Knights Templar Eye Foundation, Inc.
(Sponsored by The Grand Encampment of Knights Templar)

“A Masonic Charity”

SOMEWHERE IN THE WORLD, SOMEONE GOES BLIND EVERY 5 SECONDS

“To improve vision through research, education, and supporting access to care.”

AT LEAST 7M PEOPLE GO BLIND EVERY YEAR
From the President

The Knights Templar Eye Foundation, Inc. is pleased to announce the latest publication of our informational booklet. The booklet provides a brief history of the formation of the Foundation as well as information on the programs and sponsorships the foundation offers as well as the sponsored programs to fulfill the mission to “improve vision through research, education, and supporting access to care.”

We have learned over the years that our efforts in funding pediatric ophthalmology research have been the primary reason that we have had fewer and fewer children with strabismus (crossed eyes) to treat. Our research dollars have helped develop new, non-surgical treatments for this problem.

The Foundation has grown to $162 million while expending $168 million on research, education, and patient care. The Foundation is continuing to invest into more research and the improvement of the quality of eye care not only here in the United States but around the world. The Foundation has awarded over $34 million in research grants and $10 million in endowments at five of the leading ophthalmology research and educational institutions.

Any donation will assist in making a tremendous difference in the lives of children by helping the Foundation to fulfill its mission “to improve vision through research, education, and supporting access to care.” By preventing blindness or restoring vision to a child you are helping us assist in enhancing that child’s quality of life.

We hope you will assist us in our efforts in finding the cure for the many eye diseases in pediatrics.

David J. Kussman
President

Inquiries & Requests for materials regarding the Knights Templar Eye Foundation, Inc. should be made directly to:

Robert W. Bigley
Office Administrator/Assistant Secretary

Knights Templar Eye Foundation, Inc.
General Correspondence:
3201 Cross Timbers Road
Bldg. 4, Suite 300
Flower Mound, TX 75028

Donations:
Knights Templar Eye Foundation, Inc.
P. O. Box 271118
Flower Mound, TX 75027-1118

Phone: 214-888-0220
Fax: 214-888-0231
Email: Manager@ktef.us
Website: ktef.org

The report of the Knights Templar Eye Foundation, Inc. as of June 1, 2022.
$168 million has been spent on research, patient care and education.
Who are the Knights Templar?...

Today's organization known as the Knights Templar does not claim to be a direct descendant of the ancient order of Knights Templar that was founded during the crusades in the 12th century. The purpose of those crusader knights was to protect pilgrims from danger when on their way to the Holy Land. These men took vows of poverty, chastity, and obedience, and were renowned for their courage in battle. In 1118 A.D., nineteen years after the successful crusade, these Poor Fellow Soldiers of Christ and the Temple of Jerusalem, as they termed themselves, were officially recognized, sanctioned, and given, for their headquarters, a building on Mount Moriah, the site of the Temple of King Solomon. Consequently, they became known as Knights of the Temple, or Knights Templar.

What are Knights Templar doing today?...

Eight centuries after the crusades, the current organization is still dedicated to assisting those in need and in using its efforts for the prevention of blindness. Because sight is a most precious gift, The Knights Templar Eye Foundation is often referred to as "A Great Humanitarian Charity."
History of Foundation

A history of the Knights Templar Eye Foundation must begin with knowing something about its founder, Walter Allen DeLamater, a truly remarkable man. He was born in New York City, April 18, 1880, son of Washington Irving and Clara DeLamater, descendants of the DeLamaters who, under the name of DeLamater Iron Works, were the builders of the Monitor of the historic Monitor-Merrimac Battle during the War between the States. DeLamater, Sr. was the first president of the Village of Rhinebeck, New York, founded in 1688.

Walter DeLamater’s illustrious career covered a broad range of interests. He was a soldier with a brilliant WWI record in both combat and important staff assignments. He was an executive in a broad range of industries and businesses focusing primarily on matters of organization, management, research and development, sales promotion and was a public relations consultant.

With all these diverse fields of interest in which he excelled, one ponders his decision to choose the Great Order of Templary to be his life’s work.

Young DeLamater was educated in New York City public schools and St. Mark’s private school. In 1901, at the age of 21, he married Marie West, who died March 31, 1940. They had two children, Marie Lillian (Mrs. Herbert Norton) and Walter, Jr.

His public career began March 2, 1900, when he enlisted as a Private in the 71st Infantry, New York National Guard. He became the only person in the Regiment’s long history, dating back to 1850, to rise from a Private to a Major General. In 1916 he served in the Mexican Border affair for which he received special commendation for action under extremely trying circumstances.

Remaining in the service through WWI, he was engaged in several difficult campaigns in France, received a number of awards, decorations and citations for exceptional bravery and distinguished service under heavy shell fire without regard for his personal safety, repaired roads, opening them to traffic, and supervised the evacuation of wounded under deadly shell fire.

He had been promoted from Major to Lieutenant Colonel in the 106th Infantry. Soon he was transferred to the 79th Division in France, and became Assistant Chief of Staff, then to the 77th Division, Chief of Staff and a full Colonel by 1920.

By the end of the war he had received numerous awards and citations for exceptional bravery as well as for brilliant staff work many times performed under deadly shell fire. For this he was awarded the Distinguished Service Medal. He had been promoted to the rank of Major General.

Although a Republican, Major General Walter A. DeLamater, RET. then a Soldier Citizen, upon request by Major Fiorello LaGuardia, approved by President Franklin D. Roosevelt was appointed Federal Civil Works Administrator of New York City. Several other important civilian assignments followed.
His Masonic Career

He was raised a Master Mason in Halteman Lodge #412 at Middletown, New York, July 26, 1917. As might be expected, this extraordinarily energetic and talented individual joined and rose rapidly in the many degrees, orders, and rites of Masonry.

He was Knighted in Yonkers Commandery #47, New York State, March 17, 1921, and moved up rapidly through the lines. He served as Right Eminent Grand Commander, State of New York, 1934, and was elected to the Grand Encampment Line in 1937.

He told of being stricken and paralyzed in 1941 for a period of two months from a clot on the brain. During those two months the doctors said it was impossible for him to live and there wasn’t one chance in a million of his doing so. After the physicians gave him up, why then and for what purpose was he saved? It was during the Grand Conclave in 1946 that we first heard the story of Sir Knight DeLamater’s vision he had while still anesthetized for an operation. In his vision, heavenly bodies, angels, admonished him that if he lived he must do something to heal the blind as Jesus had done when on earth. After his miraculous recovery from near death he firmly believed that his recovery must have been for this divine purpose.

Prior to the September 20-26, 1952, Triennial Conclave in New Orleans, Louisiana, then Deputy Grand Master Walter Allen DeLamater, began his campaign in earnest. With all the skills of a public relations consultant he launched his campaign promoting Knights Templar Eye Hospitals in connection with existing hospitals throughout the United States. Thus fulfilling the admonitions of his vision “to heal the blind.”

The idea of a hospital or hospitals for the blind lead to many long debates and bitter arguments, prior to and during the Grand Encampment meeting. Arguments were still going on in the halls and cloakrooms before the meeting was called to order by Most Eminent Grand Master William Catron Gordon. At the conclusion, the original resolution was amended to include instead of “Eye Hospitals” the words “Eye Foundation”. After a vote, the Grand Master declared “the chair rules that the resolution is adopted by the required three-quarters vote”, but following a break another 3 hours of debate resulted in around 25 additional proceeding pages containing resolutions and clarifications which finally resulted in a final and conclusive vote which again passed by three-quarters vote.

From the very beginning, a Medical Advisory Council consisting of able and dedicated ophthalmologists from all over the country guided the Foundation. For a good many years funds for research were granted somewhat haphazardly on recommendations from knowledgeable Sir Knights but without particular focus. This would be corrected in 1985 when the distinguished Dr. Alfred Edward Maumanee, Jr., Director of the Wilmer Eye Institute at Johns Hopkins University in Baltimore, established a Scientific Advisory Committee. The Scientific Advisory Committee consists of five distinguished ophthalmologists from throughout the United States. This committee screens all proposals for grants for research in pediatric ophthalmology.

