That day, I absorbed and still use many things I learned from Mort."

Mort was a member of the American Academy of Ophthalmology and received both its Honor Award and Senior Honor Award. In addition to being a member of the American Ophthalmological Society, he was a charter member of the Retina Society and Vitreous Society, and a member of the Club Jules Gonin, the Schepens International Society, the Macula Society, the American Eye Study Club, and the Pine Ridge Eye Study Society. In all these organizations, he was an active and supportive member.

Dr. Morton S. Cox, Jr., age 79, passed away on April 21, 2013 in Ann Arbor, Michigan. At his bedside was his beloved wife of 56 years and his three children. Mort is survived by his wife, Mary Sue Cox; his children, Jeffrey Scott Cox, Lisa Ann Byrne (spouse Dan), Morton Samuel Cox, III; and his grandchildren, Sam, Jack and Mary Kate Byrne.

For all of us who knew and loved Mort, he will be missed but fond memories of our times together will be with us forever.

William G. Everett, MD

By *Joel S. Schuman, MD*
and Francis G. Hurite, MD

It was not unusual for William G. Everett to milk his prize Jersey dairy cows at his farm in Mars, PA and then proceed to the operating room and perform complex retinal surgeries. He had this routine for most of the 60's to mid-70's. This was just one of his many interests that this talented physician enjoyed during his lifetime. He passed away after a long illness at Saint Barnabas Village in Cranberry, PA on July l7th, 2012 at the age of 86.

William Everett graduated from the University of Pittsburgh with an undergraduate engineering degree and then as a medical doctor. Following his ophthalmology residency training at Columbia University and additional training in retina both abroad and at Wills Eye Hospital, he returned to Pittsburgh to provide retinal subspecialty care. He was the sole and premier retina specialist to the entire community for many years. In this esteemed role, he trained many residents at the University of Pittsburgh, Eye and Ear Hospital and later at St. Francis General Hospital, where he became director of the ophthalmology residency program.

He prided himself on his academic prowess and was a member of such elite organizations as the Retina Society, Club Jules Gonin and the prestigious American Ophthalmological Society. His landmark thesis on lattice degeneration was published in TAOS. His pioneering and innovative work in retinal detachment surgery, which included innovations in scleral buckling as well as use of a unique encircling band, laser surgery and the early years of vitrectomy surgery are well known throughout the academic community and provided vision saving surgery for countless patients. He was loved by his patients and respected by his colleagues for his tremendous skill and technical abilities.

In 1974, he founded Everett & Hurite Ophthalmic Association with Francis G. Hurite, MD which has evolved into the largest private practice in western Pennsylvania with 15 physicians and eight office locations. During this period, he also found time to open an antique store to compliment his hobbies.

Upon his retirement in 1990, he continued to enjoy his many hobbies, which included his world-class scale collection, his collection of carousel horses and his exceptional antique clock collection. In his spare time he expanded his hobbies to include cooking and fishing and relaxing in Florida.

William C. Frayer, MD

By *Edward A. Jaeger, MD*

William C. Frayer, M.D., Professor Emeritus in the Department of Ophthalmology at the University of Pennsylvania and the Scheie Eye Institute, died at his home in the Philadelphia suburb of Bryn Mawr, January 17, 2012. He was 91. Bill was elected to membership in the AOS in 1966 following approval of his thesis which was entitled *Reactivity of the Retinal Pigment Epithelium: An Experimental and Histopathologic Study*.

Bill grew up in Michigan and attended Brown University for his undergraduate studies. He then entered the University of Michigan School of Medicine, graduating from a wartime accelerated program in 1945. World War II ended one month before graduation. He fulfilled his two year military obligation as an Army Captain at Perry Jones Hospital in Battle Creek, Michigan. It was here that he developed what would become a lifelong love of ophthalmology. Residencies in 1949 were difficult to obtain but he began the search which eventually brought him to Philadelphia where he was interviewed by Dr. Francis Adler and Dr. Harold Scheie. Much to his delight, he was invited to begin as a resident in Ophthalmology at the University of Pennsylvania July 1, 1949.

During the first year of residency, Bill showed an interest in ocular pathology. Dr. Scheie suggested that he take a year from the residency and work in the Penn Pathology Department. This served as the foundation for his subspecialty of ocular pathology. Following residency, Bill joined Drs. Adler and Scheie in their private practice in 1952. Eventually, Bill established his own practice in Philadelphia but continued to develop the ocular pathology laboratory and contribute to resident education at Penn.

Thomas Duane, M.D., Ph.D. was appointed Chairman of Ophthalmology at Jefferson Medical College in 1962. Tom needed someone to serve as Program Director. Dr. Scheie recommended Bill for the position. He readily accepted and continued in this capacity for the next ten years. However, he returned to Penn in 1972 as Director of Medical Education and second in command of the Department. The new Scheie Eye Institute opened in 1972.

Bill Frayer was a very even-tempered and logically thinking ophthalmologist which made him popular with the residents and a sought after person for committee and administrative positions. He served as Chairman of the Philadelphia County Medical Society Eye Section and President of the Pennsylvania Academy of Ophthalmology and Otolaryngology. He was elected to membership in the Verhoeff Society in 1966 and was instrumental in founding the Eastern Ophthalmic Pathology Society. On two separate occasions Bill served as interim chairman of the Department of Ophthalmology at the University of Pennsylvania and the Scheie Eye Institute.

Bill joined the Lancaster Course faculty in Waterville, ME in 1958 and eventually became head of the histopathology section. He continued to lecture there each summer for 34 years.

Bill was a prolific contributor to ophthalmic literature having authored 35 peer reviewed articles and six book chapters. Perhaps his greatest contribution was a book entitled: *An Ophthalmic Journey: Fifty Years at the University of Pennsylvania* published in

2002. While the book pointedly emphasizes the Departmental faculty, it also chronicles the extensive and dramatic changes in the practice of ophthalmology.

Outside of medicine, Bill and his wife, Joy, enjoyed the arts and sports teams of Philadelphia and, of course, Michigan football. However, Bill's passion, outside of ophthalmology, was painting watercolor landscapes. Following retirement, Bill and Joy purchased a summer home in Waldoboro, Maine. His paintings of the Maine landscape and coastline have been exhibited and widely acclaimed.

He is survived by his wife, Joy, three sons, William, Brackley and Frederick; stepdaughters, Beth McDevitt and Joanne Munsell, two sisters, eleven grandchildren and a great-granddaughter. Bill was predeceased by his former wife, Penelope Shaw Frayer.

Bill Frayer was a very principled physician. He lived and practiced "professionalism" on a daily basis, long before it became a buzz word. Above all, "do the right thing." Professionalism was a way of life for Bill and he instilled this in his residents by example. We have lost a giant from the field of ophthalmology but the memory of his principles will continue to guide us.

Mitchell H. Friedlander, MD

By *David J. Schanzlin, MD*

Mitchell H. Friedlander, M.D., passed away on June 18, 2011 at Green Hospital of the Scripps Clinic and Research Institute, in La Jolla, California, where he served as Head of the Department of Ophthalmology.

Mitch was born on February 10, 1946 in Chicago, Illinois to Sidney Friedlander, M.D. and Dorothy Blum Friedlander, RN. Most of the men in the Friedlander family were physicians, many of whom had notable careers in academic medicine. Mitch followed this tradition and developed a life-long interest in microbiology and immunology following his father who had a distinguished teaching and research career in allergy and clinical immunology.

Mitch attended Berkeley high school in Berkeley Michigan a suburb of Detroit. During high school, Mitch excelled in music playing the oboe in the high school band and orchestra, as well as percussion in the high school marching band. In his junior year, he studied abroad in Switzerland where he acquired an interest in mountain climbing and modern art.

Mitch split his undergraduate years between Kenyon College and the University of Michigan. He matriculated to the University Of Michigan Medical School, where he graduated with honors and was admitted into Alpha Omega Alpha (AOA). Following his internship at Barnes Hospital, Washington University, in St Louis, he spent two years at the National institutes of Health (NIH) conducting basic laboratory research in immunology. He expanded his basic research to studies of ocular immunology during his residency and fellowship at Massachusetts Eye and Ear Infirmary in Boston and the Francis I. Proctor Foundation, in San Francisco. After fellowship, Mitch stayed on as faculty of the Proctor Foundation and the Department of Ophthalmology at University of California San Francisco. In 1986, he was appointed as the Director, Cornea and External Disease at the Scripps Clinic in La Jolla California. In 1996, he assumed the position as Head, Department of Ophthalmology at Scripps Clinic.

Throughout his career, Mitch was a prolific scientific researcher and published extensively in the area of ocular immunology. In addition to authoring over 100 scientific articles and 7 books, he was for many years, the Editor of *Ophthalmology Clinics of North America*. He was elected to the American Ophthalmology Society (AOS) in 1989, and his AOS thesis dealt with the immune response in the eye. He lectured on ocular immunology throughout the world, and participated in surgical missions in developing countries. He was a highly esteemed teacher and mentor of medical students, residents and fellows. Despite his soft spoken approach and gentle demeanor, he had a profound effect on his many students, and patients. He enjoyed studying foreign languages, and when once

invited to a speaking engagement in France, he delivered his entire presentation in French. He was a founder of two medical societies, namely the Aspen Cornea Society and the Pan-Pacific Ophthalmic Forum.

He is survived by his wife, Deborah, who he met in San Francisco, shortly after arriving at the Proctor Foundation, and his two children Daniel and Mara. He was dedicated to his family, and was an attentive father. He found balance between his personal and professional life, and he had many diverse interests. He was an accomplished classical pianist, and held many live music performances at his home. He enjoyed Broadway musical theater, and played in the orchestra in numerous local productions. Throughout his life, he collected original modern art and sculpture, and in doing so, nurtured the career of several artists. He was an influential supporter the University of California San Diego, serving as Chairman of the UCSD Chancellor's Club, and he was a patron of the San Diego Symphony.

His passing is mourned by his colleagues, students, patients, and all who knew him.

Thomas R. Hedges, MD

By *William Tasman, MD*

Thomas Reed Hedges, Jr., M.D. who passed away on September 10, 2009, was born in Cleveland, Ohio on October 19, 1923. As Tom says in his autobiography, the exact place is not clear, but was probably Huron Road Hospital. His father, Thomas Reed Hedges was an optometrist and eventually established a practice in Cleveland. Later the family moved to Sandusky, a more rural setting because it was at that time difficult to build a practice in Cleveland.

Tom's summers were spent at the family farm, which had passed to his maternal Aunt. He loved those summers and learned how to herd the cows into the barn for milking and how to feed them. He also became an outstanding competitive swimmer and swam with a medley team as their back-stroker. They were so good that they qualified for the Olympic team that was to go to the 1940 Olympics in Tokyo. However because of the war, the Olympics were cancelled.

Tom attended Ohio State University because of the swimming and its good liberal arts background. He would go on to be part of the OSU swim team and during his years of competition at Ohio State his team won all of their swim meets in the Big Ten.

After Ohio State, Tom went to Cornell for medical school. When he arrived at medical school he was directed to a room in the "old nurses residence" adjacent to the medical school. He describes meeting his next-door neighbor who as it turns out was Ed Norton. Ed was a year ahead of Tom and was dressed in a Midshipman uniform. Tom was to receive his V-12 uniform the following week. While in medical school Tom became interested in neuro-ophthalmology. He began working with Dr. Frank Walsh at Johns Hopkins, and became his first fellow. Dr. Walsh advised Tom to think of getting a residency in Ophthalmology and encouraged him to apply at Wilmer for a residency, but the interview with Dr. Alan Woods did not go well. Dr. Walsh then called Dr. Francis Heed Adler at Penn and Tom was awarded a residency position. He and Ann, whom he married in 1946, moved to Philadelphia and started their life at Penn in 1950 when he was 27 and Ann was 26. Their son Tom III had been born the previous August, and he ultimately would become a neuro-ophthalmologist as well.

Tom ultimately was primarily involved professionally with the University of Pennsylvania. He became a professor in 1971 and Emeritus in 1991. He was also recruited by Irving Leopold, at Wills Eye Hospital and became a senior surgeon at Wills on their neuro-ophthalmological service. His academic home however was Penn and this combined with his practice in Moorestown, a research lab in Camden, becoming Chief at Pennsylvania Hospital, America's first hospital (established by Benjamin Franklin in 1761) kept Tom busy indeed. Over the ensuing years he gave Neuro-ophthalmology courses with Dr. Walsh from 1960 to 1990 at the American Academy of Ophthalmology and became one of the founders of the American Eye Study Club along with Ed Norton, Al Ruediman and Howard Naquin in 1957.

He continued to practice in Philadelphia and Moorestown until June 2002. After 50 years of service to Pennsylvania Hospital Tom retired and his portrait by Donald Squire was hung in the portrait gallery at the hospital. Finally, it should be remembered that one of Tom's greatest achievements was the cofounding of The International Neuro-Ophthalmology Society with Dr. Alfred Huber of Switzerland in 1976. Aside from his family, neuro-ophthalmology was his second love.

Dr. Hedges is survived by his wife, Ann; son Thomas R. Hedges, III; grandsons T. Reed Hedges; G. Shonnard Hedges; Daniel W. Hedges; and Duncan F. Hedges; and great-grandson Zephan Isaac Zuser-Hedges. He was predeceased by sons George and William.

Robert E. Kennedy, MD

By *Steven E. Feldon, MD*

Robert E. Kennedy died on February 20, 2006 at the age of 86. The son of a prominent ophthalmologist in Rochester, he is survived by his wife Naomi , two daughters, and a son as well as two siblings. A former Council Member and Chair of the American Ophthalmological Society, Dr. Kennedy was an internationally acclaimed orbital surgeon who approached this clinical niche systematically and scientifically. Much of his research was published in the Transactions of the Society. He was among the first to investigate the effects of enucleation early in life on bony orbital development. One of the most impressive of his publications in the Transactions was his evaluation of 820 orbital cases – one of the largest clinical case series in the world at that time (TAOS 82:134-157, 1984).

According to Dr. Steven Ching, currently a Professor in the University of Rochester, Department of Ophthalmology, Dr. Kennedy knew that he wanted to be an orbital surgeon by age 8 and requested a skull for his birthday or Christmas present. He graduated from the University of Rochester and the Syracuse University College of Medicine. He completed his ophthalmology residency at Johns Hopkins Hospital in 1948 and, after a year as Instructor at the University of Illinois, joined the faculty of the University of Rochester where he became Clinical Professor of Ophthalmology in 1972. He published over 30 scientific papers and delivered lectures throughout North America and Asia. Dr. Kennedy was acutely aware of the medical needs in developing nations and completed missions in Algeria, West Africa, Afghanistan, and Brazil.

Dr. Fred Dushay, Clinical Professor in the University of Rochester, Department of Ophthalmology knew Dr. Kennedy "as a gentleman and an ophthalmologist of exceptional reputation. He and Albert Snell Sr. were the driving forces for professional education in ophthalmology throughout the region. I also recall that he was a friend of Sir William Stewart Duke-Elder, and I believe that he stayed at his home when he traveled to Scotland."

Dr. Kennedy's daughter Sandra often attends the annual ophthalmology meeting at the University of Rochester to hear the Albert Snell, Sr. Lecture that her father helped to establish. Although I came to Rochester late in Dr. Kennedy's career, I had the privilege of meeting with him and other senior ophthalmologists on several occasions before illness forced him into relative seclusion. His intelligence, experience, and quick wit were immediately apparent. Dr. Karl Marchenese, who was briefly in practice with Dr. Kennedy, recalls "his knowledge was encyclopedic."

Dennis O'Day, MD

By *Douglas R. Anderson, MD*

Few, if any, will have as profound and lasting impact on the practice of ophthalmology, and perhaps all of medicine, as Denis M. O'Day, who died September 9, 2012 at the age of 76. Few combine professional excellence with establishing a close-knit loving family, which he claimed as his greatest achievement and enjoyed every bit as much as his work. He was ever friendly, smiling, and cheerful.

His professional dedication was to the ill and otherwise unfortunate, promoting social justice. His opportune focus was to instill traits in physicians, such as: thorough grounding in knowledge, impeccable logic that leads to well-founded interpretation of scientific evidence, astute formulation of clinical decisions for diagnosis and therapy, abundance of compassion, and dedication to the utmost professionalism.