(Taken from “A History of the Founding of the Knights Templar Eye Foundation”, written by the late Edmund F. Ball K.G.C., H.P.G.M. and Trustee of the Foundation.)
The Knights Templar Eye Foundation, incorporated in 1956, is a charity sponsored by the Grand Encampment of Knights Templar. The Foundation is governed by a Board of Trustees comprised of the six elected officers of the Grand Encampment, all Past Grand Masters of the Grand Encampment, and six trustees-at-large elected from and by the membership for a term of nine years. It is exempt from federal income taxation under Section 501(c)3 of the Internal Revenue Code and contributions made to the Foundation are deductible by donors.

The original mission of the Foundation was “to provide assistance to those who face loss of sight due to the need for surgical treatment without regard to race, color, creed, age, sex or national origin provided they are unable to pay or receive adequate assistance from current government agencies or similar sources and to provide funds for research in curing diseases of the eye.”

On December 31, 2010, the Knights Templar Eye Foundation, Inc., by direction of the board, shifted the Foundation’s focus and adopted a new mission statement “to improve vision through research, education, and supporting access to care.” The Foundation now only participates in direct patient care through the Seniors Eye Care Program in partnership with EyeCare America and the Foundation of the American Academy of Ophthalmology. With this change, the Foundation is benefitting untold millions in generations to come through grants that support research and education. Our research dollars have helped develop new, non-surgical, treatments for strabismus (crossed eyes) and ophthalmologists have told us that our efforts in funding pediatric ophthalmology research have been the primary reason that there are fewer and fewer surgeries for strabismus. The Knights Templar Eye Foundation, Inc., annually announces its call for research grant applications. The Foundation invites eligible investigators to submit applications for pediatric ophthalmology research grants for the award period which normally runs from July 1 to June 30. From the applications received, the Scientific Advisory Committee recommends to the Trustees which requests should be funded.

Since its inception, the Foundation has expended over $168 million on research, patient care, and education. Research grants totaling in excess of $34 million have been awarded to researchers working in the fields of pediatric ophthalmology and ophthalmic genetics.
Pediatric Ophthalmology Grants

The Knights Templar Eye Foundation, Inc. is committed to support research that can help launch the careers of clinical and basic researchers focused on the prevention and cure of potentially blinding diseases in infants and children. Grants supported by the Knights Templar Eye Foundation, Inc. are awarded to impact the care of infants, children, and adults. Clinical and basic research on conditions that may be potentially preventable or correctable such as amblyopia, cataract, glaucoma, optic nerve hypoplasia, nystagmus, retinopathy of prematurity, and hereditary diseases that occur at birth or within early childhood, such as retinoblastoma, is encouraged. Proposals for support of basic research on eye and visual system development also are welcome.

Each year the Knights Templar Eye Foundation, Inc., invites eligible investigators to submit applications for pediatric ophthalmology research grants:

**Career-Starter Research Grants**
up to $70,000 per grant. Applicants for these grants must be at the beginning of their academic careers and must have received an M.D., Ph.D., or equivalent degree.

**Competitive Renewal Grants**
up to $70,000 per grant to extend the original grant project for one additional year when the data collected from the original grant is compelling enough to apply.

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Knights Templar Eye Foundation, Inc.

**General Correspondence:**
3201 Cross Timbers Road | Bldg. 4, Suite 300 | Flower Mound, TX 75028

**Donations:**
Knights Templar Eye Foundation, Inc. | P. O. Box 271118 | Flower Mound, TX 75027-1118

**Telephone:** (214) 888-0220 | **Fax:** (214) 888-0231 | **E-mail:** manager@ktef.us
Sources of Funds

Funds for the operation of the Knights Templar Eye Foundation (KTEF) are obtained from an annual assessment of each Knight Templar, contributions made by Masons from throughout the Masonic Family, fund-raising activities, memorials, wills and bequests, and donations from endowment funds or similar sources.

Special award programs for contributions include:

- **Life Sponsor** – Available to Sir Knights (members of a Commandery) who donate $30.
- **Associate Patron** – Available to any person or organization that makes a donation of $50.
- **Patron** – Available to any person or organization that makes a donation of $100.

Payments for Life Sponsor, Patron, and/or Associate Patron will exempt your Grand Commandery from further assessment to the Knights Templar Eye Foundation, Inc.

- **The Grand Master’s Club** – One Thousand Dollars enrolls you as a concerned individual in the humanitarian work of the Foundation. The Grand Master’s Club is available to all individuals, whether Templars or others, but not to organizations. Your membership in the Grand Master’s Club entitles you to a lapel pin, an engraved wall plaque and the Crusaders Cross issued for the first 25 Grand Master Clubs.

- **The Grand Commander’s Club** – You can enroll in the Grand Commander’s Club by sending in your first installment of $100.00 or more. At the time of your enrollment, you will receive a lapel pin and wallet card (signifying your membership). In addition, members of the Grand Commander’s Club pledge to make annual contributions of $100.00 or more for nine more years until the total of $1,000.00 is reached. Once contributions total $1,000.00, the individual is enrolled in the Grand Master’s Club.

**The Grand Master’s Club and Grand Commander’s Club are available to all individual Templars or others, but not to organizations.**

(As of 2/1/2015 once 25 Grand Master’s Clubs are reached, a Sword of Merit will be awarded.)

- **Memorial Donations** – These donations are of any amount in memory of a deceased person. A form is provided on the donor envelope.
- **Honorary Gifts** – These donations are given in honor of a living person in recognition of service or friendship.
- **Wills and Bequests** – Anyone who believes in the service provided by the Knights Templar Eye Foundation, Inc. may leave a bequest to the Foundation in their will.
• **Sight Crusader** – Anyone who designates the KTEF in their will and provides suitable notification to the Knights Templar Eye Foundation, Inc. will be listed in the Gold Book and designated a Sight Crusader.

• **The Permanent Donor Fund** – This unique fund gives perpetual recognition to any person or organization that becomes a recipient of the Golden Chalice or Sword of Merit. Recognition is given by presentation of the Golden Chalice or Sword of Merit and the name and amount contributed appear in the Annual Report on a continuing basis. Additional donations by the individual or organization in the amount of $1,000 or more will be acknowledged in future annual reports. The donor may be an organization, foundation, corporation, or individual.

• **The Golden Chalice** – The Chalice is awarded in recognition of a single donation of $10,000 or more. The donation may be applied to the Permanent Donor Fund.

• **The Grand Master’s Sword of Merit** – This coveted award is given in recognition of a single donation of $25,000 or more. The donation may be applied to the Permanent Donor Fund.
Endowed Professorship Awarded

In 2011, the Board explored the feasibility and desirability of establishing endowed professorship programs focusing on ophthalmic education at leading research universities and teaching hospitals. Preliminary groundwork proved constructive and in 2012 the President formed a committee of Board members to further explore this idea. This concept was approved and the endowed professorship program was subsequently created. In 2020, the Board expanded the endowment program by authorizing funding for research endowments. Research endowments support research programs as a whole and increase the number of investigators who benefit from the endowment.

Each endowed professorship and research endowment is awarded $2 million which is matched dollar for dollar by the partner institution. Each one-time investment provides a perpetual benefit to both the Foundation and the recipient institution and is consistent with the Foundation’s mission statement.

Research endowments create new partnership legacies for the Foundation. As the Foundation is credited on all publications that result from endowment funding, it receives valuable publicity and recognition which serve to further its mission.

AUGUST 2013
“Knights Templar Eye Foundation Inc., Professor in Ophthalmology Research”
Michael Brodsky, M.D.
The Mayo Clinic | Campuses in: Rochester, MN, Phoenix, AZ, Jacksonville, FL

AUGUST 2015
“Knights Templar Eye Foundation Inc., Professor of Ophthalmology”
Thomas McCarthy Bosley, M.D.
The Wilmer Eye Institute of Johns Hopkins University | Baltimore, MD

AUGUST 2017
“Knights Templar Eye Foundation Inc., Presidential Chair in Ophthalmology”
Wei Li, Ph.D.
Baylor College of Medicine | Houston, TX

JANUARY 2021
“Knights Templar Eye Foundation Directorship in Pediatric Vision Research”
Honoring Dr. John S. Penn, Ph.D.
Vanderbilt University | Medical Center | Nashville, TN

JANUARY 2021
“The Knights Templar Eye Foundation Research Endowment”
The Vision Center
Children’s Hospital Los Angeles | Vision Center | Los Angeles, CA
How to join the Grand Commander’s or the Grand Master’s Clubs

Any individual may send a check in the amount of $100 or more specified for the purpose of beginning a Grand Commander’s Club membership and made payable to the Knights Templar Eye Foundation. This initial contribution will begin your Grand Commander’s Club membership. In addition, members of the Grand Commander’s Club pledge to make annual contributions of $100 or more. Once contributions total $1,000, the individual is enrolled in the Grand Master’s Club. Membership is open to individuals only, and Commandery Credit is given for participation.

Qualified Charitable Distributions

Congress has now made the qualified charitable distribution (QCD) option permanent for those who wish to make direct contributions from their IRA to charity. The tax law allows individuals required to make minimum distributions due to age to transfer up to $100,000 a year from their IRA to a qualified charity. This distribution counts toward their required minimum distribution but isn’t added to their adjusted gross income the way a normal IRA distribution is. This can provide a tax savings of up to 40% depending upon an individual’s tax situation. Please discuss with your tax professional whether this option could benefit you in your charitable and retirement planning.

Planned Giving – Create a Charitable Legacy

Your Foundation now has a full web site dedicated to Planned Giving which you can access from our web site, shown at the bottom of this page. So if you’re thinking of ways to make a lasting legacy for yourself please check out the tab on the home page that says “Planned Giving”. Leaving your mark on the future is so simple with a gift in your will. To leave a gift in your Will or Trust it is as easy as asking your attorney to include a sentence that says:

I bequeath (lump sum) or ( % ) of my estate to:
Knights Templar Eye Foundation, Inc. (address shown below)

Knights Templar Eye Foundation, Inc.

General Correspondence:
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Flower Mound, TX 75028

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Email: Manager@ktef.us
THE NEW GRAND MASTER CLUB (GMC)
Crusader’s Cross Levels and Jewels

At the 25 Grand Master Club level a Sword of Merit will also be issued.
The Knights Templar Eye Foundation, Inc. has a number of donation programs, most with associated recognition programs. One primary contribution program that has grown in popularity is the Grand Master’s Club which issues a Crusader’s Cross as a thank you which also represents the number of Grand Master’s Clubs a person has. Grand Master’s Clubs are contributions of $1,000 which can be accumulated over time. These accumulations are known as the Grand Commander’s Club ($100 each until $1,000 is reached). Currently, Grand Master’s Club donors receive a plaque, lapel pin, and a Crusader’s Cross up to the first twenty-five Grand Masters Clubs. However, many of our members have asked the foundation to make a change to the Jewel.

Because of these requests, the Jewel now includes five tiers with five levels within each tier, each tier has a different colored center but still has quadrants representing the different levels. Remember this jewel is a thank you for the donation to the Grand Master’s Club (GMC). Each GMC represents a contribution of $1,000.

The tiers represented with the quadrants can best be seen by the full picture showing all GMC’s.

<table>
<thead>
<tr>
<th>Tier 1</th>
<th>Tier 2</th>
<th>Tier 3</th>
<th>Tier 4</th>
<th>Tier 5</th>
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<tbody>
<tr>
<td>1 – 5 GMC’s</td>
<td>6 – 10 GMC’s</td>
<td>11 – 15 GMC’s</td>
<td>16 – 20 GMC’s</td>
<td>21 – 25 GMC’s</td>
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Note: Tiers 1 – 4 have a silver jewel where tier five is a gold jewel and once a donor reaches 25 GMC’s a Sword of Merit is awarded. Each additional GMC within a specific tier is represented by a smaller cross within the quadrant. Once the four quadrants are occupied within a jewel additional GMC’s will be recognized by a different tiered jewel.

Because this is one of the Grand Encampment’s philanthropies. It is a Grand Encampment jewel and your highest leveled jewel may be worn on the right side of the uniform. However, generally all medals are worn on the left of the uniform as space permits.
There are numerous ways to raise funds for the Annual Voluntary Campaign of the Knights Templar Eye Foundation, Inc. You can be creative, put on your thinking cap and ask other Sir Knights to get involved. One project may raise enough to reach the Goals set for the Campaign or more.

**PURPOSE OF THE ANNUAL VOLUNTARY CAMPAIGN**

The purpose of the Annual Voluntary Campaign is to supplement the income of the Knights Templar Eye Foundation, Inc. through bequests, gifts, endowments and other sources so that sufficient funds are available to provide the assistance as stated in the Mission Statement of the Knights Templar Eye Foundation, Inc. The Voluntary Campaign runs from October 1st to April 30th annually. Funds received in the office at any time throughout the year will be credited to a campaign. It should be noted that bequests and wills are counted for credit of the Commanderies or Grand Commanderies during each Campaign.

Commanderies reaching the goal of $10.00 per member or more will receive a plaque and seal, and those Commanderies reaching a contribution of $5.00 per member but less than $10.00 per member will receive appropriate recognition for their efforts.

**THE QUESTION IS OFTEN ASKED: “HOW CAN WE RAISE FUNDS?”**

**FIRST METHOD (The Easy Way)**
Even though it may seem painful to some Sir Knights, an out of pocket or check donation from ALL SIR KNIGHTS requires the least effort. It does require a charitable attitude which we have all committed ourselves to in the Order of the Temple. The Knights Templar Eye Foundation is THE RESPONSIBILITY OF EVERY SIR KNIGHT. This method is almost painless. “Your attitude will determine your altitude.”

**SECOND METHOD (Special Approach)**
Donations from outside of our membership may be accomplished with a tactful approach. These sources are businesses, fraternal organizations, foundations, and generous individuals.

**THIRD METHOD (Efforts of many)**
Projects require special effort, dedication, and enthusiasm of many Sir Knights who enjoy fund raising and believe in the purpose. Fun and Fellowship are part of working on projects. Give it a try.
### SOME FUND RAISING METHODS FOR CONSIDERATION

1. Dinners before Conclaves  
2. Public Dinner/Dance/Entertainment  
3. A “Big Band” Dance  
4. Hoagie Sale  
5. Flea Market  
6. Auction  
7. Jewelry Sale  
8. Fish Fry  
9. Spaghetti Dinner  
10. Bake Sale  
11. Candy Sale  
12. Fruit Cake Sale  
13. Pancake/Sausage Breakfast  
14. Plant Sale  
15. Shirt Sale  
16. Baseball Cap Sale  
17. Fruit Sale  
18. A collection following a Conclave

Your imagination will provide many other ways and methods to provide funds so “That Others May See.”

### AN IDEA FOR 100% PARTICIPATION:

Pass a collection plate at your Christmas Observance as you would at any other religious service. By doing this, every Commandery in the Grand Encampment will have participated in the Voluntary Campaign before the end of December. PLEASE EXPLAIN THIS TO THE MEMBERS AND TRY IT. YOU WILL BE SURPRISED AT THE SUCCESS.
In the pursuit of our mission to improve vision through research, education and supporting access to care, your Knights Templar Eye Foundation has partnered with the American Academy of Ophthalmology, the largest ophthalmic organization in the world, to create a Pediatric Ophthalmology Education Center. This Center, a part of the Academy’s Ophthalmic News and Education (ONE®) Network, will be comprehensive in scope, and global in reach.

Our support of this global educational resource will be an important step toward addressing a large and growing burden of vision loss. More than 285 million people globally are blind or visually impaired, and at an estimated economic cost of $3 trillion annually. Childhood blindness is among the top five causes of visual loss worldwide. An estimated 500,000 children become blind annually, and up to 60 percent of these children in developing countries are thought to die within one year. Nearly half of all blindness in children is due to avoidable causes that could be prevented with interventions using existing knowledge.