Intervening at the start of medical education, he was founder and director of the Vanderbilt School of Medicine Emphasis Program, in which medical students were linked to individual mentors with whom the students would perform a scholarly project in one of nine areas related to medicine, ranging from laboratory based research to such diverse areas as medical humanities, global health, patient-oriented research, and biomedical informatics. He personally monitored the activities and progress of about 200 students at any one time. He embarked on this after serving 10 years as Chairman of Ophthalmology and Visual Science at Vanderbilt University, establishing a world reputation as a researcher, corneal surgeon and expert at diagnosing difficult and unusual types of ocular infections and fungal disease. Of course, education in his Department was central, both clinical expertise and professional conduct.

His less-well known crowning achievements were during his service at the American Board of Ophthalmology, bringing psychometricians to guide the directors in creating a valid examination that set actually set a minimum standard of competence to be certified. No longer was the pass rate simply an arbitrary percentage or based on subjective assessment of an examiner. Professionalism and a record of actual practice traits became part of certifying maintained competence. Lay directors from the public were added. Ophthalmology may move other specialties in medicine to emphasize knowledge and proper care as a priority, much as Anesthesiology has made all of medicine more attuned to safety issues and reduction of errors. The Board became independent in setting standards to serve the public good, while the American Academy of Ophthalmology served the Profession and its needs, helping not only with educational opportunities to improve quality of care, but also with such things as office management and political advocacy.

His enthusiasm extended to sailing. Masterful, sudden, daring moves on the water instilled fear in both his crew and his

competitors in a race. He had a propensity and skill for modifying or building his surroundings, able to tear down and rebuild walls, and to improvise whenever needed. He claimed to be a wizard with a bag of cement. He personally labored in the construction of a hospital in Haiti after the Visitation Foundation, of which he was vice-chair, enabled the construction.

Direct involvement in helping the unfortunate extended to membership of the Social Justice Committee in his church. He was active in Nashville and elsewhere to help the poor and disadvantaged.

He was interested in the synergism of science and religion, perhaps recognizing that much of what physicians do is based on faith in what possibly ill-informed professors taught, and that religious teachings contained profound truths and information on the "unknowable" that he believed. He saw only a contrived conflict, and served with his wife Ann as a lector at the Cathedral of the Incarnation, where his funeral was held on September 11, 2012.

Stephen J. Ryan, MD

By *Ronald E. Smith, MD*

Steve Ryan, an AOS member since 1979, died at his home on April 29, 2013 after fighting liver cancer. Despite aggressive treatment, and Steve's own resilient spirit, his condition advanced too far, too fast. We have lost a giant in ophthalmology and in medicine.

While at medical school at Johns Hopkins, Steve was introduced to vision research – stimulating his life-long passion for ophthalmology and the excitement of the pursuit of new knowledge and innovation. He credits A. E. Maumenee, M.D., then the Chair at Wilmer, as his mentor and role model while Steve was a resident, Chief Resident, and Assistant and Associate Professor at Wilmer.

Steve's research contributions helped shape how retina vitreous disorders are now treated. His animal model of choroidal neovascularization has been widely used to study the mechanisms and treatment of this condition. His posterior segment penetrating trauma model in primates led to a better understanding of the pathogenesis of traumatic traction retinal detachment, which influenced the timing of vitrectomy in trauma patients with vitreous hemorrhage. His laboratory continues to study cellular proliferation in models to elucidate molecular mechanisms of diseases affecting the retina, especially the macula.

He poured his body and soul into the Doheny Eye Institute where he was President for decades. But in 1974, he was the first and only full-time faculty member, as well as founding chair, of the Department of Ophthalmology at the USC School of Medicine. Thirty-nine years later, Doheny is now a Top Ten ophthalmology program in *U.S. News & World Report* and *Ophthalmology Times*.

Steve was Dean of the USC School of Medicine and Senior Vice President for Medical Care from 1991 to 2004. He was instrumental in securing the original naming gift of $150 million from the Keck Foundation to the University of Southern California, resulting in the naming of the Keck School of Medicine.

He was a member of the Institute of Medicine of the National Academy of Sciences and served as the Home Secretary for the IOM. He served as President of the Association of University Professors of Ophthalmology and the Macula Society; and a member of the International Council of Ophthalmology. He was Founding President of the National Alliances for Eye and Vision Research, established in 1993 by AAO, ARVO, and AUPO to educate opinion leaders in Washington and to advocate for NEI vision research to Congress.

He published almost 300 articles and delivered 40 named lectures, including the Jackson Lecture. He was the author or editor of 9 books, including "Retina" which is now a classic. Some of his awards included the AOS Howe Medal, the AAO Laureate Award, the

ARVO Kupfer Award for Distinguished Public Service, , and the Johns Hopkins University Society of Scholars Award. He had honorary degrees from Providence College and the University of Leipzig. He was Chairman of the Board of the Arnold and Mabel Beckman Foundation and served on the boards of Allergan, Inc., Johns Hopkins Medicine, and the W. M. Keck Foundation.

At Doheny, thanks to Steve's vision, training the leaders of the next generation of ophthalmologists and vision scientists became a major part of the mission. Today there are 26 alumni of the Doheny International Scholars program who are chairs of ophthalmology departments in countries outside of the United States; and 10 current chairs in the United States who are graduates of the residency, fellowship or faculty program.

Harvey Fineberg, current president of the Institute of Medicine, captured the essence of Steve when he recently wrote upon Steve's death: "In everything he did, Steve Ryan brought a gracious intelligence, a spirit with generosity and humility, a dedication to integrity, and an affirming attitude." Anyone who knew Steve would agree.

Steve loved the camaraderie, good will, and friendships at the AOS. We will miss his booming laughter; his character and integrity impressed and endeared him to all who knew him. He managed to find a way to engage his colleagues and friends in collegial dialogue while at the same time addressing complex and important problems facing ophthalmology and medicine.

I am particularly fortunate to have had Steve as a friend since our medical school days at Hopkins and during the Wilmer residency; and then I joined him at Doheny in 1975. I knew Steve for almost 50 years. He was my friend, leader, mentor, guide and, in reality, my big brother to whom I always turned for advice, guidance, and a helping hand. We honor his memory by devoting ourselves to research, teaching, and patient care as he did for so many years.

Steve met Anne, his wife of 47 years, when Anne was a nursing student at Hopkins and Steve was a medical student and resident. They have one daughter, Patricia, who also resides in Pasadena; Steve's brothers Richard, John and Robert reside in Boston.

Lorenz E. Zimmerman, MD

By *Ralph C. Eagle, Jr, MD*

Lorenz E. Zimmerman died on March 16, 2013 of congestive heart failure complicating recurrent aortic valve disease at the Blakehurst retirement community in Towson, Maryland. "Zim", as he was affectionately called by his colleagues and numerous fellows, is universally and rightly regarded as the preeminent ophthalmic pathologist in the United States in the second half of the twentieth century. The child of German and Swiss immigrants, Dr. Zimmerman was born and schooled in Washington, D.C. where he attended public schools and received both his undergraduate and medical degrees from George Washington University. Zim attended medical school in uniform because he had received a deferment to study medicine during World War II. After internship at the Gallinger Municipal Hospital (later D.C. General), he was assigned to the Pentagon as a GMO where he performed routine physical exams on healthy officers. Zim found this extremely boring and joined the regular Army so he could apply for a Pathology Residency at Walter Reed Army Hospital. At one time he considered a career in Internal Medicine, but he became disillusioned with the psychosomatic aspects of that specialty. After his residency in clinical and anatomic pathology, Zim initially was slated to be stationed in Japan, but the Korean conflict broke out and he was appointed Commander of the 8217th Mobile Medical Laboratory in Pusan, Korea. During his stay in Korea, Zim first met Army Nurse Anastasia (Stasch) Urbaniak whom he was to marry in 1959. After the war, Dr. Zimmerman was assigned to the Armed Forces Institute of Pathology in Washington, D.C. where he was allowed to rotate through a number of subspecialty services in preparation for his pathology board exams. One of his primary interests was infectious disease and most of his early publications dealt with that topic. He actually coined the term opportunistic infection in one of his early papers. In 1954 AFIP Director Brig. Gen Elebert DeCoursey appointed Dr. Zimmerman as Chief of the Ophthalmic Pathology Branch of the AFIP to replace the legendary histology technician Helenor Campbell Wilder, who had retired suddenly after receiving a marriage proposal from a wealthy San Francisco attorney. Prior to his appointment, Zim had had little or no exposure to ophthalmic pathology. In his oral history, Dr. Zimmerman states that he knew that the Ophthalmic Pathology Branch was a "gold mine" with a backlog of 5000 cases. After his appointment Zim eagerly mastered ophthalmic pathology and started "mining the gold". Rapidly, he began to transform a field that formerly had largely been a hobby pursued by a small, select group of interested ophthalmologists into a vital scientific discipline that was destined to foster major improvement in the quality of ophthalmic practice. Zim's first paper on an ophthalmic topic was a report on ocular cryptococcus that was written with his first fellow Sadi de Buen from Mexico. Landmark papers on phacolytic glaucoma, diffuse iris melanoma with heterochromia and glaucoma and uveal melanoma followed. Dr. Zimmerman wrote more than 370 papers that spanned a wide breadth of ophthalmic topics. In 1962 he coauthored the landmark 2nd

edition of textbook Ophthalmic Pathology, and Atlas and Textbook with AOS member Michael Hogan. Hogan and Zimmerman became the standard reference work in ophthalmic pathology for several decades. Under Dr. Zimmerman's leadership the ophthalmic pathology branch at the AFIP began to attract an outstanding group of fellows, and the AFIP soon became the mecca for training and research in ophthalmic pathology. Zim's fellows, who include many members of the American Ophthalmological Society, established ophthalmic pathology laboratories at academic centers throughout the United States and the world and, in turn, trained new generation of ophthalmic pathologists. Others saw training in ophthalmic pathology as a valuable introduction to careers in academic ophthalmology and research and became leaders and department chairs and editors of major ophthalmic journals. Members of the AOS who were fellows, or collaborated with Dr. Zimmerman include William Spencer, J. Donald Gass, W. Richard Green, Myron Yanoff, Stephen Ryan, Daniel Albert, Hans Grossniklaus, Frederick Jakobiec, Jerry Shields, Narsing Rao, Ralph Eagle, William Townsend, and Bradley Straatsma.

Zimm's contributions were recognized early in his career. He received the Association for Vision and Research in Ophthalmology's Friedenwald award in 1965, only a decade years after his introduction to ophthalmic pathology in 1954. He received numerous other honors including the Ernst Jung Prize in Medicine, The Helen Keller Prize for Vision Research, the Jules Stein Award, and the Donders Medal. His numerous named lectures included the Bowman, McAllister, DeSchweinitz and Bedell Lectures and the Jackson Memorial Lecture. He was made a Laureate of the American Academy of Ophthalmology in 2006.

Dr. Zimmerman was inducted into the AOS in 1985 in the special category of honorary member, since he was not an ophthalmologist. He also is the only non-ophthalmologist honored with the Lucien Howe Medal, which he received in 1999. Five of Dr. Zimmerman's fellows (William Spencer, Stephen Ryan, W. Richard Green, J. Donald Gass and Daniel M. Albert) also received this honor. In 1999, the American Society of Cataract and Refractive Surgery (ASCRS) named Dr. Zimmerman one of the ten most influential ophthalmologists of the 20th century, a most remarkable achievement for a non-ophthalmologist. In 1971 Dr. Zimmerman described phakomatous choristoma, a pediatric eyelid tumor composed of extraocular crystalline lens tissue. This fascinating tumor has been named Zimmerman's tumor in his honor.

Zim lived an active life and was an avid tennis player. Anastasia (Stasch), his wife of 53 years was a remarkable woman who raised his 6 children, three by a previous marriage. Stasch was a major contributor to Dr. Zimmerman's success. Mrs. Zimmerman died ten days after Dr. Zimmerman. A joint funeral mass was held for the couple in Annapolis, Maryland on April 6, 2013, and their remains will be inurned at Arlington National Cemetery at a future date.

MINUTES OF THE PROCEEDINGS

One Hundred and Forty-Nineth Annual Meeting
May 17-19, 2013

The ONE HUNDRED AND FORTY-EIGHTH ANNUAL MEETING of the American Ophthalmological Society (AOS) was held at The Lodge at Torrey Pines, La Jolla, California

On May 17, 2013, Friday, President Richard K. Parrish, II, MD called the opening session to order. The program began with the following AOS-Knapp symposium:

Symposium: Challenges of Ophthalmic Care in the Developing World

1. Introduction by Stephen MacLeod, MD
2. Verhoeff Lecture
3. Preventing Blindness & Child Mortality with Vitamin A: an AOS Odyssey
4. Overview of Major Challenges & the Vision 20/20 Initiative
5. Trachoma Prevention & Treatment
6. Corneal Blindness & Infectious Keratitis
7. CMV Retinitis
8. A Systems Approach to Cataract Blindness
9. Retinopathy of Prematurity in the Developing World

The Meeting Was Continued With The Following Scientific Program:

1. Treatment Of LCA2 Patients With An AAV2 Vector Expressing Hrpe65. **Tim Stout***, Richard Weleber, Maureen McBride, **David Wilson**, Mark E. Pennesi, Margaret Humphries, Terry Flotte, **Shalesh Kaushal**, Lauren Jensen, Andreas Lauer, Jeff Chulay
2. Vitrectomy for Floaters: Prospective Efficacy Analysis and Retrospective Safety Profile. **J. Sebag***, Kenneth M P Yee, Laura C Huang, Christianne Wa, **Alfredo A. Sadun**
3. Evaluation of the Reactive T Cell Infiltrate in Uveitis and Intraocular Lymphoma with Flow Cytometry of Vitreous Fluid (AN AOS THESIS). **Janet L. Davis***, Philip Ruiz, Jr., Milan Shah, Efrem D. Mandelcorn
4. Mean Nocturnal Arterial Blood Pressure is Strongly Associated with Progression of Normal-Tension Glaucoma. Carlos Gustavo De Moraes*, Alissa R. Link, Martin T. Wells, Adji Dieng, Jeffrey M. Liebmann, Mary E. Charlson, **Robert Ritch**
5. Descemet Membrane Endothelial Keratoplasty (DMEK) Combined With Cataract Surgery: Complications And Visual Results. **Mark A. Terry***

BOLD=AOS member *=presenter

EXECUTIVE SESSION, SATURDAY, MAY 18, 2013

RICHARD PARRISH, MD: Good morning everyone I'd like to call the order of this Executive Session of the 149th Meeting of the American Ophthalmological Society.

The Executive Vice President, Dr. Tom Liesegang will now give his report:

REPORT OF THE EXECUTIVE VICE-PRESIDENT 2013

THOMAS J. LIESEGANG MD: The investments of the Society have prospered nicely during this recent stock market run and are presently at their historic high. The Society remains in a strong financial condition. The Council is actively engaged with the Society's financial managers at Vanguard, including direct dialog during the Council meetings. The AOS has an investment committee and an audit committee to monitor the financial activities of the Society; these committees are pleased with the present financial status of the AOS. The AOS Council recommends no increase in dues next year.

The three sources of income for the AOS are membership dues, annual meeting registration fees, and investment income. The AOS investment income continues to subsidize the meeting, the Transactions, and the membership activities. The Knapp symposium held during the Annual Meeting is supported by the Knapp Fund. The Council is careful to use the bequeathed funds following the legal guidelines for their use. The Council carefully monitors all the expenses in an attempt to maximize the AOS holdings.

There are now 219 active members and 134 emeritus members with the bylaws permitting up to 275 active members. New members that have been accepted for membership last year were featured in the spotlight session during the Annual Meeting on Thursday afternoon and they will be introduced at the banquet. The AOS website continues to be refreshed each year with information on new members, Council and Officers, as well as past and present members. There is information about the history of the Society, of the Charitable, Educational and Scientific Trust Fund, of the Herman Knapp Testimonial Fund, of the Howe Medal; a listing of all past members and prior meeting sites; membership requirements, a calendar of activities for the year and there is now a history of all the athletic trophies and their winners over the years, along with a photo of the trophy. There is linkage to the full text of each article in each Transactions volume since 1864. All members are encouraged to submit a biosketch and photo for the Website. Recent changes by the Council include the removal of the requirement for submission of papers presented at the meeting and the

encouragement of international members. Under the leadership of Marilyn Miller, the AOS has developed a symposium to be included in the World Ophthalmology Conference to be held in Tokyo April 2014.

Changes in the Meeting this year include recording the program with audio and video for future web presentation. This will assist in extending and prolonging the effect of the Annual Meeting.