The purpose of the Pediatric Ophthalmology Education Center (Education Center) is to ensure a strong educational foundation for current and future generations of ophthalmologists, and by doing so, eliminate a lack of ophthalmic education as a contributor to global blindness. It will speed the adoption of new knowledge, technology and treatments. No such resource currently exists, even though the pace of innovation is increasing, and there is a real and growing need for the Education Center among pediatric ophthalmologists.
The Education Center will enable pediatric ophthalmologists throughout the United States and worldwide, including countries where we have Subordinate Commanderies, to access a single online resource of the highest quality content, vetted by experts. In combination with an extensive surgical simulation library, this virtual skills transfer center will address the needs of residents and fellows, mid-career practitioners, and international training programs in less-developed countries. The Education Center will teach:

- Basic science principles
- Pathology and pathogenesis of disease
- Specific disease content
- Diagnosis and differential diagnosis
- Medical and surgical management
- Risk management
- Complications management
- Patient instructions
- Outcomes assessment

Visit: www.aao.org/one

In recognition of our support, the American Academy of Ophthalmology has named the ONE® Network pediatric ophthalmology subspecialty center:

The Knights Templar Eye Foundation, Inc., Pediatric Ophthalmology Education Center

in perpetuity

By supporting the Pediatric Ophthalmology Education Center within the American Academy of Ophthalmology’s ONE® Network, we have a real opportunity to make a difference and improve the outcomes in eye care for children worldwide.
EyeCare America provides eye care at no cost to those who qualify through volunteer ophthalmologists (Medical eye doctors) nationwide. To see if you qualify, visit their Online Referral Center at www.aao.org/eyecareamerica

**WHY**

One-in-three Americans has some form of vision impairing eye disease by age 65, and nearly three million people of all ages have glaucoma. Most people do not know it either because there are often no early warning symptoms or they assume that poor sight is a natural part of growing older. Detecting and treating eye disease early through annual, dilated eye exams can prevent unnecessary vision loss and preserve sight well into the future.

**WHO**

Through its Online Referral Center, EyeCare America, one of the country’s leading public service programs provides eye care through a pool of more than 5,000 volunteer ophthalmologists. Since 1985, EyeCare America has helped more than 2 million people. Ninety percent of the care provided is at no out-of-pocket cost to the patient. Through its Online Referral Center, the Seniors EyeCare Program offers two types of services based on qualifications.

**Two programs offered:**

1. The Seniors Program connects eligible seniors 65 and older with local volunteer ophthalmologists who provide a medical eye exam often at no out-of-pocket cost, and up to one year of follow-up care for any condition diagnosed during the initial exam, for the physician services.

2. The Glaucoma Program provides a glaucoma eye exam at no cost to those who are eligible and uninsured. Those who are eligible and insured are billed normal office procedure, and responsible for any co-payments. (This is an awareness program to provide a baseline glaucoma eye exam to those who may not be aware they are at increased risk).

**Eligibility for each program:**

**Seniors Program:**

- U.S. citizen or legal resident
- Age 65 or older
- Not belong to an HMO or have eye care benefits through the VA
- Not seen an ophthalmologist in three or more years

**Glaucoma Program:**

- U.S. citizen or legal resident
- Not belong to an HMO or have eye care benefits through the VA
- Not had an eye exam in 12 months or more
- At increased risk for glaucoma, determined by your age, race and family history
SERVICES THAT ARE NOT COVERED
• Additional services necessary for your care such as, hospitals, surgical facilities, anesthesiologists and medications, are the patient's responsibility and beyond the scope of EyeCare America services. The ophthalmologist is a volunteer who agrees to provide only services within these program guidelines.

EYEGASSES ARE NOT COVERED:
• EyeCare America provides medical eye care, only. The program does NOT provide eyeglass prescriptions or cover the cost of eye glasses. If you are concerned about the cost of these items, please discuss this with the doctor BEFORE the examination, or visit our eye glasses resources webpage.

ADDITIONAL REFERRALS:
• If you were eligible for the Seniors Program, and require a re-referral to another ophthalmologist for specialty care, you or the EyeCare America volunteer ophthalmologist MUST contact EyeCare America in order to continue receiving care through the program. We may be able to locate another EyeCare America volunteer to provide the care.

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<tr>
<th>HOW</th>
<th>Visit <a href="http://www.aao.org/eyecareamerica">www.aao.org/eyecareamerica</a> for more information or to see if you qualify for a referral to one of EyeCare America’s 5,000 volunteer ophthalmologists nationwide.</th>
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<tr>
<td>EXCLUDED</td>
<td>Eyeglasses, prescription drugs, hospital services, and fees of other medical professionals</td>
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<tr>
<td>CONTACTS</td>
<td>Christie L. Morse, MD -- Chair, EyeCare America</td>
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<tr>
<td></td>
<td>ECA staff 877-887-6327; Fax 415-561-8567, PO Box 429098 San Francisco, CA 94142</td>
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Visit: www.aao.org/eyecareamerica

EyeCare America is co-sponsored by the Knights Templar Eye Foundation, Inc., with additional support provided by Alcon and Regeneron. EyeCare America is endorsed by state and subspecialty ophthalmological societies.

A public service program of the American Academy of Ophthalmology, EyeCare America's mission is to reduce avoidable blindness and severe visual impairment through education and public service.
Scientific Advisory Committee Meeting

PEDIOATRIC OPHTHALMOLOGY GRANT REVIEW 2022

Annually the Knights Templar Eye Foundation holds a meeting mid-March in Dallas with the officers and trustees of the Foundation with ten doctors specializing in pediatric ophthalmology from many leading hospitals and research institutions throughout the country to review the applications and recommend which applications based on the merits of the proposal should be funded with a grant.

Annually this meeting takes place in person but because of some travel restrictions this is the third year this meeting has been held through ZOOM, currently we are scheduling to return to in person for 2023.

The meeting started at 9:30am CST and concluded at 4:30pm CST – our conference allowed everybody to view and share our PC screen so they could track the scoring of grants as they were recorded after each grant was discussed in detail.

Our meeting ended with twenty-two Competitive Renewal & Career Starter grants for a total of $1,533,025 that were recommended by the SAC doctors and later that night approved by the KTEF SAC committee.

Our website www.ktef.org/grants has a complete list of the grants that were approved along with the specific research.
The Importance of KTEF funding

I recall very fondly the year I received a Knights Templar Eye Foundation grant, as that award enabled me to dedicate my career toward the prevention and treatment of childhood blindness. As a biomedical engineer, my career goal has always been to develop solutions for treating patients. Historically, biomedical engineers have made contributions to medicine that we see every day, including cardiac pacemakers, prosthetics, MRIs, and robotic surgery. After obtaining my undergraduate degree from Vanderbilt University in this field in 2003, I wanted to sharpen my engineering skills with a Ph.D. so I could hopefully make a mark of my own, to develop the next big thing in medicine.

In graduate school, my mentor was John Penn, Ph.D.**, who himself was once a Knights Templar Eye Foundation Awardee when he began his career. He wanted me to apply my engineering skills to a difficult problem in ophthalmology: drug delivery to the eye. When drugs are delivered to the eye, a needle is inserted and the injected drug is exposed to the entire eye. Therefore, both diseased and healthy tissues receive the drug. This is particularly a problem for treating a major cause of childhood blindness, called Retinopathy of Prematurity (ROP). In ROP in newborns, who at this stage are still developing their eyes’ blood supplies, some of the vessels that develop are abnormal, and if this abnormal vessel growth is not corrected, some patients can experience irreversible vision loss. However, in the newborn eye, many blood vessels, which are growing normally, can be adversely affected if any drugs are injected, since the drugs are designed to combat blood vessel growth and cannot distinguish between healthy vessels and abnormal, diseased ones.

To address this problem, Dr. Penn wanted me to engineer the surface coating of drugs with polymers, in order to make the drugs “smarter,” such that the drug could only bind to abnormal vessels and correct them, while leaving healthy blood vessels alone. I proposed an engineering strategy for achieving this goal, and Dr. Penn helped me land a faculty position at the Vanderbilt Eye Institute and gave me a laboratory next to his in order to test my drug delivery strategy. He suggested that, like him, I ask the Knights Templar Eye Foundation to obtain financial assistance for developing the ROP treatment strategy so that I could prove it works. The Sir Knights and their families came through with a generous grant which enabled me to prove that targeted drug delivery can be achieved in ROP. Seven years later, I am now a head of R&D for a major drug company, Roche Pharmaceuticals in Switzerland, and it hired me to further develop my drug delivery strategy in order to make smarter drugs for diseases like ROP. Thanks to the KTEF, my dream of developing a new therapy to stop childhood blindness from ROP is a very tangible reality. I will never forget the pivotal role that the Foundation played in my career development, and I am excited to make a substantial return on its investment in the form of new treatments that will improve clinical outcomes for children facing vision loss.

** John S. Penn, Ph.D. as referenced above is currently Vice Chair of the Department of Ophthalmology and Visual Sciences at Vanderbilt University and Chair of the Knights Templar Eye Foundation Scientific Advisory Committee.
In this article Dr. Penn outlines what effect KTEF funding has had on the development of his career.

In 1986 I was an assistant professor of ophthalmology at the Cullen Eye Institute at Baylor College of Medicine, and I was just embarking on my research career. I was interested in a particularly tragic form of blindness known as retinopathy of prematurity or ROP. This condition is tragic because it blinds premature infants at the very onset of life, before they have an opportunity to appreciate the wonder of their visual surroundings. At the time we didn't know much about how ROP developed in infants or how it progressed to its blinding form. I applied to the Knights Templar Eye Foundation for two years of financial support, and I used that support to develop an animal model of the ROP condition so its pathogenesis could be investigated. Two years later, when my KTEF funding ended, I submitted an application to the National Eye Institute of NIH, relying on the model I'd developed with KTEF support. In my NEI application, I proposed experiments to better understand the onset and progression of the ROP condition. I was fortunate enough to receive NEI funding for that project, and I’m proud to say that grant has been renewed multiple times and is now in its 28th year of consecutive funding. That simply would not have happened if not for the Knights Templar grant.

Our findings, first in Houston, then in Little Rock at the University of Arkansas for Medical Sciences and finally in Nashville at Vanderbilt University where I've been for the last 15 years, and those of other labs during this nearly three-decade period, have altered the way in which premature infants are cared for and the way in which ROP is treated. And I’m proud of that legacy and appreciative of the pivotal role that the KTEF played in it.

The primary pathologic feature of ROP is abnormal capillary growth in the retina of the eye. The ROP model I developed proved to be applicable to abnormal capillary growth in a wide variety of non-ocular tissues and diseases. So, the model became a valuable tool for use beyond the realm of eye disease....for studying these other conditions and for testing pharmacotherapies to address them. Over the last three decades, we've used the model to conduct drug efficacy trials in partnership with the pharmaceutical industry, and this activity has contributed to the development of a number of drugs that are on the market today.

Thus, KTEF funding had a clear and direct impact upon my early professional development and on the success of my research program. Also, it led to findings that had a significant impact on patient care in a particularly vulnerable population, tiny infants. I believe that my experience can serve as an example of what the KTEF can do for young vision scientists throughout the country. I know that's the case, because KTEF funding has catapulted the careers of four of my trainees, each of whom have gone on to make their own mark in vision science.
When I think of the impact the Knights Templar Eye Foundation has had on my career, I am reminded of my high school motto, (“Finis origine pendet”) which is Latin for “The end depends upon the beginning.” Early events can have a profound impact on the ultimate direction we take. In my case, receiving a Knights Templar Eye Foundation grant was one such event.

Growing up in Minnesota, I was sure I would become either a farmer or an astronaut. Little did I know what the future would have in store for me. My education took me out of Minnesota to Johns Hopkins in Baltimore for college, then further north to New York City where I went to medical school at Cornell and then finally up to Boston where I completed a retina fellowship at Harvard. During that journey, I knew that to create a better future, we needed to discover new treatments that would help us in our fight against childhood blindness. In my case, I focused on a hereditary cancer, retinoblastoma, which occurred in the eyes of newborn babies. In 1998, I was awarded a Knights Templar Eye Foundation grant to study the fundamental aspects of this blinding cancer. Through this work I realized that there was much more we could do to protect childhood sight. Since then, I have devoted my life to this cause, and now as Director of the Vision Center at Children’s Hospital Los Angeles, I oversee seven doctors who are all equally dedicated to eradicating childhood blindness.

This path I took all started with a simple grant application 14 years ago to the Knights Templar Eye Foundation, and I am very grateful for the generosity of all of the members and their families for supporting doctors and scientists like myself. Our motto at the Vision Center is that every child should be able to see a sunset. Through the support from the Knights Templar Eye Foundation, we are now closer to making that a reality.

Thomas C. Lee, M.D.
Knights Templar Eye Foundation, Inc.

A Predictive Medicine Approach to Childhood Blindness

David Cobrinik, MD, Ph.D., Associate Professor of Ophthalmology and Biochemistry & Molecular Medicine, The USC Roski Eye Institute and Norris Comprehensive Cancer Center, Division of Ophthalmology, Children’s Hospital Los Angeles and a member of the Knights Templar Eye Foundation Scientific Advisory Committee (KTEF).

As indicated I am a member of the KTEF Scientific Advisory Committee for the past five years and a member of a team of childhood blindness researchers at Children’s Hospital Los Angeles (CHLA). However, I was not always a vision researcher. In college, my research focused on genes that cause tumors in plants. This got me interested in understanding how genes cause human diseases, and I continued studying cancer because that was the first area to which I was exposed. After graduate school at Case Western Reserve University, I took a postdoctoral position in an MIT laboratory that was studying a childhood eye cancer called retinoblastoma. They and others had been in a race to clone the gene that causes retinoblastoma, and by the time I arrived the challenge had turned towards understanding how this gene causes the eye cancer in children. Continuing as a faculty member at Columbia University, I realized that we had to understand the retinal origin of retinoblastoma in order to develop preventive strategies. Around this time I met Dr. Tom Lee, who passionately shared this interest and recruited me to pursue this at Cornell Medical School. As a pediatric ophthalmologist, Tom also enlisted me in efforts to study childhood blindness more broadly. He later recruited me to join the Vision Center at CHLA and the KTEF scientific board. This increased my understanding and appreciation of important childhood blinding conditions.

Of late, these experiences have enabled me to participate in the CHLA team that aims to model inherited retinal dystrophies (the main genetic cause of childhood blindness) and curative genetic approaches. (See below picture for team member details.) The team seeks to develop a predictive medicine approach that was initiated by Dr. Lee, in which a blinding disease can be modeled and a therapy developed in the interval between the first detection of the condition and the irreversible retinal damage. Unfortunately, there is no one-size-fits-all cure, so we aim to tailor approaches to the unique blinding mutations in each child. I am privileged to work with the CHLA team and the Knights Templar Eye Foundation in this endeavor - to save the vision of every at-risk child, one child at a time. Time is short and there is much to do.

David Cobrinik

CHLA Predictive Medicine Team members from left: David Cobrinik MD, Ph.D.; Jennifer Aparicio Ph.D.; Aaron Nagiel MD, Ph.D., and team originator Tom Lee MD, Additional members Jesse Berry MD and Paula Cannon Ph.D. (not shown).
The Knights Templar Eye Foundation, Inc. grant was a game changer for me.

Dr. Bibiana Jin Reiser, an Associate Professor of Ophthalmology at USC Roski Eye Institute and Director of Cornea and Glaucoma Services at Children’s Hospital Los Angeles, and a former KTEF grant recipient.

As I was finishing up my last training year on my way to becoming a cornea and refractive surgeon for adults, my mentor suggested that I do a year in pediatrics. In order to be the best, he said that I should be able to work with babies and children. He called it the “final frontier”, where only the few and the brave would dare venture forth. After hearing the “to be the best” comment, I was all in. I jumped in, head first, and never looked back. This extraordinary year was only made possible with financial support of the KTEF, and today I serve as the Director of the Cornea and Glaucoma services at the Vision Center at Children’s Hospital of Los Angeles, one of the busiest in the country specializing in critical eye care for children.