The AOS Council publishes a Newsletter twice a year over the past 6 years, highlighting AOS activities, announcements, and encouragement of participation in leadership positions and the annual meeting. The AOS Council, under the leadership of Marilyn Mets, produced a white paper based on a prior Knapp symposium and entitled, "The Ophthalmologist of the Future.

The AOS is preparing for the 150th Anniversary meeting in NYC next year and have special academic meeting plans in preparation. An updated history of the Society, to accompany prior versions of the history of the Society, is being prepared by Dan Albert and will be presented to members at the Meeting in NYC, along with a verbal presentation by Dan.

2013 AOS PRESIDENT RICHARD K. PARRISH, II, MD

REPORT FROM THE COUNCIL CHAIR

RICHARD P. MILLS MD MPH: Your Council is charged with the day-to-day operation of the AOS, as well as serving in a fiduciary capacity to safeguard the AOS endowment. In 2012-13, the Council has consisted of myself, David Wilson, Jay Erie, Ed Wilson, and Anne Coleman.

My primary message to bring you today is to ask you to plan to attend the 150th anniversary meeting of the AOS in New York City May 15-18, 2014. It is a wonderful venue: the brand new Ritz-Carlton in Battery Park, Lower Manhattan. The hotel easily meets our quality standards, and is in a very walkable neighborhood near the Twin Towers memorial and at the confluence of the Hudson and East Rivers. Convenient subway connections make travel uptown quick and inexpensive. The Knapp symposium will be on Ocular Gene Therapy, with presentations on gene replacement therapy, pharmacologic delivery of genes, gene vs. stem cell therapy, risks of gene replacement, and ethical considerations. There are two major temporary changes related to the venue and the anniversary: there will be no athletic program in 2014, and there will be no free papers (though a vigorous poster session is planned). In their place on the program will be a series of talks centered on each of nine subspecialty areas of ophthalmology: where we've been and where are we going. Leaders from the membership in each area are being recruited to give these talks. In addition, vignettes from video interviews with past Presidents and Howe Medal award winners will be shown. Capping it all off will be the 150th anniversary lecture, "A History of the AOS", given by Dan Albert, MD.

For years, the AOS meetings have featured a named lectureship honoring Frederick Verhoeff. The Council decided to name an additional annual lecture for Frederick Blodi MD, to be delivered by an AOS member in mid-career. In addition, the Council has

elected to continue its support of the Heed Foundation Scientific Symposium for residents and junior faculty interested in being clinician scientists.

It has been an honor and a privilege to serve the Society this past 5 years on the Council. Its leadership for next year is in very good hands under the direction of David Wilson MD.

REPORT OF THE AOS AUDIT COMMITTEE

JOHN CLARKSON, MD:John Clarkson was the Chair of the AOS Audit Committee this year with additional members Richard Mills (Council Chair) and Thomas Liesegang (EVP). Dr Clarkson was unable to attend the Audit committee conference call but was informed of the results. The Audit committee met on June 24, 2013 with additional guests including Neil Erickson and Daniel Figueredo of Burr, Pilger, and Mayer Accountants and Alice Paw as Finance Manager, American Academy of Ophthalmology and Steven Rausch as Director of Finance, American Academy of Ophthalmology. AOS Management staff included Stephen Moss, Lisa Brown and Timothy Losch.

The Committee reviewed the Fiscal Year 2012 Audited Financial Statements and Ms. Paw provided an overview. Ms. Paw noted that there were no significant changes to the presentation of the footnotes, with one exception: footnote 1 on pages 6 and 8 regarding cash equivalents and reclassifications was eliminated as there were none in 2012. Ms. Paw reported that the total net assets increased from the prior year primarily as a result of an increase in investments due to unfavorable market conditions.

Drs. Mills and Liesegang convened an Executive session with no irregularities reported.

2013 AOS PRESIDENT RICHARD K. PARRISH, II, MD AND HIS WIFE MARIANNE

REPORT OF THE COMMITTEE ON THESES

J TIMOTHY STOUT, MD PhD MBA: Chair and reporting member, Committee Members include: Thomas W. Gardner, MD and John D Gottsch, MD: The AOS Thesis Committee reviewed 21 thesis submissions in 2013. Of these, 9 were new, 10 were first time resubmissions from the past two years and 2 were second re-submissions.

Of the 9 new submissions, 1 was accepted, 1 was returned for minor revision, meaning likely acceptance this year, 5 were returned for major revision, requiring a resubmission and re-review by the committee, and 2 were rejected.

Of the 10 revised first time re-submissions, 3 were accepted without revision, and 7 were returned for minor revision.

Of the 2 revised second re-submissions, both were returned for minor revision.

In total, of the 21 submissions this year, 4 were accepted, 10 required only minor revision, and 5 were returned for major revision and 2 were rejected.

REPORT OF THE EDITOR

EMILY Y. CHEW, MD:The 2012 110th volume of the *Transactions* of the American Ophthalmological Society (TAOS) was published online. All previous publications in the *TAOS* are easily accessible through PubMed Central at http://www.ncbi.nlm.nih.gov/pmc/journals/308/. In addition to the full text of the 7 theses, the contents included the proceedings of the Executive Session, reports from the Society to other organizations, Necrology, Banquet, abstracts of the 18 oral and 12 poster presentation of the 2012 Annual Meeting, and presentation of the Howe Medal.

The scientific community continues to access articles from this original source of important information. During the month, July 2013, and in the last 12 months, 28,611 individual unique user IPs retrieved 14,660 full text articles in HTML format and 6,440 in the PDF version. An additional 16,899 summaries were also retrieved. During July 1 2012 to July 2013, the most frequently retrieved article was the thesis by Peter C. Donshik, "Giant Papillary Conjunctivitis". Trans Am Ophthalmol Soc, 1994 Dec. 92:687-744." Total retrievals were 687 with 531 PDFs requested.

We have changed the publication procedures to accelerate the publication of all the theses. This is a welcomed change by all. We are also looking into possibly obtaining an impact factor for the *Transactions of the American Ophthalmological Society* in the future. I appreciate this opportunity to serve the society.

REPORT OF THE COMMITTEE ON PROGRAMS

STEPHEN D. MCLEOD, MD: 33 abstracts were submitted to the Committee on Programs for possible inclusion in this year's scientific program. **18** abstracts were chosen by the committee for paper presentation, **4** of which were prior AOS theses (Baudouin, Kerr, Krueger, Lueder), all of which were the author's first presentation as an AOS member. One paper that had been withdrawn due to a death in the family was also included. **14** abstracts were invited for poster presentation—**12** authors accepted the invitation.

The Committee on Programs would like to remind the membership that manuscripts published prior to the AOS meeting are not eligible for presentation at the meeting. At each AOS annual meeting, there is a limit of 1 paper and 1 poster per member as first author. All accepted abstracts not selected for podium presentation will be offered poster presentation—we encourage members to support the poster session as presenters and as audience members.

Continuing medical education credit is being offered again this year. A total of **10.75** Category 1 credits will be awarded for the 2013 meeting. Credit was awarded for both of the symposia and for **all** of the papers. One of the symposia was approved for **1.5** hours of ethics CME credit. It remains a challenge to encourage all scientific program contributors to adhere to the guidelines for CME credit. Common problems include

- Insufficient information to demonstrate educational need
- Practice gap not clearly identified
- Presentation unbalanced
- Authors did not respond to request for additional information

Acquiring CME credit required significant AOS staff time and effort. Much of this time was spent trying to acquire information for each paper that was not included by the authors in the original abstract submission. Authors are reminded that the following information is critical to obtaining CME credit for their paper: current practice/outcomes, preferred practice (practice "gap"), references, financial disclosure, off-label use disclosure, and IRB status. These sections of the abstract submission form are therefore NOT optional. Remember that the key question being asked by CME reviewers is, "How will the presentation of this work improve ophthalmic practice and/or patient care?"

I would like to thank this year's authors, discussants, and symposium speakers for their enthusiastic participation, the near universal prompt response to queries, and the quality and scholarship of the presentations. The members of the Committee on Programs—Ed Buckley, Jerry Sebag and Carol Shields—did an outstanding job reviewing abstracts and securing authoritative and insightful discussants. We also must express our most sincere gratitude to the AOS staff for their tremendous work in putting on this year's meeting, especially Stephen Moss, Lisa Brown, and Tim Losch.

REPORT OF THE COMMITTEE ON MEMBERSHIP

ANNE L COLEMAN, MD, PHD:I would like to thank my colleagues who were also on the Committee on Membership, Marian Macsai, Timothy Olsen, and Joel Schuman. We reviewed letters of nomination and their seconds, along with their applications and credentials. After an extensive review, this data was shared with the AOS Council, where 16 individuals were invited to submit a thesis to join our prestigious organization. This number of invitations is consistent with the tradition of the organization to invite leaders who have a strong publication or creative work record and a stellar reputation among their colleagues. We would like to thank the members who nominated or seconded a potential candidate, since the future of this beloved organization depends on our new members.

COUNCIL APPOINTMENTS

RICHARD MILLS, MD: **Council Chair Report on the Slate of Officers**

After taking into consideration all member names submitted to the Council for potential leadership positions for 2013-14 the Council put forward the following individuals for consideration:

President – Hans Grossniklaus
Council Member – Woodford S. Van Meter
Executive Vice President – Thomas Liesegang (to continue)
Editor, *Transactions* – Emily Y. Chew (to continue)
Committee on Programs – David Tse
Committee on Theses – John Thompson
Committee on Membership – William F. Mieler
Committee on Prizes – Lee Jampol
Committee on Emeriti – Froncie Gutman (to continue)
Archivist/Photographer – Ralph Eagle, Jr. (to continue)
Committee on Athletics – Rick W. Fraunfelder
Committee on New Members – Evelyne Paysse & David Coats (to continue)
PAAO Representative – Eduardo Alfonso (to continue)
ACS Representative – Edward Raab (to continue); George Spaeth (to continue as alternate)
AOC Representative – Thomas France (to continue); Edward Raab and David Weakley (to continue as alternates)
AAO Council Representative – Thomas J. Liesegang (to continue), Richard P. Mills (to continue as alternate)
ICO Representative – Marilyn T. Miller (to continue)
JCAHPO Representative – William F. Mieler (to continue)
Parliamentarian – Edward L. Raab

All were contacted and agreed to serve.

AOS COUNCIL.
FROM LEFT: JAY C. ERIE, MD, THOMAS J. LIESEGANG, MD, RICHARD P. MILLS, MD, RICHARD K. PARRISH, II, MD, ANNE L. COLEMAN, MD, DAVID J. WILSON, MD, EMILY Y. CHEW, MD

REPORT OF THE ARCHIVIST PHOTOGRAPHER

RALPH C. EAGLE JR MD: I took more than 1000 digital photographs at the one hundred forty-eighth annual meeting of the American Ophthalmological Society held at The Charleston Place, Charleston, South Carolina on May 17-20, 2012. Seven photos were included as color illustrations in the 2012 on-line volume of the TRANSACTIONS OF THE AMERICAN OPHTHALMOLOGICAL SOCIETY. These included photos of 2012 AOS President Douglas D. Koch, MD, President Koch and his wife Marcia D. Murphey, and group photos of The Council and the New Members. Also included were photos of new member Deepak P. Edward, MD signing the AOS membership book, 2011 Lucien Howe Medalist Hugh R. Taylor with Drs. Marilyn T. Miller and George B. Bartley, and Dr. Taylor with his wife Liz Taylor. A photo show comprising 198 PDF images from the 2012 meeting can be downloaded from the *meeting photos* section of the *members only* section of the AOS website. PDF photo shows from the 1996 through 2012 meetings currently can be downloaded. A presentation of historical photos from 1940's through the 1960's entitled "Images from the Past" can also be downloaded. This presentation includes a number of fascinating color photos from the 1940 meeting that depict many distinguished former members including Frederick Verhoeff, Edward Jackson, Jonas Friedenwald and Walter Lancaster. The digital archives of the AOS now comprise more than 7000 high-resolution digital photographs stored on CDs, DVD's and hard drives.

REPORT OF THE COMMITTEE ON EMERITI

FRONCIE GUTMAN, MD:Since our AOS Meeting in 2012, the following deaths have been reported to the Secretary. There have been nine deaths since the last AOS Annual Meeting in 2012:

NAME	YEAR INDUCTED	RESIDENCE
Melvin G. Alper	1975	Bethesda, MD
Leonard Apt	1980	Los Angeles, CA
Morton S. Cox, Jr.	1980	Pinckney, MI
William G. Everett	1966	Ponte Vedra, FL
William C. Frayer	1966	Bryn Mawr, PA
Thomas R. Hedges, Jr.	1963	Moorestown, NJ
Robert E. Kennedy	1964	Pittsford, NY
Denis M. O'Day	1990	Nashville, TN
Stephen J. Ryan	1979	Los Angeles, CA
Lorenz E. Zimmerman	1985	Washington, D.C.

May I ask for the membership to stand for a moment of silence to respect the memory of these friends and colleagues.

The following members have applied for Emeritus membership:

NAME	YEAR INDUCTED	QUALIFICATION
Jorge A. Alvarado	1989	70+ Years of Age, Member for 10+ Years
J. Brooks Crawford	1980	Retired, Member for 25+ Years
Peter C. Donshik	1994	70+ Years of Age, Member for 10+ Years
Stephen S. Feman	1994	Retired From Active Practice, Member for 10+ Years
Alan H. Friedman	1984	Over 70 Years of Age, Member for 25+ Years
David L. Guyton	1986	Member for 25+ Years
W. Jackson Iliff	1985	Retired, Member for 25+ Years
James S. Kelley	1983	70+ Years of Age, Member for 25+ Years, Retired
Francis A. L'Esperance	1968	Member for 25+ Years
Malcolm L. Mazow	1987	Member for 25+ Years
Travis A. Meredith	1993	70 Years of Age, Member for 10+ Years
Mylan R. Van Newkirk	1997	Retired, Over 70 Years of Age, Member for 10+ Years
William M. Townsend	1991	73 Years of Age, Member for 10+ Years
George O. Waring	1989	70+ Years of Age, Member for 10+ Years
Kirk R. Wilhelmus	2000	Retired, Member for 10+ Years

REPORT OF THE REPRESENTATIVE TO THE COUNCIL OF THE AMERICAN ACADEMY OF OPHTHALMOLOGY

THOMAS J LIESEGANG MD:The Council of the American Academy of Ophthalmology (AAO) continues to meet in formal session twice yearly, first during the annual American Academy of Ophthalmology Annual meeting in the fall and then jointly with the AAO Board and State and Subspecialty Leadership at the Mid-Year Forum in Washington in April. The Council was established to provide liaison between the AAO Board of Trustees and the numerous member societies involved with socioeconomic, governmental and public service issues. The current Council consists of voting representatives of all fifty states and includes Puerto Rico and the District of Columbia. Twenty-four Sub-Specialty societies have equal representation; however, the five "Special Interest Societies" which include the AOS, Association for Research in Vision and Ophthalmology (ARVO), American Board of Ophthalmology (ABO), Eye Bank Association of America (EBAA) and the Canadian Ophthalmological Society have Associate Non-voting Councilors because of the way we are incorporated or because of our membership eligibility. Each representative, including the AOS representative, provides a semi-annual report to the AAO Council each year summarizing the activities of the individual states and societies.

Since its founding in 1864 the objective of the AOS has been "the advancement of ophthalmic Science and art", and its activities are primarily for the academic, educational and collegial benefit of its members. Although the AOS maintains no political or economic agenda, participation in the Council reflects its broad support for the Academy's mission.

As in previous years, the AAO has sponsored and promoted a Congressional Advocacy Day at the Mid-Year Forum during which a significant number of Councilors or alternatives were briefed on the Academy's top legislative priorities and counseled on relationship building with their congressional representatives before proceeding to Capitol Hill and the offices of their personal representatives in the House and Senate.

During the Mid-Year Forum and Council meeting, several recurring problems continue to take precedence. Hearings this year included the following symposia: The Workforce Puzzle: Use and Abuse of Midlevel Practice Extenders; The Confounding Situation with Compounded Drugs: The Risks and Impact on Ophthalmology; Electric Health Records: Impact on Cost effectiveness; and Patient Centered Care.

There are additional meetings held at the MYF, including meetings of different regions of the USA, meetings of state society representatives, and meetings of Subspecialty Societies. The AOS meets with Subspecialty Society group.