Growing up a daughter of immigrants, I wanted to dream big in America, and my dream was to be a doctor. My mother, a nurse, strongly discouraged it. She felt that work as a doctor would not let me be a mother to her future multiple grandchildren. Ever-stubborn and driven, I wanted to prove her wrong. I believed that I could do it all, and I have. Today, I have two children, one in college and the other in junior high school. And as my children grow older, I have many others, my patients and their parents, for whom I am a caregiver. What a privilege and honor it is to be part of their lives, shepherding care, saving a child’s vision.

In these 10 years since my year supported by the KTEF educational grant, I have built one of the largest anterior segment practices in the country that serves not only families in Southern California but families across the globe. Today, we are developing techniques and innovations resulting in better clinical outcomes and decreased complications in very rare, blinding eye diseases, such as congenital cataracts, Peter’s anomaly, and glaucoma. So, since progress cannot happen in a vacuum, we present our work internationally so others can benefit from our experience.

The fight that we fight to preserve a child’s vision is not always rewarded by easy success. Sometimes, keeping and not losing vision is a hard-fought victory. Because this is the struggle pediatric eye specialist’s face, it is not always the path that is chosen by many. The financial support of the KTEF grant allowed me the breathing room to give this challenging area a hard, close look. Past my gaze, staring back at me, were the eyes of a child. Behind this child stood his parents and, behind them, the will and support of many others. This includes the many who will never be in the exam or operating room but those who are tirelessly fundraising for this noble cause, the fight to prevent childhood blindness.

Thank you for your support, my work today would not have been possible without it.
Jesse Berry, M.D.

Associate Professor of Ophthalmology and Associate Director of Ocular Oncology at USC Roski Eye Institute at Children’s Hospital Los Angeles, is a former KTEF grant recipient.

Knights Templar Eye Foundation funding is sky-rocketing careers and creating significant advances for children with ocular cancer

In addition to a busy clinical practice treating ocular tumors in adults and children, she trains residents and fellows in ophthalmology and ocular oncology, and leads an exciting research team in developing the first ever liquid biopsy for retinoblastoma from the aqueous humor – which is the clear fluid in front of the eye. The team calls this the ‘surrogate tumor biopsy’. With funding from the Knights Templar Eye Foundation Career Starter Grant, Berry et.al. extracted and sequenced DNA from the retinoblastoma tumor, in the aqueous humor. Her initial work was published in JAMA Ophthalmology on October 12th (which also happened to be Dr. Berry’s birthday!) with a commentary from another prominent ocular oncologist, Bill Harbour, MD. The media response to the manuscript has been immense. To date the paper has been viewed over 500 times, released by four news outlets, and tweeted 75 times. The research was presented at the American Academy of Ophthalmology in November 2017 in New Orleans where it was awarded best paper and featured on the One Network of the American Academy of ophthalmology as well as the Knights Templar Eye Foundation Pediatric Ophthalmology Education Center.

To say that the Knights Templar Grant has started my career is an understatement; it skyrocketed it. On March 30th I heard the official news that I was selected. I was quite literally over the moon and immediately we started sequencing our banked samples of aqueous humor with stunning results: tumor-derived DNA was present – but more exciting – certain chromosomal changes correlated with aggressive tumors that responded poorly to therapy and these changes were absent in eyes where the tumors that did well. This suggests that genomic evaluation of the aqueous could be used to predict the ability to save the eye and maybe in the future help direct more intensive therapy to the more aggressive tumors.

The Knights Templar grant has been revolutionary for me and my career – but more importantly, the research it supports will dramatically change the way we care for the children who suffer from this blinding -- and deadly -- ocular cancer. Imagine a world where a tiny sample of aqueous from an eye in a child with retinoblastoma can be used for diagnosis, for prognosis of treatment response and maybe even, to provide a means for the first ever attempts at personalized, directed therapy for retinoblastoma. With the support of KTEF, that world is now within reach. Thank you for giving me the chance to jumpstart my career – thank you even more for helping me to change the paradigm of retinoblastoma management and to contribute to a new future of personalized, predictive medicine for my patients. I could not be more grateful for this opportunity.
Irina De la Huerta, M.D., Ph.D.

Assistant Professor Department of Ophthalmology and Visual Sciences, Vanderbilt University School of Medicine and was awarded the Knights Templar Eye Foundation 2019 Career Starter grant and 2020 Renewal grant

The Impact of KTEF Funding

I am a practicing vitreoretinal surgeon with subspecialty training in pediatric retinal disorders. I have always wanted to be both a physician and a scientist, and to run a laboratory dedicated to developing solutions for treating children who suffer from diseases thought of as incurable. My interest in the pediatric retina grew from learning about retinal development during my Ph.D. in neuroscience. This experience inspired me to pursue clinical training in ophthalmology, and to start developing research ideas focusing on the role that retinal neurons play in pediatric disorders of the retinal vasculature. Throughout my ophthalmology residency, I continued to participate in laboratory research in retinal diseases. Following residency, I pursued fellowship training in vitreoretinal surgery with a special focus on pediatric retinal conditions. Having acquired both the laboratory and the clinical training necessary to develop new therapies for retinal diseases in children, I joined the faculty in the Department of Ophthalmology at Vanderbilt University.

When I started in my position at Vanderbilt, I was ready to begin building my research program. Yet I quickly learned that most foundations as well as the National Institutes of Health require a substantial amount of preliminary data in order to fund grant applications. This is a significant obstacle for many early career scientists, and the difficulties are further compounded for those of us who at the same time are building a medical and a surgical practice. John Penn, who is one of my mentors and who was awarded research funding from the Knights Templar Eye Foundation early in his career, understood well my predicament. He advised me to apply for a KTEF Career Starter Grant. The support I received from the Knights Templar Eye Foundation allowed me to form a laboratory team and to start putting my scientific ideas in action. I will never forget the role that the Foundation’s grant played in getting my research program up and running.

Funding for research in pediatric eye disorders is extremely important and critically needed. The Knights Templar Eye Foundation is one of the few organizations that provide support for pediatric ophthalmology research. I have learned from my mentors who are successful and respected principal investigators about the difficult times they faced early in their careers due to the uncertainty of funding. The grants awarded by the Foundation are invaluable in helping early career scientists and clinician scientists like me to develop laboratories dedicated to vision research.
David K. Wallace, M.D., M.Ph.
Chair, Department of Ophthalmology, Marilyn K. Glick Professor of Ophthalmology, Indiana University School of Medicine.

Doctor Wallace is also a Member of The Knights Templar Eye Foundation Scientific Advisory Committee, and was awarded the Knights Templar Eye Foundation 1997 Career Starter grant.

It’s been a pleasure for me to join the Knights Templar Scientific Advisory Board in 2021. When asked to serve in this role, I accepted without hesitation, because I recall fondly how the Knights Templar Eye Foundation helped launch my clinical research career back in 1997. At that time, I was an Assistant Professor of Ophthalmology and Pediatrics at the University of North Carolina (UNC). We had a small group of investigators interested in studying retinopathy of prematurity (ROP), but we did not have any funding to support this work. Retinopathy of prematurity is one of the most common causes of blindness in children worldwide. With the funds from the Knights Templar Eye Foundation, we were able to collect video images of the retina of infants with ROP. We completed studies that helped us understand important risk factors for severe ROP, such as poor rate of weight gain early in life, early blood vessel changes (“pre-plus disease”), and small tufts of tissue above the retina (“popcorn”).

In 2004, I had the opportunity to be a member of the committee that revised the International Classification of ROP, and to learn from some of the “giants” in our field. A few years later, I participated as an investigator, and then as an Executive Committee member, in the Early Treatment for ROP randomized trial. These experiences piqued my interest in contributing to the development of better treatments for ROP. Later I received an NIH K23 Career Development Award in Patient-Oriented Research, and I obtained a Master’s in Public Health in Epidemiology, which provided a deeper understanding of research design and statistics. In 2014, I assumed the role of network chair for the Pediatric Eye Disease Investigator Group (PEDIG), an NIH-funded national clinical trials network.

ROP care has rapidly evolved. Until 5-10 years ago, most infants with severe ROP were treated using laser. Now many infants are treated with injections of drugs that reverse the sight-threatening effects of severe ROP. However, much remains unknown about which drugs are best and what dose we should use. Our PEDIG group recently completed a multi-center study that helped to establish that a much lower dose can be used, which is potentially safer for infants and better for their developing vision. Our research group is now planning 2 simultaneous multi-center randomized clinical trials to help determine the best care for premature infants with severe ROP; one will compare laser to a low-dose injection, and the other will compare 2 different doses of injections.

When I reflect back on my early career, it could have gone in any of several different directions – private practice, industry, or academic medicine with a focus on education, administration, or research. The grant I received from the Knights Templar Eye Foundation in 1997 gave our group the support we needed to study ROP, and it allowed me to begin to develop skills as a clinical researcher. Subsequently, I chose to devote a large part of my career to helping find better treatments for ROP and other pediatric eye diseases.
Bela Anand-Apte, MBBS, Ph.D.

Importance of Funding

Chair, Department of Ophthalmic Research, The Llura and Gordon Gund Endowed Chair in Ophthalmology Research; Professor, Cleveland Clinic Lerner College of Medicine-CWRU-Dept. of Ophthalmology, Cole Eye Institute, Cleveland Clinic Foundation. Dr. Anand-Apte serves as Chair of the Knights Templar Eye Foundation Scientific Advisory Committee.

A blind child is more likely to live in socioeconomic deprivation. A blind child is more likely to be developmentally delayed. A blind child is more likely to be hospitalized frequently and die during childhood.

Approximately 14 million children worldwide are legally blind, although this number is likely an underestimate. Knights Templar Eye Foundation is the only entity that provides funding for research specifically addressing childhood blindness.

There is a particular urgency in finding cures for pediatric vision loss that is different from adult blinding diseases. Children born blind or who become blind early in childhood face a lifetime of blindness. The associated emotional, economic and social costs to the child, family and society are immense. Children’s eyes are not just a smaller version of adult eyes-they are unique not just in their stage of development but also in their response to medical and surgical interventions. Children are born with an immature visual system, and for normal vision to develop, the brain must learn to process clear, focused images. Failure of normal vision maturation cannot be corrected in adults, suggesting that correcting these defects early is critical.

My research over the past 20 years has focused on understanding what makes blood vessels in the eye grow and leak abnormally to cause vision loss in a variety of diseases including retinopathy of prematurity-a condition leading to blindness in premature infants. As a Scientific Advisory Committee member since 2016 and as Chair since 2020, I am humbled and grateful for the opportunity to play a role in ensuring that the KTEF funding is awarded to projects that will have an impact on pediatric blinding disease. It is also critical to develop the careers of young scientists who share the passion and urgency in combating this debilitating condition. These young investigators are the future of research in this area and a beacon of hope for finding cures for pediatric blinding diseases.

Bela Anand-Apte, MBBS, Ph.D., MBA
The American Academy of Ophthalmology was awarded $2 million from the Knights Templar Eye Foundation, Inc. to establish a permanent research fund to advance the practice of pediatric ophthalmology. This fund will be used to support the work of researchers investigating both rare and common eye diseases affecting children and to uncover optimal, real-world approaches to prevention and treatment.

Insights for these projects will be gleaned from the Academy's IRIS Registry (Intelligent Research in Sight), the world's largest clinical specialty data registry. The Academy developed the IRIS Registry to provide insights on eye disease, and to empower ophthalmologists to effectively improve their practices and their patients' lives. Having amassed data on 50 million patients in just four years, this data-rich resource has already improved the quality of eye care for adult patients.

The fund will enable the Academy's IRIS Registry team to enhance the capture of data collected on pediatric patients to reveal patient characteristics associated with disease and better approaches to their prevention and treatment. The IRIS Registry team will also focus on attracting more pediatric ophthalmologists to contribute to the database, further enhancing the power of its data-driven insights.

The IRIS Registry will also be used to drive individualized learning for pediatric ophthalmologists, providing them with information on their performance, outcomes of treatment, and adherence to best practices. It will also connect ophthalmologists to an online tool offering the best educational resources in pediatric ophthalmology.

"This grant is an extraordinary gift for ophthalmology," said David W. Parke II, MD, CEO for the American Academy of Ophthalmology. "It will build upon the strengths of the world's largest clinical data registry to drive insights on children's eye health. I have no doubt that it will improve the care of individual children. The Knights Templar Eye Foundation is a tremendous partner for our profession and our patients."
KNIGHTS TEMPLAR EYE FOUNDATION, INC. AWARDS
TWO MILLION DOLLARS TO CEF OF AAPOS ALL CHILDREN SEE

WHAT
All Children See, a program of the Children’s Eye Foundation of the American Association for Pediatric Ophthalmology and Strabismus (CEF of AAPOS), provides an eye exam and a year of follow up care at no cost to children who qualify nationwide.

WHY
Vision impairment is common among young children. More than 2% of children under age 18 years are blind or visually impaired and up to 5% of young children are at risk for permanent vision loss from conditions such as amblyopia (also known as “lazy eye”) and strabismus.

Uncorrected significant need for glasses (nearsightedness, farsightedness and astigmatism) are the most common vision disorders in children. 5-10% of preschoolers and 25% of school age children have vision problems that affect their learning and quality of life. Because 80% of learning is visual, vision plays a critical role in the cognitive, physical and social development of a young child. Vision is a strong predictor of school readiness and academic success.

We cannot afford to allow our children to forego care. The consequences of delaying treatment for children with visual impairment can be life-long—and include blindness.

WHO
To qualify as an All Children See patient, a child must be:
- under the age of 18
- a legal citizen or resident of the United States
- uninsured or under-insured
- financially unable to provide their physician with a co-pay

HOW
Visit allchildrensee.org for more information or to see if a child qualifies for a referral to one of All Children See’s volunteer ophthalmologists nationwide.

EXCLUDED
Eyeglasses, prescription drugs, hospital services, and fees of other medical professionals. Information about how to access these resources are available on the allchildrensee.org website and the patient’s physician may be able to help navigate a pathway to ensuring the child has the care he/she needs.

CONTACTS
Mona Panchal  |  Mpanchal@aao.org  |  Visit: allchildrensee.org
Knights Templar Eye Foundation, Inc.

Video Clips
Available for viewing and can be downloaded from the Knights Templar Eye Foundation webpage
www.ktef.org/videos

Dr. John S. Penn
Vanderbilt University
Vice Chair of the Dept of Ophthalmology and Visual Sciences

Dr. Thomas Lee
Division Head – The Vision Center
Children’s Hospital Los Angeles
Member of the KTEF Scientific Advisory Committee

KTEF Grant Recipients
Dr. Christie L. Morse
Chair, American Academy of Ophthalmology Foundation Advisory Board

American Academy of Ophthalmology
Intelligent Research in Sight (IRIS) Registry

Gene Therapy

Senior EyeCare
The Knights Templar Eye Foundation, Inc. (KTEF) has partnered with the Association for Research in Vision and Ophthalmology (ARVO) to fund travel grants to assist student/trainee members to attend ARVO’s annual meeting. Travel grants provide partial travel support to investigators who have an accepted abstract with a high score and whose research findings in the abstract are of high interest to the vision and ophthalmology research community allowing them to attend the ARVO annual meeting. The annual meeting provides a unique opportunity for trainees and early career investigators to discuss their research with leaders in their fields and to receive encouragement to continue their work. For some ARVO members, travel grants make the difference in whether they can attend the annual meeting to present their research. ARVO is the largest and most respected eye and vision research organization in the world. It includes nearly 12,000 researchers from over 75 countries. ARVO advances research worldwide toward understanding the visual system and preventing, treating, and curing its disorders.

The KTEF grant allowed ARVO to award an additional 95 travel grants in 2022, an increase of nearly 21%, for a total of nearly 462 grants for the year. For more than half a century, the KTEF has funded research grants with the goal of improving and preserving vision. As our Foundation has grown since its inception in 1955, it has expanded the number and size of grants and has commenced new initiatives in ophthalmology research and education. The Foundation’s research grants are targeted to new research by those in the early stages of their careers.