Both the AOS and the AAO continue to receive benefit in the forum provided by the MYF and the AAO Council activities. The next Council meeting is at the 2013 Fall Annual Meeting of the American Academy of Ophthalmology in New Orleans.

REPORT OF THE REPRESENTATIVE TO THE AMERICAN COLLEGE OF SURGEONS

EDWARD L. RAAB, MD:Our Society's representative has been named to the ACS Board of Governors and its Ophthalmic Advisory Council. These meet in conjunction with the ACS annual Clinical Congress and by teleconference. An ACS Governor acts as liaison between the organization represented by the Governor and the Board of Regents of the College for consideration of problems of mutual concern. Eighty-one of the 270 members of the Board of Governors represent specialty societies across the range of surgical fields, the remainder representing geographic regions of the United States and Canada and a number of other countries.

The College in the midst of reorganizing the committee structure of the Board of Governors. The Board's committees will be grouped under 5 major headings or "pillars": Member Services, Education, Advocacy and Health Policy, Quality Research and Patient Care, and Communication. Possible assignments for Dr. Raab will come from the International Relations, Clinical Congress Program, Specialty Society Representatives, and Board of Governors Coalition committees.

Another impetus has been more frequent updating of Governors with material to be shared with their constituents, and an effort to achieve increased racial, gender, and ethnic diversity of Board members. There are informational webinars and the circulation of weekly "NewsScopes" discussing various current issues.

Advocacy is another College initiative. Advocacy Summits have been held in 2012 and 2013, in preparation for participants to visit Capitol Hill to express member concerns to federal legislators. Increased funding for emergency medical services to trauma victims is prominent in the College's advocacy efforts.

As previously reported, training and education programs at the 2012 Clinical Congress included a symposium for residents debating the pros and cons of end of life surgery, patient safety presentations, and skills-oriented courses. Surveys conducted by the College have determined that the large majority of graduating surgery residents do not feel that they are well prepared for practice. The decline in number of cases during residency, due in part to the growing concentration on laparoscopic procedures and their pre-emption for the training of post-residency fellows, and to the decrease in opportunities for progressive assumption of responsibility for decision making, are important factors in this result. It is not clear to what extent this sentiment was voiced by ophthalmology residents, as laparoscopic procedures are not prominent in our training programs, and as the ophthalmologist constituency in the ACS is quite small.

The College has taken notice of a trend among graduating residents of surgical training programs to seek full time in-hospital employment. This trend has increased from 3% in 2001 to 32% in 2011. A guide has been developed that discusses the issues and strategies of importance to those interested in this type of career.

A situation of possible concern to our specialty and therefore to our Society is the very marginal presence of ophthalmologists at the membership and governance levels of the ACS. I have participated in the program planning for the 2013 Clinical Congress, and

again this year it will be necessary, and difficult, to find a topic that will appeal to the overall specialist mix attending the Congress, such as the excellent course on ocular and orbital trauma presented in 2012.

REPORT OF THE REPRESENTATIVES TO THE AMERICAN ORTHOPTIC COUNCIL

EDWARD L. RAAB, MD:The American Orthoptic Council consists of ophthalmologists specializing in pediatric ophthalmology and strabismus, and of certified orthoptists. Its mission over many years has been to establish requirements for and accredit orthoptic teaching programs and program content; to examine candidates for certification; establish standards for continuing education of certified orthoptists; and to promote and oversee the knowledgable and ethical practice of orthoptics. Among its successful major achievements has been the recognition of orthoptics as a profession rather than a technologic adjunct to ophthalmic practice.

Our Society's representatives to the Council are Drs. Thomas France, Edward Raab, and David Weakley. Dr. France has announced his attention to retire from the Council, as its longest tenured member, after many years of outstanding service.

During the past year, Dr. France served as Chair of the Accreditation and International Affairs Committees, Representative to the Canadian Orthoptic Council, and member of the Editorial, Nominating, Program, and Finance Committees. Dr. Raab served as Chair of the Bylaws Committee, a Vice-Chair of the Program Committee, and member of the Ethics, International Affairs, and Program Support Committees. Dr. Weakley served as Chair of the Nominating Committee and member of the Accreditation, International Affairs, Editorial, and Long Range Planning Committees. All are Past Presidents of the Council.

In an unprecedented action, The American Orthoptic Council has revised its structure to increase the number of Certified Orthoptist members to be equal to that of the ophthalmologist members. This responds to the desire of the orthoptist community to have a greater voice in the oversight of their profession. The Council also approved the addition of ophthalmologists representing the Section of Ophthalmology of the American Academy of Pediatrics, as an effort to extend the awareness of orthoptics and its practitioners to a large constituency of physicians interested in eye care of children. The Council also admitted to membership the Editor of the American Orthoptic Journal as an *ex officio*, non-voting member unless also serving as a representative from one of the sponsoring organizations. Bylaws enabling these changes were adopted after extensive planning and discussion.

The Council's Annual Meeting and certifying examinations will be held in Nashville October 3-5, 2013. Fourteen candidates are expected to seek certification, among whom are several foreign orthoptists seeking Council certification. Candidates must have passed a prior written examination, which this year for the first time was in electronic form.

Members of the Council and the American Association of Certified Orthoptists continue to be active in national and international professional meetings. Several had participated in the quadrennial International Orthoptic Congress held in Toronto in June, 2012. Orthoptist former Council Member Katherine Fray has been named Secretary of the International Orthoptic Association, which is planning the Congress to be held in Rotterdam in 2016.

The AOC and the AACO join each year with the American Academy of Ophthalmology to present the traditional Sunday Symposium at the AAO Annual Meeting, and offer a workshop, this year co-moderated by AOS representative Dr Raab, at the Annual Meeting of the American Association for Pediatric Ophthalmology and Strabismus. There are present efforts to include orthoptist participation in international pediatric eye care programs.

The American Orthoptic Journal continues to be viable despite loss of a substantial subscription base in the form of a discounted benefit to AAPOS members. The Journal has been exploring ways to increase its subscribers, including the possibility of renegotiation with AAPOS. The Journal recently has achieved Medline recognition, and is held by Councilors and AACO members to be a source of highly valuable information about strabismus and associated problems, as well as an important element to the recognition of orthoptics as a profession. AOS member James Reynolds, as Editor-in-Chief of the AOJ, is an *ex officio* member of the American Orthoptic Council.

The descriptions above are a brief digest reflecting the efforts of several dedicated individuals, AOS non-members as well. The Council appreciates the continued support and identification with AOC objectives given by the AOS over many years.

REPORT OF REPRESENTATIVE TO THE INTERNATIONAL COUNCIL OF OPHTHALMOLOGY

MARILYN MILLER, MD

I. Review of the activities of this last year

The most important AOS /ICO activity this last year was the organization of the proposed AOS symposium for the World Ophthalmology Congress (WOC) to be held at the Tokyo International Forum and Imperial Hotel in Tokyo from April2-6, 2014. The sponsoring organization is the International Council of Ophthalmology (ICO) with the Japanese Ophthalmologic Society (JOS) and the Asia-Pacific Academy of Ophthalmology (APAO) acting as co-hosts.

The AOS had previously been invited to submit a symposium at the 2012 ICO Abu Dhabi meeting but concluded it would not do it at that time but reconsidered last year and decided to participate in the 2014 woe meeting by submitting a symposium. An e-blast was sent out to the AOS membership asking for members interested in participating to submit a talk. There were a few suggested themes but the topics were left to the members. The response was good and unfortunately some excellent talks had to be rejected. However the talks not chosen were also forwarded to the organizers of the meeting and may be included in other places on the program. The symposium was accepted as submitted. The speakers with the title of their talks are included in an attachment. Dr. Thomas Liesegang, Dr. Hugh Taylor and Professor Shigeru Kinoshita will act as Co-chairs for the session.

II. Recommendations

1. After the meeting the speakers and chairs discuss the apparent success of the symposium and make a recommendation as to whether the AOS should consider participating in future meetings with suggestions of types of topics, venue and other considerations. Following that evaluation a formal report is sent to the Council with recommendations for their information and future decisions.
2. The AOS continue its support of the ICO and explore ways the AOS might be of assistance to our international colleagues thru international organizations and other activities.

REPORT OF THE REPRESENTATIVE TO THE PAN AMERICAN ASSOCIATION OF OPHTHALMOLOGY

EDUARDO ALFONSO, MD:

1. ***Pan-American Council of University Professors*** (PACUPO)
   Eduardo Mayorga MD (Argentina) chairs ***PACUPO***. The purpose of this program is to unite and standardize university training programs throughout Latin American through exchange programs and other means. Dr. Mayorga is also chairing the growing E-Learning Initiative where the Pan-American plans to organize several webinars a year.
2. ***Fellowships Committee***.
   Paulo Augusto Arruda de Mello MD (Brazil) chairs the ***Fellowships Committee***. Scholarships are funded from a variety of sources. Over $150,000 in scholarships and other awards were given out in 2012.In addition to using its Pan-American Foundation unrestricted resources, funding for these programs is provided by personal donations to the Pan-American Foundation, from donations from industry partners and private or family foundations, such as the Retina Research Foundation, the Tim & Judith Sear Foundation and the David and Julianne Pyott Foundation.
3. ***Visiting Professors Committee***
   José Antonio Roca MD (Peru) chairs the ***Visiting Professors Committee***. The Visiting Professors Program sends Visiting Professors to the majority of the countries in Latin America.
4. 4. 2013 Meetings & Educational Activities
   Mark J. Mannis, MD, PAAO President, has broadened its scope of educational activities to include a PAAO symposium during the Cuban Congress in 2013.
   - **10th Leadership Development Course "Curso de Liderazgo"**
     Jointly with the American Academy of Ophthalmology (AAO) & the European Ophthalmological Society (SOE)
     January 11-13, 2013
     San Francisco, California
   - **XXI Pan-American Regional Course**
     Jointly with the Spanish Society of Ophthalmology
     April 25-27, 2013
     Santiago de Compostela, Spain
   - **2013 Pan-American Research Day (one day before the ARVO meeting)**
     May 4, 2012
     Seattle, Washington
   - **PAAO Symposium at the 7th International Congress of Ophthalmology at the 15th Cuban Congress of Ophthalmology**
     May 29-31, 2013
     Havana, Cuba
   - **30th Pan-American Congress of Ophthalmology jointly with the 37th Brazilian Congress of Ophthalmology**
     August 7-10, 2013
     Rio de Janeiro, Brazil
   - **XXVI Lo Mejor de la AAO en Español**
     November 20, 2013
     New Orleans, Louisiana
5. 5. Major Initiatives for the Year
   Expand PAAO educational courses to virtually all countries in the Western Hemisphere.
   - Expand the PAAO's online educational programs.
   - Endorse guest speakers at national meetings, resident exchange, newsletter features; consultant visits, shared executive expertise and shared advocacy experience

REPORT OF THE REPRESENTATIVE TO THE JCAPO

WILLIAM MIELER, MD:The mission of the Joint Commission on Allied Health Personnel in Ophthalmology (JCAHPO).is to enhance the quality and availability of ophthalmic patient care by promoting the value of qualified allied health personnel and by

providing certification and education. JCAHPO has a membership of 20 ophthalmology and allied health organizations, and has 35 representatives who are JCAHPO Commissioners. I was recently appointed as the AOS representative to JCAHPO, and I have voting privileges as one of the Commissioners.

JCAHPO continues to have ongoing, active initiatives in certification, education, E-learning, international relationships, career development, and in communication. As I become more involved in the JCAHPO organization, I will report much more detail in future reports, regarding the current activities in these specific areas. With virtually every national ophthalmology meeting, there is an accompanying JCAHPO program.

The involvement of the AOS with JCAHPO continues to promote a positive relationship between the two organizations. I recommend that the AOS continue to actively support and endorse JCAHPO's certification and continuing education programs. I have actively partaken in a variety of JCAHPO educational programs over the past seven to eight years, and I encourage all of you to become involved when asked to do so. This will only serve to strengthen the quality of our ophthalmic technical staff.

SCIENTIFIC SESSION, SATURDAY, MAY 18, 2012

6. Ultrashort-Pulse Lasers Treating the Crystalline Lens: Will They Cause Vision-Threatening Cataract? (AOS Thesis 2012). **Ronald R. Krueger***, Harvey S. Uy, Jared P. McDonald
7. Targeted Silencing Of VEGF Reduces Aberrant Intravitreal Angiogenesis In Model Of Retinopathy Of Prematurity. **M. Elizabeth Hartnett***, Zhihong Yang, Haibo Wang, Tal Kafri, Yanchao Jiang, Manabu McCloskey
8. Bupivacaine Shortens Eye Muscles And Corrects Strabismus. **Alan B. Scott***, Joel M. Miller, Kenneth K. Danh
9. Presentation of Fungal Endophthalmitis Outbreak Due to Contaminated Triamcinilone from a Compounding Pharmacy. **Kent W. Small***, Candy Chan, Thomas Walsh

Symposium: The Patient Or The Public:Whose Interests Do We First Serve?

1. Introduction: Richard P. Mills
2. Atlas Unshrugged: The Physician's Ethical Burden
3. Bottom Of The Ninth?

10. An Evaluation Of Non-Physician Educators' Role In Enhancing Cataract Patient's Surgical Knowledge And Satisfaction At The Aravind Eye Hospital. Paula Anne Newman-Casey*, Sathya Ravilla, Vinoth Palanichamy, Manju Pillai, Vijayakumar Balakrishnan, Haripriya Aravind, **Alan Robin**
11. Patient-Specific Induced Pluripotent Stem Cells (Ipscs) Allow Direct Investigation Of Disease Mechanisms In Inherited Retinal Degeneration. Budd A. Tucker, Robert F. Mullins, Kristin R. Anfinson, Emily E. Kaalberg, **Edwin M. Stone***
12. Increasing Use Of The Vaccine Against Zoster According To Current National Recommendations. **Elisabeth J. Cohen***, Zachary Elkin, Jesse Jung, Xiaochun Li, Judith D. Goldberg, Eliana Castano, Ilyse Haberman, Lisa Park, Michael Perskin

SATURDAY EVENING BANQUET, MAY 18, 2012

REPORT FROM THE COMMITTEE FOR NEW MEMBERS

EVELYN A. PAYSSE, MD**:** The New Members Committee welcomed this year's new members to the American Ophthalmological Society. The new members for 2013 are Christophe Baudouin, MD,PhD,FARVO, Janet Davis, MD, Bita Esmaeli, MD, Judy Kim, MD, Shigeru Kinoshita, MD,. Ronald R. Krueger, M.D, and Gregg Lueder, MD. Natalie Kerr, MD was also welcomed to her first AOS meeting. She joined the AOS in 2012 but was unable to attend last year's meeting. A brief background summary for each new member follows:

Christophe Baudouin, MD, PhD, FARVO

- Professor of Ophthalmology in Paris, France
- Chairman of Ophthalmology, Quinze-Vingts National Ophthalmology Hospital, Paris
- Cornea
- Developed various original techniques and models, in particular flow cytometry or confocal microscopy in conjunctival imprints, *in vivo* confocal microscopy

Janet Davis, MD

- Professor of Ophthalmology, Bascom Palmer Eye Institute
- Vitreoretinal surgeon and Director of Uveitis Section
- President of the American Board of Ophthalmology
- Treatment and disease mechanisms of ocular inflammations and infections

Bita Esmaeli, MD

- Professor of Ophthalmology at The University of Texas M. D. Anderson Cancer Center
- Orbital oncology and oncologic oculoplastic surgery
- Research interests: molecular signature of ocular/orbital tumors and eye and vision-sparing strategies for orbital and ocular cancers.

Judy Kim, MD (not able to attend)

- Professor of Ophthalmology, Medical College of Wisconsin
- Vitreoretinal surgery

- Research interests: ARMD, diabetic retinopathy, ocular trauma

Shigeru Kinoshita, MD (not able to attend)

- Professor and Chairman, Department of Ophthalmology, Kyoto Prefectural University of Medicine, Kyoto, Japan
- Cornea
- Innovator and pioneer in the biology and reconstruction of the ocular surface

Ronald R. Krueger, M.D.

- Medical Director of Refractive Surgery, Professor of Ophthalmology, Cleveland Clinic
- Refractive surgery
- Pioneered the development of femtosecond lasers in the treatment of the crystalline lens

Gregg Lueder, MD

- Professor of Ophthalmology and Pediatrics, Washington University Medical Center in St. Louis, Missouri
- Pediatric Ophthalmology and Strabismus
- Research interests in strabismus, amblyopia

Natalie Kerr, MD (2012 New Member)

- Roger L. Hiatt Chair, Professor of Ophthalmology and Pediatrics, University of Tennessee Health Science Center, Memphis; Chief, Pediatric Ophthalmology
- Special interest in pediatric cataract and genetic disorders

2013 AOS NEW MEMBERS. FROM LEFT: NATALIE C. KERR, RONALD R. KREUEGER, JANET L. DAVIS, CHRISTOPHE BAUDOUIN, BITA ESMAELI

REPORT FROM THE ATHLETIC COMMITTEE:

WOODY VAN METER, MD: My fellow ophthalmologists, colleagues, athletes and friends: I come to you tonight with a heavy heart. After 13 years as Director of Athletics for the AOS, I have decided to step down. The long and tiring days on the recruiting trail, the scouring ofk the globe to find world class venues for our athletic competition and the sleepless nights worrying about golf tee times and tennis courts have taken a toll on both my personal and professional life.

I am pleased to have been a part of the glory days of AOS athletics: I am fortunate to have witnessed the dynasties of George Spaeth, John Gottsch, Alice Wilkinson and June Wood on the tennis court; of Verinder Nirankari, Ron Smith, Stan Truhlsen, Mylan Van Newkirk and Pat Wilkinson on the golf course. The athletic events have been a unique and vital part of the AOS heritage, allowing new and old members and their spouses to meet in an informal and friendly competition year after year and add their names to the AOS trophies. The trophies, with past and present names engraved, connect us all to an illustrious past.

After much soul searching, I am resigning as of tonight. Sadly, this will be my last night with you as Athletics Director.

However, I will be staying on as General Manager and moving to the front office. I have agreed to accept a seat on the AOS

Council, and will retain oversight of the day to day activities of the AOS Athletics Department from my new position. Coach Rick Fraunfelder will assume my responsibilities as Athletics Director and strength coach and will be in charge of player development, having been groomed for this position by AOS leadership for the past three years. And I pledge that we will both work tirelessly to maintain the AOS dynasty in the style to which you have been accustomed, and continue the venerable AOS athletics tradition for another 150 years.

REPORT FROM THE COMMITTEE ON PRIZES

JOHN CLARKSON, MD: Dan B. Jones, MD was named recipient of the Lucian B. Howe Medal during the 2013 Annual Meeting of the American Ophthalmological Society. Dr. Jones served on the AOS Council from 1999 through 2004 and as President in 2008. He is the 80th individual to receive the honor since it was instituted in 1922. The Howe medal is awarded for one of the following reasons:

1. Discoveries so notable as suddenly to advance the progress of ophthalmology in all parts of the world.
2. Conspicuous ophthalmologic service as a writer or teacher, or, long years of devotion to our science and other contributions which constitute unusually distinguished service to ophthalmology.
3. Outstanding original investigation in the field of ophthalmology.

A Phi Beta Kappa graduate of Duke University and an AOA graduate of Duke Medical School, Dr. Jones trained in ophthalmology at Bascom Palmer Eye Institute with fellowship training at Moorfields Eye Hospital. He joined the faculty at Baylor College of Medicine in 1972 and currently serves as the Sid W. Richardson Professor, Distinguished Service Professor and Margaret Root Brown Chair of Ophthalmology at Baylor and the Chief of Ophthalmology of the Harris County Hospital District, Texas. He is an internationally recognized expert in Cornea and External disease and has received numerous honors and awards included among them are the following:

Duke University Distinguished Alumnus	1988
Baylor College of Medicine First Outstanding Teaching Award	1991
Baylor College of Medicine Distinguished Faculty Member	1996
Baylor College of medicine Distinguished Service Professor	2003
American Academy of Ophthalmology Lifetime Achievement Award	2003
Baylor College of Medicine Danny B Jones Endowed Chair	2012

The committee report was presented by Dr. John Clarkson, 2013 Chair of the Committee on Prizes. Dr. Jones was escorted to the podium by Dr. Marilyn T. Miller and Dr. George B. Bartley, the other members of the Committee.

2013 LUCIEN HOWE MEDALIST DAN B. JONES, MD

SCIENTIFIC SESSION, SUNDAY, MAY 19, 2013

13. The Role Of Autophagy In The Clearance Of Rpe Lipofuscin**. Shalesh Kaushal***, Lei Lei, Radouil Tzekov, Huapeng Li, J. Hugh McDowell, Guangping Gao, Wesley C. Smith
14. The Association of Neonatal Dacryocystoceles and Infantile Dacryocystitis with Nasolacrimal Duct Cysts. Gregg T. Lueder*
15. The Role of Thyroid Eye Disease and Other Factors in the Overcorrection of Hypotropia Following Unilateral Adjustable Suture Recession of the Inferior Rectus. Natalie C. Kerr*
16. Visual Field Improvement in the Collaborative Initial Glaucoma Treatment Study**. George Spaeth***, Paul Palmberg, **Paul Lichter**, Brenda Gillespie, Leslie Niziol, David Musch
17. The Monofixation Syndrome - Does it change with time?. **Malcolm R. Ing***, Kathryn Roberts, Alexander Lin, John Chen

Could Benzalkonium Chloride Participate to Trabecular Meshwork Degeneration in Glaucoma?. **Christophe Baudouin***, Alexandre Denoyer, Francoise Brignole-Baudouin

2013 LUCIEN HOWE MEDALIST DAN B. JONES, MD AND HIS WIFE MARILYN JONES

Members registered for the 2013 meeting. XXX professional guests are at the end of the list.

Members

Abbott	Richard	Active Member	Chow	Alan	Active Member
Asbell	Penny	Active Member	Cibis	Gerhard	Active Member
Bartley	George	Active Member	Clarkson	John	Active Member
Bateman	J. Bronwyn	Active Member	Cohen	Elisabeth	Active Member
Baudouin	Christophe	Active Member	Coleman	Anne	Active Member
Berler	David	Emeritus Member	Crawford	J. Brooks	Emeritus Member
Black	Bradley	Active Member	Davis	Janet	Active Member
Blomquist	Preston	Active Member	Day	Susan	Active Member
Bobrow	James	Active Member	Doughman	Donald	Active Member
Brodsky	Michael	Active Member	Durrie	Daniel	Active Member
Buckley	Edward	Active Member	Eagle, Jr.	Ralph C.	Active Member
Bullock	John	Emeritus Member	Erie	Jay	Active Member
Cantor	Louis	Active Member	Esmaeli	Bita	Active Member
Caprioli	Joseph	Active Member	Feldon	Steven	Active Member
Chew	Emily	Active Member	Feman	Stephen	Emeritus Member

Ferris	Frederick	Active Member
Flach	Allan	Active Member
Fraunfelder	Frederick T.	Emeritus Member
Fraunfelder	Frederick W.	Active Member
Friedman	Alan	Active Member
Gardner	Thomas	Active Member
Gelender	Henry	Active Member
Godfrey	William	Emeritus Member
Goldbaum	Michael	Active Member
Goldberg	Robert	Active Member
Good	William	Active Member
Gottsch	John	Active Member
Grand	M. Gilbert	Active Member
Gross	Ronald	Active Member
Grossniklaus	Hans	Active Member
Gutman	Froncie	Emeritus Member
Haller	Julia	Active Member
Harris	Gerald	Active Member
Hartnett	Mary	Active Member
Heckenlively	John	Emeritus Member
Holland	Gary	Active Member
Horton	Jonathan	Active Member
Humayun	Mark	Active Member
Iliff	W. Jackson	Emeritus Member
Ing	Malcolm	Active Member
Jampol	Lee	Emeritus Member
Jones	Dan	Emeritus Member
Kaiser	Peter	Active Member
Kaushal	Shalesh	Active Member
Kerr	Natalie	Active Member
Kikkawa	Don	Active Member
Kinyoun	James	Active Member
Krueger	Ronald	Active Member
Lakhanpal	Vinod	Active Member
Laties	Alan	Emeritus Member
Lawrence	Mary	Active Member
Lewis	Richard Alan	Active Member
Liesegang	Thomas	Active Member
Lindstrom	Richard	Active Member
Liu	Donald	Active Member
Ludwig	Irene	Active Member
Lueder	Gregg	Active Member
Manche	Edward	Active Member
Mazow	Malcolm	Emeritus Member
McLeod	Stephen	Active Member
Mets	Marilyn	Active Member
Meyers	Sanford	Active Member
Mieler	William	Active Member
Miller	Joseph	Active Member
Miller	Marilyn	Active Member
Mills	Richard	Active Member
Minckler	Donald	Emeritus Member
Mitchell	Paul	Active Member
Morrison	John	Active Member
Nelson	J. Daniel	Active Member
Netland	Peter	Active Member
Newman	Steven	Active Member
Nirankari	Verinder	Active Member
Nork	T. Michael	Active Member
Olsen	Timothy	Active Member
Parke, II	David W.	Active Member
Parrish, II	Richard K.	Active Member
Paysse	Evelyn	Active Member
Pulido	Jose	Active Member
Raab	Edward	Active Member
Ritch	Robert	Active Member
Robin	Alan	Active Member
Runge	Paul	Active Member
Sadun	Alfredo	Active Member
Schanzlin	David	Active Member
Schubert	Hermann	Active Member
Schwab	Ivan	Active Member
Schwartz	Daniel	Active Member
Scott	Alan	Active Member
Sebag	Jerry	Active Member
Sergott	Robert	Active Member
Sherwood	Mark	Active Member
Small	Kent	Active Member
Smith	Ronald	Emeritus Member
Sommer	Alfred	Active Member
Spaeth	George	Active Member
Spencer	Rand	Active Member
Stamper	Robert	Active Member
Steinert	Roger	Active Member
Stone	Edwin	Active Member
Stout	Tim	Active Member
Taylor	Hugh	Active Member
Terry	Mark	Active Member
Tornambe	Paul	Active Member
Tsai	James	Active Member
Tse	David	Active Member
Tychsen	Larry	Active Member
Van Meter	Woodford	Active Member
Van Newkirk	Mylan	Emeritus Member
Weinreb	Robert	Active Member
Wilhelmus	Kirk	Emeritus Member
Wilkinson	Charles	Active Member
Wilson	David	Active Member
Wood	Thomas	Emeritus Member
Wright	Kenneth	Active Member
Yeatts	R. Patrick	Active Member
Zacks	David	Active Member

Professional Guests

Chiang	Michael	Professional Guest
De Moraes	Gustavo	Professional Guest
Fox	Christi	Professional Guest
Keenan	Jeremy	Professional Guest
Klinger	Kyle	Resident/Fellow Guest
Lietman	Tom	Professional Guest
London	Nik	Professional Guest
Mokhtarzadeh	Ali	Resident/Fellow Guest
Newman-Casey	Paula Anne	Resident/Fellow Guest
Sundstrom	Jeffrey	Resident/Fellow Guest
Thulasiraj	Ravilla	Professional Guest
West	Sheila	Professional Guest

PAPER ABSTRACTS

TREATMENT OF LCA2 PATIENTS WITH AN AAV2 VECTOR EXPRESSING HRPE65

Tim Stout*, Richard Weleber, Maureen McBride, **David Wilson**, Mark E. Pennesi, Margaret Humphries, Terry Flotte, **Shalesh Kaushal**, Lauren Jensen, Andreas Lauer, Jeff Chulay

Purpose: To evaluate the safety and efficacy of rAAV2-CB-hRPE65 in patients with Leber congenital amaurosis caused by mutations in the RPE65 gene.

Methods: Twelve LCA2 patients were treated with a single, unilateral, subretinal dose of an AAV2 vector harboring the human RPE65 gene. Doses ranged from 1.8 x 10^{11} to 5.4 x 10^{11} viral genomes and were delivered in 450 µL. Serial postoperative examinations included measurements of acuity, static and kinetic perimetry, optical coherence tomography, fundus photography, luminance sensitivity and visual quality-of-life function.

Results: All subjects tolerated the surgery and study agent without surgical or inflammatory complications. Visual acuities were transiently depressed in the treated eye of all patients during the first 1 to 2 weeks after surgery, but returned to baseline or better in all of but two patients. Post-treatment improvement in visual acuity was observed in the four youngest patients with increases ranging from 6 to 12.5 ETDRS letters. For the three subjects with visual acuity of 20 to 31 ETDRS letters, one had a 2.5 letter increase and two had a 6.5 or 12 letter decrease in the treated eye. GATE total and central 30 degree hill-of-vision analysis trended towards improvement when compared to baseline values. The five subjects with the poorest baseline visual acuity had little or no change in their visual acuity over time, but for the four subjects followed for at least 6 months, three had a small but statistically significant increase in kinetic perimetry with the V4e target in the treated eye compared to baseline. An improvement in visual functioning and quality of life was noted by most patients.

Conclusions: Gene therapy for LCA2 patients with a recombinant AAV2-hRPE65 vector is safe and appears effective. The greatest improvements in visual acuity were observed in younger patients who presented with better baseline visual acuity.

VITRECTOMY FOR FLOATERS: PROSPECTIVE EFFICACY ANALYSIS AND RETROSPECTIVE SAFETY PROFILE

J. Sebag *, Kenneth M P Yee, Laura C Huang, Christianne Wa, **Alfredo A. Sadun**

Purpose: Floaters can impact vision, but the mechanism is unknown. It is hypothesized that floaters reduce contrast sensitivity (CSF) and that CSF can be normalized by vitrectomy. It is further hypothesized that not inducing PVD during surgery will lower the incidence of retinal tears (reported at 30%) and cataract formation (reported from 53-76%), which may also be mitigated by leaving anterior vitreous behind the lens.

Methods: 69 eyes (40 phakic) in 54 patients (age = 61 +/- 13.6 years) with floaters were compared to 42 eyes in 26 controls. The main etiologies for floaters were PVD (46/69; 67.6%), myopic vitreopathy (22/69; 31.8%), and asteroid hyalosis (8/69; 11.6%). Minimally-invasive 25G vitrectomy was performed without induction of PVD, leaving anterior vitreous intact, and inserting a non-hollow probe for superior cannula extraction. Follow-up averaged 15.5 months (range: 3-51). Vision status/satisfaction was quantified prospectively in 17 patients using the NEI Visual Function Questionnaire (VFQ-39). CSF was prospectively evaluated with Freiburg Acuity Contrast Testing (Weber index: %W) in 13 eyes of 10 floater patients (52.9 +/- 21.6 years) and compared to age-matched controls (N=32 in 16 patients; 52.6 +/- 14.6 years). The reproducibility of FrACT was found to be 92.1% (n=10 eyes).

Results: Eyes with floaters had 52% attenuation in CSF (4.37 +/- 2.54 %W) compared to controls (2.87 +/- 1.19 %W; $P < 0.008$). Following vitrectomy, CSF normalized in each case at 1 week (2.21 +/- 1.64 %W; $P < 0.014$) and remained normal at 1 month (2.16 +/- 1.29 %W; $P < 0.016$) and 3 months (2.28 +/- 1.58 %W; $P<0.015$). VFQ improved for the composite of all 39 questions (19.5%; P=0.004) as well as for general vision (37.5%; P =0.003), near vision (22.5%; P= 0.012) and driving (21.4%; P=0.012) at 1 month, and was sustained at 3 – 9 months post-op.

No patients (0/69; 0%) developed retinal breaks or detachments, hemorrhage, infection, or glaucoma. Only 8/40 (20%) phakic eyes developed cataracts requiring surgery, which occurred only in patients aged 53 to 66 years, an average of 16.1 months post-vitrectomy.

Conclusions: Floaters impact vision by lowering CSF, which in part explains patient unhappiness. CSF is normalized within 1 week after vitrectomy and remains normal at each post-op evaluation. Not inducing PVD reduced retinal tear incidence from 30% to 0% ($P < 0.007$). This and preserving vitreous behind the lens lowered the incidence of post-vitrectomy cataract surgery from 50% to 20% ($P < 0.02$) compared to previous studies. Minimally-invasive vitrectomy thus appears effective and safe in alleviating the visual dysfunction induced by floaters.

EVALUATION OF THE REACTIVE T CELL INFILTRATE IN UVEITIS AND INTRAOCULAR LYMPHOMA WITH FLOW CYTOMETRY OF VITREOUS FLUID (AN AOS THESIS)

Janet L. Davis*, Philip Ruiz, Jr., Milan Shah, Efrem D. Mandelcorn

Purpose: To describe the reactive T cell infiltrate in uveitis and intraocular lymphoma using flow cytometry of clinical intraocular specimens acquired during diagnostic pars plana vitrectomy.

Methods: Design: Retrospective review of diagnostic vitreous specimens between 1992 and 2011. Setting: University-based, tertiary care. Patients: 78 patients with uveitis or lymphoma undergoing pars plana vitrectomy and selected for intraocular testing based on clinical diagnostic uncertainty. Interventions: Pars plana vitrectomy with flow cytometry, gene rearrangement studies, and cytology.

Results: T cell infiltrates were found in all diagnostic categories with limited power to discriminate between uveitis and T lymphocyte reactive infiltrates in response to intraocular lymphoma. Statistically significant differences by two sample test of means between group means were found between 35 uveitis and 35 B cell lymphoma cases for T cell markers CD2, 3, 4, 5, and 7, but not for CD8. The CD4:CD8 ratio had a higher mean value in the uveitis group (P=.0113) and 8 T cell lymphomas had a statistically greater number of CD3+ lymphocytes compared to uveitis (P=.0199) by two-sample test of means. Likelihood ratios for were highest for CD2, CD5, CD7, CD4:CD8 ratio, CD20, and CD22.

Conclusions: Discrimination between uveitis and lymphoma based on cell identification by flow cytometry was limited due to the prevalence of T lymphocytes in all diagnostic categories, emphasizing the importance of a reactive T cell infiltrate in B cell lymphomas which may impede diagnosis. Flow cytometry may allow identification of more cases of T cell lymphoma than reported when it is combined with gene rearrangement and cytology.

MEAN NOCTURNAL ARTERIAL BLOOD PRESSURE IS STRONGLY ASSOCIATED WITH PROGRESSION OF NORMAL-TENSION GLAUCOMA

Carlos Gustavo De Moraes*, Alissa R. Link, Martin T. Wells, Adji Dieng, Jeffrey M. Liebmann, Mary E. Charlson, **Robert Ritch**

Purpose: Normal-tension glaucoma (NTG) patients may continue to have progressive visual field (VF) loss despite intraocular pressure (IOP) reduction. Low systemic blood pressure (BP) is a reported risk factor for glaucoma incidence and progression. However, most studies relied on single BP recordings and did not consider nocturnal BP in relation to daytime BP. We hypothesized that VF progression in NTG occurs at least in part due to systemic BP falling below the lower limit of autoregulation, resulting in ischemia and optic nerve injury, and that the extent and duration of the nocturnal fall in mean arterial pressure (MAP) below the autoregulatory limit may be associated with progression.

Methods: Patients diagnosed with NTG with reproducible VF defects were included. All patients had a history of IOP <21 mmHg prior to glaucoma treatment. Systemic and ocular characteristics were evaluated. BP was monitored every 30 minutes for 48 hours with an ambulatory recording device at 6-month intervals. All patients had a minimum of 8 VF tests and progression was defined based on the EMGT criteria and rates of mean deviation (MD) change (dB/yr).

Results: 166 eyes of 85 NTG patients were included (mean age, 65 years; 67% women). Multivariate analysis revealed that the total time that nocturnal MAP was below the daytime MAP was associated with VF progression (p=0.023). The total area under the curve (i.e.: both magnitude and duration of the BP below daytime MAP) was also significantly associated with progression (p=0.035). Use of topical beta-blockers (p=0.059) and IO (p=0.066) reached borderline significance. There was a significant difference in MD change between patients with and without hypertension in the total time (p=0.025) and the total area measure (p=0.024)

Conclusions: Nocturnal BP dips below the daytime mean MAP, as well as the magnitude and duration of these dips, are associated with progression of NTG. Patients with NTG should have 24-hour BP monitoring to assess their risk of progression.

DESCEMET MEMBRANE ENDOTHELIAL KERATOPLASTY (DMEK) COMBINED WITH CATARACT SURGERY: COMPLICATIONS AND VISUAL RESULTS

Mark A. Terry*

Purpose: Pre-op pupil dilation with cycloplegics is contraindicated in Descemet Membrane Endothelial Keratoplasty (DMEK). We report our technique, complications and results with the DMEK Triple procedure. (Transplantation combined with phacoemulsification cataract extraction and intra-ocular lens placement).

Methods: DMEK was performed in 68 eyes, 37 combined with cataract surgery and 31 with DMEK alone. No cycloplegia drops were used in any case. Complications, donor endothelial cell loss, and visual results were compared.

Results: Re-bubble rates in the triple cases (30%) were almost equivalent with the DMEK alone cases (32%), (p=0.82). Primary graft failure (PGF) was lower in the triple cases (8%) than in the DMEK alone cases (19%), but the difference was not statistically significant (p=0.29). Mean endothelial cell loss measured at 6 months after surgery was 31% in both groups. Early visual results were

not different between the two groups (mean = 20/24 and 20/25), with triple cases having 79% achieve ≥ 20/25 and 38% achieve ≥ 20/20; DMEK alone cases had 83% achieve ≥ 20/25 and 25% achieve ≥ 20/20. ($p > .10$ for all visual comparisons).

Conclusions: DMEK combined with cataract surgery with a technique that avoids cycloplegics has as low (or lower) a complication rate as performing DMEK alone and post-op visual results are comparable. When DMEK and cataract surgery are both required, they should be performed at the same time.

ULTRASHORT-PULSE LASERS TREATING THE CRYSTALLINE LENS: WILL THEY CAUSE VISION-THREATENING CATARACT? (AOS THESIS 2012)

Ronald R. Krueger*, Harvey S. Uy, Jared P. McDonald

Purpose: To demonstrate that ultrashort-pulse laser treatment in the crystalline lens does not form a focal, progressive, or vision-threatening cataract.

Methods: An vanadate picosecond laser (10 ps) with prototype delivery system was used. Primates: 11 rhesus monkey eyes were prospectively treated at the University of Wisconsin (energy 25-45 microJoules/pulse and 2.0-11.3 Million pulses per lens). Analysis of lens clarity and fundus imaging was assessed postoperatively for up to 4.5 years (5 eyes). Humans: 80 presbyopic patients were prospectively treated in one eye at the Asian Eye Institute in the Philippines (energy 10 microJoules/pulse and 0.45-1.45 Million pulses per lens). Analysis of lens clarity, best-corrected visual acuity (BCVA), and subjective symptoms was performed at 1 month, prior to elective lens extraction.

Results: Bubbles were immediately seen, with resolution within the first 24 to 48 hours. Afterwards, the laser pattern could be seen with faint, noncoalescing, pinpoint micro-opacities in both primate and human eyes. In primates, long-term follow-up at 4.5 years showed no focal or progressive cataract, except in 2 eyes with preexisting cataract. In humans, <25% of patients with central sparing (0.75 and 1.0 mm radius) lost 2 or more lines of BSCVA at 1 month, and >70% reported acceptable or better distance vision and no or mild symptoms. Meanwhile, >70% without sparing (0 and 0.5 mm radius) lost 2 or more lines, and most reported poor or severe vision and symptoms.

Conclusions: When treating the crystalline lens with a picosecond laser, focal, progressive, and vision-threatening cataracts can be avoided by lowering the laser energy, avoiding prior cataract, and sparing the center of the lens. Future investigation with a femtosecond laser is recommended in further characterizing these effects.

TARGETED SILENCING OF VEGF REDUCES ABERRANT INTRAVITREAL ANGIOGENESIS IN MODEL OF RETINOPATHY OF PREMATURITY

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Purpose: Vascular endothelial growth factor (VEGF) inhibitors have improved outcomes in adult eye diseases with abnormal angiogenesis, but in retinopathy of prematurity (ROP) concerns exist about inhibiting VEGF. We tested the hypothesis that targeted silencing of VEGF in cells that overexpress it would reduce abnormal intravitreal angiogenesis in a relevant model of ROP.

Methods: All studies were approved by the University of Utah Institutional Animal Care and Use Committee. A well-accepted rat model of oxygen-induced retinopathy (OIR) causes conditions similar to human severe ROP: fluctuations in arterial oxygen concentrations, extrauterine growth restriction, and zone II, stage 3 ROP with plus disease. Retinal VEGF was measured by enzyme-linked immunosorbent assay (ELISA). VEGF mRNA expression was localized in retina using in situ hybridization. Short hairpin RNAs were fashioned as microRNAs with fluorescent (GFP) tags to silence VEGFA (shRNA-VEGF) or luciferase (shRNA-luc) and packaged into lentivectors with CD44 promoters designed to target Mueller cells (provided by J. Flnnery). Bilateral subretinal injections of shRNA-VEGF or shRNA-luc (1uL) were performed on postnatal day (p)8. GFP of transduced cells was visualized in vivo with the Micron fundus camera. Intravitreal angiogenesis (IVA) and percent avascular retina (AVA) were measured in lectin-stained retinal flat mounts in p18 pups.

Results: At p14, VEGF localized to retinal layers corresponding to glutamine synthetase-positive Mueller cells. At p18, VEGF was increased in the ROP model 3-fold compared to room air raised pups ($P<0.0001$). shRNA-VEGFA treatment restored retinal VEGF levels to room air levels. At p18, IVA was significantly decreased 4-fold in retinal flat mounts ($P= 0.0017$), whereas AVA was unaffected compared to control.

Conclusions: In a model of ROP, silencing of Mueller cell-overexpressed VEGFA reduced IVA and restored VEGF levels to room air levels without adversely affecting AVA at p18. Additional study to selectively target overexpressed VEGF may lead to future treatments of severe ROP.

BUPIVACAINE SHORTENS EYE MUSCLES AND CORRECTS STRABISMUS

Alan B. Scott*, Joel M. Miller, Kenneth K. Danh

Purpose: To evaluate clinical effectiveness and gross anatomic changes resulting from bupivacaine injection into extraocular muscles to treat comitant horizontal strabismus.

Methods: In a prospective pilot trial, 19 patients with esotropia 9-40 pd received injection of bupivacaine into the lateral rectus muscle, and 12 patients with exotropia 12-85 pd received injection into the medial rectus muscle. Sixteen of these 31 patients having large strabismus angles also received injection of botulinum toxin into the antagonist muscle at the same treatment session. A second treatment was given to 13 patients who had residual strabismus after the first.

Results: At 6 months after the last injection, bupivacaine-injected muscles increased in volume by 5.9%; their maximum cross-sectional area increased by 7.9%. At the latest examination, average 15 months after the last treatment, the original deviation was reduced by 1.4 pd or 50%, and 52% of patients had residual deviation of 10 pd or less. Two patients with diplopia from slight over-corrections required surgical alignment. No eye was perforated or lost vision. The maximum muscle enlargement in this series, 15%, is an amount calculated to move the eye about 1 degree. Changes of 10-15 degrees, as in some of our cases, require one or more additional mechanisms. We suppose that the sarcomeres are rebuilt to make a wider shorter muscle. Alteration of the fiber types and addition of fibrous tissue within the muscle to stiffen it are likely additional mechanisms of action of bupivacaine upon eye muscles.

Conclusions: Bupivacaine corrects strabismus by altering eye muscle structure and length. The effect persists month to years in many cases.

PRESENTATION OF FUNGAL ENDOPHTHALMITIS OUTBREAK DUE TO CONTAMINATED TRIAMCINILONE FROM A COMPOUNDING PHARMACY

Kent W. Small*, Candy Chan, Thomas Walsh

Purpose: To provide data on the presentation of an outbreak of fungal endophthalmitis due to contaminated triamcinilone from a compound pharmacy.

Methods: A retrospective chart review was performed of 15 patients who received intravitreal injections of preservative-free triamcinolone obtained from Franck's pharmacy which were subsequently found to be contaminated with the fungus Bipolaris hawaiiensis. Seventeen eyes were injected (one twice) with this preservative-free triamcinilone . Two patients received bilateral sequential injections. The data extracted from the charts were: time to onset of signs and symptoms of infection, visual acuity, intraocular pressure, fundus photos, fluorescein angiography, ultrasounds, vitreous culture and biopsy results.

Results: Of the seventeen eyes injected, 12 (70%) eventually developed evidence of fungal endophthalmitis. The time of onset of signs and / or symptoms ranged from 2 weeks to 10 months, median 4 months. The typical presenting signs and symptoms were painless loss of vision in an eye which was white and quiet appearing except for cell in the anterior chamber and the vitreous. Vitreous biopsy (cytospin for hyphae) obtained by pars plana vitrectomy was more sensitive in making the diagnosis of fungal endophthalmitis than was vitreous culture or in office "vitreous taps" (including cyto-spin).

Conclusions: Fungal endophthalmitis is rare and can have an insidious and much delayed onset. Initially making the diagnosis without the context of a documented "outbreak" is extremely difficult. Endophthalmitis due to Bipolaris hawaiiensis, a plant mold, has only been reported twice before. Our Bipolaris endophthalmitis cases have many similarities with the Exserohilum meningitis cases. Both are ubiquitous airborne black molds which had contaminated triamcinilone by different compounding pharmacies. The markedly delayed onset of Bipolaris hawaiiensis infections is a potentially ominous warning for the patients and doctors involved with the 17,000 patients exposed to Exserohilum meningitis.

AN EVALUATION OF NON-PHYSICIAN EDUCATORS' ROLE IN ENHANCING CATARACT PATIENT'S SURGICAL KNOWLEDGE AND SATISFACTION AT THE ARAVIND EYE HOSPITAL

Paula Anne Newman-Casey*, Sathya Ravilla, Vinoth Palanichamy, Manju Pillai, Vijayakumar Balakrishnan, Haripriya Aravind, **Alan Robin**

Purpose: To evaluate the efficacy of non-physician pre-surgical educators in teaching cataract patients and enhancing satisfaction with their medical care .

Methods: We prospectively administered a questionnaire at an Aravind Eye Hospital to 60 patients with visually significant cataracts both before and after they underwent pre-surgical counseling. Our primary outcomes included patient's cataract knowledge and changes in patient's decisional conflict (1) over whether to undergo surgery. We assessed socio-demographic characteristics including

age, sex, occupation, literacy status, education, insurance status, and whether a patient was the primary decision maker. We evaluated each counselor's knowledge. After counseling, we measured patient satisfaction with the counseling services.

Results: Both the patient knowledge scores and decisional conflict scores improved following counseling (mean difference +2.0 questions out of 11, p=0.004 and +8.4, p<0.0001). Multiple regression identified female gender (Beta=2.5, p<0.001) and being illiterate (Beta=1.7, p=0.04), as important factors in how much the counseling increased patient knowledge. 99% of patients reported that they were satisfied with the counseling system. Counselor knowledge scores were correlated to patient satisfaction score (Pearson correlation coefficient 0.49, p<0.001). There was a significant correlation between the patient satisfaction score and the change in patient knowledge score (Pearson correlation coefficient 0.28, p=0.03). Undergoing surgery was associated with an increased satisfaction score (p=0.10).

Conclusions: Not all counseling programs have been as successful (2). The Aravind Eye Hospital has created a model program where non-physician educators are effectively counseling patients (3). Counseling improved knowledge and reduced anxiety about cataract surgery, potentially facilitating increased uptake. We found counseling to be important in reaching out to patients who have traditionally had more limited access to healthcare such as women and illiterate patients (4). Increased use of high quality counseling might help to further reduce the global burden of cataract blindness (5,6).

PATIENT-SPECIFIC INDUCED PLURIPOTENT STEM CELLS (IPSCS) ALLOW DIRECT INVESTIGATION OF DISEASE MECHANISMS IN INHERITED RETINAL DEGENERATION

Budd A. Tucker, Robert F. Mullins, Kristin R. Anfinson, Emily E. Kaalberg, **Edwin M. Stone***

Purpose: Usher Syndrome is an inherited disorder characterized by early onset hearing loss and retinitis pigmentosa (RP). Mutations in USH2A are the most common cause of both Usher syndrome type II and non-syndromic autosomal recessive RP. The large size of the USH2A gene and its polymorphism in the general population make it challenging to distinguish true disease-causing mutations from benign polymorphisms - something that will be essential to do during the development and deployment of gene and cell based therapies. This study was performed to test the hypothesis that patient-derived iPSCs could be used to demonstrate the pathogenicity of a recently discovered intronic mutation.

Methods: iPSCs were generated via transduction of human keratinocytes, obtained from a patient with USH2A-associated RP, using the transcription factors Oct4, Sox2, C-Myc and KLF4. iPSC potency and capacity for retinal differentiation were demonstrated by immunocytochemistry, western blotting, and teratoma formation. Pathogenicity of the USH2A mutation was demonstrated with rt-PCR and western blotting of USH2A.

Results: iPSCs were generated from a patient with USH2A associated RP. Cell lines were expanded in feeder free conditions and determined to be pluripotent based on the expression of pluripotency markers and the ability to generate tissues specific to all three germ layers. Following differentiation, eyecups containing both RPE and neural retina developed in vitro. Isolation of the neural retina and subsequent analysis of the USH2A transcript revealed that a suspected splice site mutation within IVS40 caused exonification of the intron and insertion of a premature stop codon.

Conclusions: By combining next generation sequencing and induced pluripotent stem cell (iPSC) technologies we were able to clearly demonstrate the pathogenicity of a an intronic mutation in a patient with non-syndromic USH2A associated RP. These findings will enable us to proceed with patient specific studies focused on USH2A gene correction and photoreceptor cell replacement.

INCREASING USE OF THE VACCINE AGAINST ZOSTER ACCORDING TO CURRENT NATIONAL RECOMMENDATIONS

Elisabeth J. Cohen*, Zachary Elkin, Jesse Jung, Xiaochun Li, Judith D. Goldberg, Eliana Castano, Ilyse Haberman, Lisa Park, Michael Perskin

Purpose: To increase usage of the vaccine against herpes zoster at an academic medical center by 1) having ophthalmologists provide the vaccine at a city hospital and 2) studying general internal medicine physicians' knowledge, attitudes, practices, and barriers before, and one year after, interventions to facilitate use.

Methods: 1) An IRB approved prospective study of 100 eligible ophthalmology clinic patients who received the zoster vaccine compared to 66 eligible patients who declined the vaccine. 2) An IRB approved baseline and follow up survey of general internal medicine physicians regarding the vaccine against herpes zoster pre and post interventions including education, increased availability at the pharmacy, and electronic medical record reminders. Pharmacy use of vaccine was monitored.

Results: 1) 166 consenting patients included 100 vaccinated patients and 66 patients who declined. The most common reason that patients declined was they wanted to speak with their primary care physician (23/49, 46.9%). 2) Response rate was 33.5% (89/266) for the baseline survey and 29.1% (75/257) for the follow-up, including 55 doctors who responded to both. Only 66% (42/64) at baseline and 72.6% (46/62) on follow-up responded that HZ vaccination was an important clinical priority. Physicians' preferred intervention was nurse-initiated prompting about vaccination (36/75, 48% at baseline and 29/60, 48.3% on follow-up). On follow-up,

more practices have supports for physician education about shingles (p=0.0034). Monthly pharmacy vaccine prescriptions increased from averaging 47 (range 33-59), prior to interventions, to 134 (range 103-169) afterwards (286% increase).

Conclusions: Addressing barriers to the zoster vaccine can increase its use. Physicians need to recommend this vaccine more strongly.

THE ROLE OF AUTOPHAGY IN THE CLEARANCE OF RPE LIPOFUSCIN

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Purpose: To understand the possible role of lysosomes and autophagy in degrading RPE lipofuscin.

Methods: RPE cells were fed with either unbleached or 4-hydroxynonenal (HNE) -modified rod outer segments (ROS). The cells were then treated with several lysosome or proteasome inhibitors or with known enhancers and inhibitors of autophagy and the autofluorescence was detected by FACS. Immunofluorescence microscopy with LC3 antibodies was used to confirm the effect of autophagy inhibitors or enhancers. The intracellular localization of lipofuscin after treatment with chloroquine or ammonium chloride (NH4Cl), both lysosomal inhibitors, was also evaluated by confocal microscopy. In a complementary approach, we monitored the levels of lipofuscin after downregulation of two autophagy proteins (ATG5 and ATG7) by either siRNA or shRNA. Finally, the autophagy inducer rapamycin was added to cells that have previously accumulated lipofuscin for live cell experiments.

Results: Cells supplemented with either HNE-modified ROS or unbleached ROS all increased lipofuscin-like autofluorescence (LLAF) at a similar rate at both wavelengths with the inhibition of lysosomes with NH4Cl or chloroquine or inhibiting autophagy (with 3-MA), In contrast, induction of autophagy with four known inducers (rapamycin, Ku-0063794, PI-103, PIK-90) significantly decreased LLAF in cells that have previously accumulated lipofuscin. After incubating the cells with either rapamycin, Ku-0063794 or PI103, a conversion of LC3-1 to LC3-2 was observed- confirming that autophagy was stimulated. Inhibition of ATG5 and ATG7 was confirmed by Western blot and resulted in an increase in lipofuscin. Live cell imaging of lipofuscin laden RPE cells treated with rapamycin demonstrated a rapid and significant decrease in lipofuscin.

Conclusions: These results emphasize the role of autophagy in modulating RPE lipofuscin. Further, it confirms the possibility of pharmacological clearance of RPE lipofuscin by small molecules modulating the mTOR/autophagy pathway, thus opening new avenues for the treatment of dry ARMD and other lipofuscinopathies.

THE ASSOCIATION OF NEONATAL DACRYOCYSTOCELES AND INFANTILE DACRYOCYSTITIS WITH NASOLACRIMAL DUCT CYSTS

Gregg T. Lueder*

Purpose: To investigate whether neonatal dacryocystoceles and dacryocystitis are associated with nasolacrimal duct cysts, and to report the outcomes of treatment of these disorders.

Methods: This was a retrospective medical record review of two groups of infants with nasolacrimal duct (NLD) obstruction treated in a referral practice. The first group consisted of 33 neonates who had dacryocystoceles with or without dacryocystitis. The second group consisted of 27 infants less than 6 months of age without dacryocystoceles who had NLD obstruction with symptoms severe enough to require early NLD probing. All of the patients underwent NLD probing and nasal endoscopy. When present, NLD cysts were removed. Treatment was considered successful if the dacryocystoceles resolved and there were no clinical signs of recurrent lacrimal infection.

Results: In the first group of 33 neonates, acute dacryocystitis was present in 16 patients, 12 had noninfected dacryocystoceles that did not resolve, and 5 had dacryocystoceles that resolved but severe symptoms persisted. All of the patients had NLD cysts that were surgically removed. The symptoms resolved after surgery in 31 patients (94%). In the second group of 27 older infants with severe symptoms, 12 (44%) patients had NLD cysts. The symptoms resolved in 11 (92%) of 12 patients following NLD probing and cyst removal.

Conclusions: Neonatal dacryocystoceles are almost always associated with NLD cysts. NLD probing with endoscopic cyst removal is the most effective method of treating these patients. Nasolacrimal duct cysts also are present in many young infants with severe symptoms of NLD obstruction. Nasal endoscopy is an important adjunct to the management of these infants.

HYPOTROPIA FOLLOWING UNILATERAL ADJUSTABLE SUTURE RECESSION OF THE INFERIOR RECTUS

Natalie C. Kerr*

Purpose: Overcorrection of hypotropia subsequent to adjustable suture surgery following inferior rectus recession is undesirable, often resulting in persistent diplopia and reoperation. I hypothesized that overcorrection shift after suture adjustment may be unique to thyroid eye disease, and the use of a nonabsorbable suture may reduce the occurrence of overcorrection.

Methods: A retrospective chart review of adult patients who had undergone eye muscle surgery with an adjustable suture technique was performed. Overcorrection shifts that occurred between the time of suture adjustment and 2 months postoperatively were examined. Descriptive statistics, linear regression, Anderson-Darling tests, generalized Pareto distributions, odds ratios, and Fisher tests were performed for two overcorrection shift thresholds (>2 and >5 prism diopters [PD]).

Results: Seventy-seven patients were found: 34 had thyroid eye disease and inferior rectus recession, 30 had no thyroid eye disease and inferior rectus recession, and 13 patients had thyroid eye disease and medial rectus recession. Eighteen cases exceeded the 2 PD threshold, and 12 exceeded the 5 PD threshold. Statistical analyses indicated that overcorrection was associated with thyroid eye disease (P=6.7E-06), inferior rectus surgery (P=6.7E-06), and absorbable sutures (>2 PD: OR=3.7, 95% CI=0.4-35.0, P=0.19; and >5 PD: OR=6.0, 95% CI=1.1-33.5, P=0.041).

Conclusions: After unilateral muscle recession for hypotropia, overcorrection shifts are associated with thyroid eye disease, surgery of the inferior rectus, and use of absorbable sutures. Surgeons performing unilateral inferior rectus recession on adjustable suture in the setting of thyroid eye disease should consider using a nonabsorbable suture to reduce the incidence of postoperative overcorrection.

VISUAL FIELD IMPROVEMENT IN THE COLLABORATIVE INITIAL GLAUCOMA TREATMENT STUDY

George Spaeth*, Paul Palmberg, **Paul Lichter**, Brenda Gillespie, Leslie Niziol, David Musch

Purpose: Evaluate whether occurrences of visual field improvement in the Collaborative Initial Glaucoma Treatment Study participants were real or due to random variation.

Methods: Baseline and follow-up VF tests (Humphrey 24-2 full threshold VFs) were obtained and mean deviation (MD) change from baseline over up to nine years of follow-up was analyzed. Baseline factors reported to be predictive of long-term VF loss in the CIGTS were inspected to determine the extent and direction of their association with VF improvement in repeated measures regression models.

Results: The percentage of CIGTS participants showing substantial VF improvement over time was similar to that showing VF loss through five years after initial treatment, after which VF loss became more frequent. At 1, 3, and 5 years after treatment, substantial VF loss/improvement was observed in 6.6%/7.5%, 10.9%/12.7%, and 14.5%/13.9%, respectively. At seven years, occurrences of substantial VF loss (19.6%) were more frequent than VF improvement (13.5%). Significantly predictive factors for VF improvement included female sex [odds ratio (OR)=1.73, 95% confidence interval (CI) = 1.17, 2.56], visit one year prior to cataract extraction (OR=0.11, 95% CI=0.02, 0.62), and an interaction between treatment and baseline MD in which participants treated with surgery who presented at baseline with more substantial VF loss were more likely to show VF improvement than those with comparable VF loss treated medically. Measures of intraocular pressure (IOP) control during treatment were also predictive of VF improvement, including a lower mean IOP, lower minimum IOP, and measures relating to maintenance of lower IOP during prior follow-up.

Conclusions: In CIGTS, comparable percentages of participants demonstrated either substantial VF loss or improvement through five years after treatment initiation, after which VF loss became more frequent. Predictive factors for VF improvement include some that are consonant with the postulate that VF improvement was real, such as measures of better IOP control over time.

THE MONOFIXATION SYNDROME - DOES IT CHANGE WITH TIME?

Malcolm R. Ing*, Kathryn Roberts, Alexander Lin, John Chen

Purpose: The purpose for this study of consecutive patients in a private practice of pediatric ophthalmology was to determine the etiology, characteristics and stability of the monofixation syndrome (MFS).

Methods: The charts of 63 consecutive patients encountered in a 5 year period (2008-2012), with a minimum of 3 years follow-up with the diagnosis of MFS, were studied to determine the etiology, characteristics and stability of the syndrome. Best visual acuity, motor angle deviation at near, fusion, as measured by the Worth-4-dots and stereoacuity, as tested by Titmus vectograph overlay, on the last visit were examined. The stability of the MFS was documented by comparing the date of the first diagnosis of the patients and

the date of the last exam for those who had not decompensated and comparison of the date of the decompensation and secondary surgery for those who did decompensate

Results: The etiology of the MFS was esotropia in 58 patients (92.0%), anisometropia in 2 patients (3.2%) and exotropia in 3 patients (4.4%). No decompensation of the MFS was found in those patients with refractive or exotropia etiology, but decompensation was found in a total of 6 patients with esotropia. Five of the decompensated patients were restored to MFS by secondary sugery and one experienced spontaneous recovery. Stable MFS patients were followed for 13.9 years and those that showed decompensation had been followed for an average of 6.4 years before decompensation. All patients fused the Worth-4-dots. There was no measurable stereoacuity in 2 patients. However, somewhat unexpectedly, 5 patients were found to have gradual improvement in their stereoacuity to record higher grade (60 seconds of arc or better) by the end of the follow-up period.

Conclusions: The MFS is a relatively stable binocular status but may change with time. A small percentage (9.3%) may decompensate during the follow-up period. However, an equal percentage of MFS patients (7.8%) may demonstrate evolution to 60 seconds or better stereoacuity when followed for a sufficient interval of time.

COULD BENZALKONIUM CHLORIDE PARTICIPATE TO TRABECULAR MESHWORK DEGENERATION IN GLAUCOMA?

Christophe Baudouin*, Alexandre Denoyer, Francoise Brignole-Baudouin

Purpose: Long-term antiglaucomatous drug administration may cause irritation, dry eye, allergy, subconjunctival fibrosis, or increased risk of glaucoma surgery failure, potentially caused by the preservative, benzalkonium chloride (BAK), whose toxic, proinflammatory, and detergent effects have extensively been shown experimentally. We hypothesize that BAK may also cause or aggravate trabecular meshwork (TM) degeneration.

Methods: Trabecular specimens were examined using immunohistology and RT-PCR. A trabecular cell line was stimulated by BAK and examined for apoptosis, oxidative stress, fractalkine and SDF-1 expression, and modulation of their receptors. An experimental model was developed with BAK subconjunctival injections to induce TM degeneration. Mass spectrometry imaging (MSI) assessed BAK penetration after repeated instillations in rabbit eyes.

Results: Trabecular specimens showed extremely low densities of trabecular cells and presence of cells expressing fractalkine and fractalkine receptor and their respective mRNAs. Benzalkonium in vitro induced apoptosis, oxidative stress, and fractalkine expression and inhibited the protective chemokine SDF-1 and Bcl2, also inducing a sustained IOP increase, with dramatic apoptosis of trabecular cells and reduction of aqueous outflow. MSI showed that BAK could access the TM at measurable levels after repeated instillations.

Conclusions: BAK enhances all characteristics of TM degeneration typical of glaucoma, namely trabecular apoptosis, oxidative stress, induction of inflammatory chemokines, and causes degeneration in acute experimental conditions, potentially mimicking long-term accumulation. BAK was also shown to access the TM after repeated instillations. These findings support the hypothesis that antiglaucoma medications, through the toxicity of their preservative, may cause further long-term trabecular degeneration and therefore enhance outflow resistance, thus reducing the impact of IOP-lowering agents.

POSTER ABSTRACTS

APPROPRIATE USE OF IMAGE GUIDANCE SYSTEMS IN COMPLEX SINO-ORBITAL SURGERY

Ali Mokhtarzadeh*, George B. Bartley, John F. Pallanch, Elizabeth A. Bradley, James A. Garrity

Purpose: Advances in medical imaging have led to the development of highly accurate image guidance systems, allowing real-time intraoperative determination of precise anatomic position. The use of intraoperative image guidance has been reported for orbital decompression, orbital tumor surgery, orbital fracture repair, debridement and drainage of infections, removal of orbital foreign bodies, placement of a Jones lacrimal bypass tube, and the management of sinus disorders affecting the orbit. This study summarizes a series of complex sino-orbital operations aided by image-guided navigation performed at Mayo Clinic with particular attention to the additional radiation and the incremental financial expense associated with the procedures.

Methods: Retrospective chart review. Radiation exposure using the volume computed tomography (CT) dose index (CTDIvol) and incremental costs were compared with standard sino-orbital surgery.

Results: Intraoperative image-guided navigation provides valuable information that improves clinical outcomes and safety but entails additional radiation exposure and expense. In our series, radiation exposure from preoperative CT imaging ranged from 26.80 to 69.11 milligray (mGy). After the initial investment in the guidance system, incremental cost per case was approximately $150.

Conclusions: Intraoperative image-guided navigation facilitates anatomical localization in complex sino-orbital surgery, albeit with increased radiation exposure and financial expense. The technology seems justified in the following situations:

1. Reconstruction of severely distorted orbital anatomy secondary to neoplasm, infection, trauma, developmental anomalies, or prior surgery.
2. Resection of a sino-orbital mass abutting dura or reconstructed intracranial lining.
3. Biopsy of an infiltrative or inflammatory mass with similar consistency to orbital fat.
4. Bone removal adjacent to the optic nerve or skull base.

PLATEAU IRIS AS ARRESTED DEVELOPMENT

Hermann D. Schubert*

Purpose: Plateau iris is an anatomic configuration of the iris root featuring anteriorly displaced retroiridal ciliary processes flattening (plateauing) the ciliary iris with a potential to narrow and close the anterior chamber angle. Anterior displacement of the corona ciliaris had been noted by the author as a normal configuration in lower vertebrate species. If this were generally true, anterior displacement could be a normal finding in early phylogenesis and an arrested stage in human ontogenesis.

Methods: The teaching collection of the Algernon Reese Laboratory of ophthalmic pathology has a collection of "comparative anatomy". The slides were labeled by vertebrate species without documentation of individual ages. Histological slides were stained with Hematoxilin-Eosin and examined using a light microscope.

Results: Rat, fantail goldfish, guinea pig, rabbit, cat, goat and ox had retroiridal anteriorly displaced ciliary processes; mouse, dog and pig had not.

Conclusions: Retroiridal displacement of ciliary processes was a common finding (6 of 9) in lower vertebrates of unknown ages. In the embryological human literature, the same configuration has been described to occur between 6 and 9 months post conception suggesting that plateau iris may represent arrested development.\

IMPROVED VITREOUS PROTEOMIC ANALYSIS TO DETECT TREATMENT TARGETS IN PATIENTS WITH MACULAR EDEMA

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Purpose: Bioactive molecules in the vitreous are currently targeted for the treatment of macular edema arising from CRVO, but many patients fail to respond to anti-VEGF therapy or steroids. A comprehensive analysis of vitreous fluid in control and CRVO patients is required to further understand disease mechanisms and identify novel therapeutic targets.

Methods: Vitreous samples were obtained from patients undergoing PPV (macular hole) or prior to intravitreal injection. Proteomic analysis was conducted using electron spray ionization mass spectrometry (ES-IMS/MS) on samples prior to and after removal of abundant proteins, such as albumin and immunoglobulins. MS data were analyzed using the Trans-Proteomic Pipeline and spectral counts were determined using ABACUS software. Pathway analysis was conducted using Gene Ontology and Kyoto Encyclopedia of Genes and Genomes.

Results: In undiluted samples, 727 proteins were identified in controls and 686 proteins were identified in CRVO, but after removal of abundant proteins, identification improved to 1120 proteins in controls and 1065 proteins in CRVO. A combined inventory of 1293 proteins were identified across both groups and preparation conditions. Pathway analysis suggested that the vast majority of proteins were glycosylated as expected in extracellular fluids. The complement system and kallikrein-kininogen system were elevated in CRVO compared to controls.

Conclusions: To the best of our knowledge, this is the highest protein identification in vitreous to date, and the data suggest the importance of this approach to optimize treatment targets such as the complement and kallikrein-kinin systems that may play a role in the development of macular edema from CRVO.

NEURO-OPHTHALMOLOGIST LOOKS AT THE CAVERNOUS SINUS. DIFFERENTIAL DIAGNOSIS AND DIAGNOSTIC TECHNIQUES

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Purpose: The cavernous sinus represents an intracranial extradural extension of the orbit. As such, pathology affecting the cavernous sinus usually presents with ophthalmic signs and symptoms including diplopia, sensory loss, proptosis, and venous engorgement. While imaging studies have revolutionized our ability to make a diagnosis, even the most advanced CT and MRI techniques lack specificity.

Methods: A retrospective study of a series of 347patients referred for various neuro-ophthalmic signs and symptoms found to have evidence of cavernous sinus pathology seen at a single institution over a 12 year period. In addition, a case controlled series of patients undergoing various minimally invasive diagnostic techniques permits specific diagnosis of cavernous sinus pathology and this directed treatment.

Results: A retrospective series demonstrates predominance of neoplastic lesions (65%) (most commonly benign) followed by vascular (28) and inflammatory (6%). Noninvasive techniques included the use of fine needle aspiration biopsy (through the skull base or orbit) transsphenoidal endoscopic biopsy, and translateral orbital extradural approaches. Specific diagnosis of cavernous sinus lesions was possible in 60 % of patients undergoing trans foramen ovale fine needle aspiration biopsy. Two patients underwent trans superior orbital fissure biopsy in the setting of no light perception. When more tissue was necessary transsphenoidal endoscopic biopsy provided larger specimens, and in two cases, outpatient translateral orbital biopsy permitted specific diagnosis without craniotomy. In the presence of neurotropic spread of cancer, distal biopsies (supra orbital and inferior orbital nerves) permitted specific diagnosis without more invasive techniques.

Conclusions: Ophthalmologists are particularly suited to diagnose cavernous sinus pathology. A combination of endoscopic, fine needle aspiration biopsies, and additional periorbital techniques often permit specific diagnosis. These techniques are particularly useful in patients with malignancy and some inflammatory conditions, avoiding craniotomy.

PARS PLANA VITRECTOMY WITH ENDODRAINGE OF CHRONIC, REFRACTORY SEROUS MACULAR DETACHMENT ASSOCIATED WITH OPTIC DISC PIT

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Purpose: To report a new surgical technique in management of refractory serous macular detachment (SMD) from optic disc pit (ODP).

Methods: A 17 year old male was referred on March 6,2007 for loss of vision in left eye of six weeks duration. On exam the right eye was 20/20 and completely normal. Left eye vision was 20/200. Fundus exam revealed a SMD with a 0.4 disc diameter pit on temporal margin of optic disc. Fundus fluorescein angiography showed hypoflourescence at the ODP. OCT showed SMD with schisis with central foveal thickness (CFT) of over 700um.

Results: Patient underwent pars plana vitrectomy (PPV), endolaser to the temporal rim of optic disc and 8% C3F8 air fluid gas exchange on March 15, 2007. Posterior hyaloid was very adherent and could not be removed. Post operatively the SMD did not flatten. On August14, 2007 second PPV with posterior hyaloid separation was achieved. Follow up showed visual acuity of 20/70 with some resolution of SMD to CFT at 425um. Patient was followed up for for 16 months without complete flattening of macula. On December16, 2009 visit, vision dropped to CF. A repeat PPV with internal retinotomy and endodrianage at SMD was performed. Follow up revealed resolution of SMD with CFT at 167um. A significant cataract required cataract surgery with lens implantation. Eighteen months after the last surgery, exam on July21, 2011, showed vision of 20/40 with complete resolution of SMD.

Conclusions: SMD associated with ODP may be managed by a variety of surgical techniques including PPV, endolaser and gas tamponade. However, some cases, especially those associated with schisis, may need endodrainage of SMD to achieve full resolution.

DACRYOCYSTORHINOSTOMY FOR ACQUIRED NASOLACRIMAL DUCT STENOSIS IN THE ELDERLY (>80 YEARS OLD)

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Purpose: The incidence of acquired nasolacrimal duct obstruction (NLDO) increases with advancing age. Dacryocystorhinostomy (DCR) is considered the definitive treatment for NLDO. DCR enjoys a high success rate (65-100%) with a low complication rate (1-6%). However, surgical outcomes have not previously been reported specifically for an elderly population, in which there may be increased risk for intra- and postoperative complications.

Methods: A retrospective cohort study was performed of all patients ≥80 years of age undergoing external DCR at the Mayo Clinic between 1 January 1990 and 31 December 2010. A matched control group of younger patients (40-79 yo) undergoing external DCR by the same surgeons was also reviewed. There were 2 controls for each study patient. Primary endpoint was symptomatic improvement at last follow-up. Secondary endpoints included anatomic patency and adverse event rate.

Results: There were 44 DCRs (33 patients) in the elderly group. The control group consisted of 73 DCRs in 62 patients. Elderly patients had longer symptom duration at presentation and were more likely to have bilateral disease (p=0.03). Resolution of symptoms at last follow-up was 66% in the elderly group vs. 87% in the younger cohort (p=0.02). Although there was no difference between groups with respect to common postoperative complications, there was a higher rate of pre-defined serious complications in the elderly group (5 events vs. 1 event; p=0.01). There was no difference between groups regarding need for additional eyelid surgery (p=0.30).

Conclusions: DCR surgery is associated with less symptomatic relief for elderly patients compared to their younger counterparts. The risk of routine complications is similar between the groups. The risk of serious complications is higher in the elderly group.

THE AMERICAN HEALTH CARE CRISIS. FOLLOW THE MONEY

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Purpose: The American health care system is spiraling into an ever-increasing financial crisis. Despite unsustainable yearly increases in health insurance premiums and government medical expenditures, provider payments are being slashed to equally unsustainable levels. Most presentations and written reviews of the issue begin with the same unsubstantiated phrase; "Technology and drug prices have increased the cost of health care, therefore we must do more to control costs." This statement is usually followed by recommendations for tighter bureaucratic control. The purpose of this study is to investigate the root causes of the crisis. A proposal is offered for comprehensive study of costs, suggesting practical solutions after identification of said factors.

Methods: Health policy specialists, legislators and their aides, health industry legal consultants, and executives were informally polled to determine their estimates of the percentage of the health care dollar spent on bureaucracy. Health care providers, (physicians, nurses), were also surveyed.

Results: Active health care providers had vastly higher estimates of bureaucratic burden (50-90%), than did analysts and other administrative persons (25-40%). Private practitioners and younger health care providers gave the highest estimates. Since the survey was performed, the Affordable Care Act (ACA) was designed primarily to control and monitor physicians' fees and services, thereby increasing bureaucratic costs. The ACA contained no significant statutes or regulations to control drug prices or the cost of defensive medicine (tort reform), ignoring two components of cost.

Conclusions: There is an enormous difference in the perceived bureaucratic costs to health care between those controlling the system, either by policy or business practice, and those trying to deliver care within it. Accurate data is needed to prevent the inevitable collapse of the entire system. A large-scale, government or AMA-sponsored study is indicated. Detailed studies are needed to probe real costs without flawed economic assumptions. Targeted solutions can then be implemented.

MACLAR HOLE SURGERY WITHOUT FACE DOWN POSITIONING: A RETROSPECTIVE REVIEW OF 81 CONSECUTIVE CASES USING MODERN SURGICAL TECHNIQUES

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Purpose: To evaluate the success rate following surgical repair of full-thickness macular holes without face-down positioning in a large series.

Methods: A retrospective chart review of 81 consecutive patients with idiopathic full-thickness macular holes <750m in diameter were treated with standard surgical techniques by a single surgeon (PET). Surgical technique included 23-gauge pars plana vitrectomy, ICG-assisted peeling of the internal limiting membrane, and fluid-gas exchange with 25% SF6 gas. All patients were either pseudophakic or rendered pseudophakic at the time of surgery. None of the patients were instructed to position face down at any time following surgery, but were instructed to avoid supine positioning. Post-operative optical coherence tomography was obtained on all patients to document hole closure and as needed thereafter. Charts were reviewed for anatomic hole closure, best corrected final visual acuity, and the incidence of retinal detachment.

Results: The single operation success rate for macular hole closure was 97%. Visual acuity of 20/50 or better was attained in 84% of eyes. The incidence of retinal detachement was 3%.

Conclusions: Face down positioning is not necessary to successfully close macular holes, and substantially adds to the post-operative burden of patients.

EFICIENT AND EFECTIVE MANAGEMENT OF "BURNING, ITCHING AND TEARING" IN PATIENTS WITHOUT DIAGNOSTIC SIGNS

Allan J. Flach

Purpose: Define keratodynia as burning, itching and tearing unrelated to diagnosable ocular disease. Present the examination, patient education and treatment found successful, inexpensive and satisfying for patients with this syndrome.

Methods: Careful histories were taken from and complete ophthalmic examinations were performed upon hundreds of patients complaining of burning, itching and tearing over a ten to fifteen year period within the University of California San Francisco Department of Ophthalmology. Symptomatic patients without diagnostic signs of ocular disease were informed of their condition (keratodynia) and the pathophysiology underlying their symptoms. Thereafter, they were taught how to manage these symptoms with nonprescription medications and environmental and behavioral changes.

Results: All patients learned to recognize their symptoms as useful indicators for the existence of keratodynia. They learned to self medicate themselves with a combination of over the counter medications, cool compresses, and making appropriate environmental and behavioral changes to their satisfaction as will be discussed.

Conclusions: The symptoms of burning, itching and tearing in patients without diagnosable ocular disease can be called keratodynia. This syndrome can be managed to the patient's satisfaction and the physician's relief without excessive risk or expense for the patient or unnecessary repetition for the physician. Naturally, these patients must be reexamined at intervals to rule out the development of dry eyes, blepharitis, ocular allergies, nasolacrimal or other specific ocular diseases that might require more aggressive treatments.

THE OPTOKINETIC UNCOVER TEST: A NEW INSIGHT INTO INFANTILE ESOTROPIA

Michael C. Brodsky*

Purpose: To ascertain whether subcortical visual input contributes to the asymmetrical monocular optokinetic responses that characterize infantile esotropia.

Methods: Optokinetic testing was performed in 7 patients with isolated infantile esotropia (5 untreated and 2 previously treated) and in 3 patients with infantile esotropia syndrome associated with mild neurological disease.

Results: All patients showed poor temporally-directed optokinetic responses that instantaneously improved when the occluded esodeviated eye was uncovered, exposing it to nasally-directed optokinetic motion. This improvement in optokinetic responses did not necessitate a fixation shift to the contralateral eye.

Conclusions: Nasally-directed optokinetic input to the esodeviated eye can supplement temporal monocular optokinetic responses in the fixating eye under binocular conditions. This nonfoveal optokinetic contribution suggests that monocular nasotemporal optokinetic asymmetry is partly attributable to subcortical visuo-vestibular responses mediated by nonfoveal retina.

BIRTH WEIGHT AS A RISK FACTOR FOR RETINOPATHY OF PREMATURITY WHEN GESTATIONAL AGE AT BIRTH IS 30 OR MORE COMPLETED WEEKS

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Purpose: This study examines whether birth weight less than 1,500 grams, considered a risk factor for loss of vision from retinopathy of prematurity (ROP) under present guidelines for the United States and Canada, is relevant when gestational age at birth is at least 30 completed weeks.

Methods: A retrospective study, from a major urban institutional Neonatal Intensive Care Unit, of infants whose gestational age at birth was 30 or more completed weeks but whose birth weight was less than 1,500 grams. Observation of whether ROP was present and its need for treatment under current guidelines were made from initial and follow up examinations of 266 infants.

Results: There were 212 observed final outcomes. One infant (0.5%) required treatment for severe ROP. We observed 211 infants (99.5%) to reach vascularization through retinal zone 3. The calculated occurrence rate for ROP requiring treatment in these neonates (95% confidence interval) is 0.01 to 2.6%. Although not included in the outcome, an additional 25 neonates showed normal vascularization in zone 2 at their 36th postmenstrual week or later. Only 10 infants showed some degree of ROP throughout their course.

Conclusions: The risk of a premature infant developing ROP severe enough to require treatment, when gestational age at birth is at least 30 completed weeks, appears to be extremely low regardless of birth weight. However, results from other similar studies are required for more certainty. If these findings are confirmed, examination guidelines should be revised for this apparently different subgroup of at-risk infants. Regional and socioeconomic differences among populations may affect applicability of these results.

AJCC STAGING AND MULTIDISCIPLINARY MANAGEMENT OF MERKEL CELL CARCINOMA OF EYELID

Bita Esmaeli*

Purpose: Merkel cell carcinoma (MCC) is a rare neuroendocrine tumor with approximately 1500 new cases diagnosed each year in the United States. Despite 5823 cases of MCC identified in the National Cancer database,information regarding periocular MCC remains scarce. The goal of this report was to assess the value of AJCC classification for MCC of eyelid and its correlation with outcomes. We also reviewed the multidisciplinary management of eyelid MCC.

Methods: The medical records of 17 patients with eyelid MCC treated over 14 years.

The outcome measures included: tumor size, tumor location, nodal status at presentation, local therapy, treatment for regional nodes, regional nodal metastasis and distant metastasis, survival status at last follow-up and follow up time. All patients were staged according to the AJCC criteria for Merkel cell carcinoma as well as for eyelid carcinoma.

Results: All patients had surgical excision followed by post-operative adjuvant radiation treatment to the tumor bed. Three patients had sentinel lymph node (SLN) biopsy; two had a positive SLN and one had a negative SLN; another 2 patients had palpable lymphadenopathy at presentation. Systemic chemotherapy was administered to six patients. Two of 8 patients (25%) with T2b or greater tumors developed metastatic disease and had tumor related mortality, while no metastasis or tumor related deaths occurred in patients with less than T2b tumors.

Conclusions: AJCC TNM designation for eyelid carcinoma correlates with lymph node metastasis and survival in patients with eyelid MCC. About 25% of patients with eyelid MCC greater than or equal to T2b develop metastasis and die of their disease.