The Foundation is committed to funding travel grants for ARVO. The Foundation believes this is an ideal expansion of our funding concept. By stretching out a helping hand to those starting their careers, the Foundation hopes to encourage and expedite successful careers advancing the cause of vision loss. Providing funding for travel grants helps the Foundation fulfill its mission to improve vision through research, education, and supporting access to care.
Representing the Knights Templar Eye Foundation, Inc. at this year’s ARVO Annual meeting held in Denver, Colorado.

Pictured above with the travel grant recipients are Jeffrey A Bolstad, Vice President and Trustee, Robert W. Bigley, Assistant Secretary of the Foundation.
The Officers and Trustees of the Knights Templar Eye Foundation wish to thank all Grand Commanderies that have become either 100% or 200% Life Sponsors within their jurisdiction and to those Grand Commanderies that are actively working towards the 100% goal.

**Grand Commanderies at 100%**
- 2022 – MARYLAND & UTAH
- 2021 – ILLINOIS
- 2021 – IOWA & CONNECTICUT
- 2020 – OHIO & TEXAS
- 2017 – VIRGINIA & GEORGIA
- 2015 – DISTRICT OF COLUMBIA
- 2015 – WYOMING
- 2014 – TENNESSEE & MONTANA
- 1996 – SOUTH CAROLINA & OREGON
- 1995 – ALABAMA
- 1994 – NEW HAMPSHIRE

**Grand Commanderies at 200%**
- 2020 – TEXAS & OHIO
Dr. Marco Bassetto from the University of California, Irvine was awarded a $70,000 grant for Non-invasive, magnetic-assisted delivery of hydrophobic drugs and mRNA to the retina by topical application.

The overall goal of his research is to develop a non-invasive retinal drug delivery system for children affected by retinal diseases, which is currently exceptionally difficult due to the inadequacy of the administration method. Ideally the treatment should be non-invasive, but invasive intraocular injections are the only way to achieve therapeutic concentrations of drug inside the eye. Thus, the risk of permanent retinal damage exceeds the potential benefits of the therapy and most retinal diseases affecting children are not treated.

Eyedrops are a less invasive administration route in ophthalmology, but they are ineffective at targeting the retina. Previous results demonstrate that magnetic nanoparticles (MNPs)-based eyedrops delay the onset of retinal degeneration in a mouse model mirroring the syndromic retinal degeneration occurring in children, where a magnet behind the eyeball is used to concentrate drugs in the retina. Similarly, this approach rescued photoreceptor degeneration in rat retinal explants featuring retina degeneration by delivering small RNA. However, larger messenger RNA (mRNA) and hydrophobic drugs were not delivered because they required dedicated formulations.

The aims of this grant are: 1) adapt and apply a pre-established, MNPs-based eyedrop formulation to deliver tamoxifen in the retina of a mouse engineered for selective, colorimetric response to tamoxifen; 2) adapt and apply a pre-established, MNPs-based formulation to deliver Cre mRNA in the retina of a mouse engineered for selective, colorimetric response to Cre mRNA.

The results will unlock the translation of novel treatments including hydrophobic drugs and mRNA for retinal diseases in pediatric patients.
Acute retinal necrosis is a rapidly progressive herpes virus infection (herpes simplex virus -1 or -2, or varicella-zoster virus) of the retina seen in both healthy children and adults resulting in substantial inflammation ultimately leading to irreversible pathologic changes within the retina thereby permanently limiting vision. Following the resolution of the viral infection, additional ocular complications such as high rates of retinal detachment are common, which only further reduce the already poor visual prognosis.

Unfortunately, the immune response within the retina is poorly understood and very little is known regarding the pathogenesis and local immunity to the virus inhibiting improvements in clinical outcomes. In other better studied tissues affected by herpes viruses, such as the brain and cornea, various but distinct innate immune sensors have been shown to be crucial in initiating antiviral immunity. For example, children with deficiencies in toll-like receptor 3 (an innate immune sensor) are prone to recurrent herpetic encephalitis, and in mice, this has been further characterized to be due to a loss of a potent antiviral, type I interferons. This differs from the cornea where a loss of TLR-3 has no effect on viral containment, but the loss of another sensor, Interferon gamma-inducible protein 16, results in uninhibited viral replication. He will utilize a mouse model of acute retinal necrosis that he has developed, and mimics human disease, to better understand the pathogenesis of the disease and the role of important innate immune pathways to identify future therapeutic targets.
Dr. Corinna Cozzitorto from the University of California, San Francisco School of Medicine, San Francisco, California was awarded a $70,000 grant for her research titled: *Exploring the cellular heterogeneity of the periocular mesenchyme and its derivatives during anterior segment development and disease*

Ocular anterior segment dysgenesis (ASD) refers to disorders resulting from defective development of the front of the eye. Individuals with ASD frequently develop glaucoma at young age with subsequent vision loss. The disease characteristics are highly variable and can depend on the causative mutation, highlighting the importance of a genetic diagnosis. The biological mechanisms underlying ASD are still poorly understood, hampering disease prognosis and treatment.

The periocular mesenchyme is mixed population of cells that goes on to form the anterior segment of the eye. Defects in their migration or differentiation can lead to glaucoma and visual impairment. Mutations in FOXC1, PITX2 and, type IV collagens (COL4A1 and COL4A2) affect this cell population and cause ASD and glaucoma.

The research aims to characterize the cellular populations comprising the periocular mesenchyme and how it gives rise to anterior segment structures during normal development and ASD, using Col4a1 mutant mice as disease model. This data will provide new insight into mechanisms contributing to COL4A1-related ASD and could pave the way to understand more general causative mechanisms of ASD.

Dr. Simon S.M. Fung from the UCLA Stein Eye Institute, Los Angeles, California was awarded a $70,000 grant titled: *Discovery of tear film biomarkers in pediatric blepharokeratoconjunctivitis*

Pediatric blepharokeratoconjunctivitis (BKC) is a common but poorly understood childhood disease in which the surface of the eye becomes inflamed. This condition typically affects young children whose vision is still developing, causing issues from eye redness and irritation, to debilitating light sensitivity and permanent vision loss.
due to corneal scarring. Affected children often require frequent clinic visits and prolonged eyedrop treatment to control the inflammation. Pediatric BKC can present in several different ways in the eye. In addition, examination of young children with active disease is difficult because of the light sensitivity, making the diagnosis of BKC difficult.

Dr. Fung’s overriding objective is to improve the detection and monitoring of inflammation in children with BKC, so that the level of inflammation could be measured and tracked more accurately over time. To do so, he will analyze the tears on the surface of the eye, and look for surrogate markers of inflammation using FDA approved in-office testing devices. These non-invasive devices are quick and easy to use, producing results within minutes after testing, and are already in widespread use among adult patients with dry eye disease.

This research will lead to improved detection and monitoring of inflammation on the eye surface resulting in earlier diagnosis and treatment, which will allow normal visual development and prevent long-term vision loss in children.

Dr. Steven F. Grieco from the University of California, Irvine was awarded a $70,000 grant for his research entitled: **Neurotherapeutic Intervention for Amblyopia**

Amblyopia, aka ‘lazy eye’, is the leading cause of visual impairment, affecting ~1% of the population worldwide. It is most-often caused by a misalignment of the eyes during a childhood developmental ‘critical period’ for binocular vision. Because of a mismatch in the quality of vision for each eye during this period, the brain learns to ‘ignore’ the worse eye, resulting in a permanent loss of vision. After ~6-9 years of age in humans, there is no cure for this. Dr. Grieco recently found in pre-clinical studies that a neurotherapeutic induces visual system neuroplasticity and reverses the effects of amblyopia to restore vision. The goal of the study proposed herein, is to build mechanistically and translationally on the applicant’s finding. In support of the Knights Templar Eye Foundation’s (KTEF) commitment to the understanding, prevention and cure of pediatric diseases threatening vision, this project will determine how a neurotherapeutic ‘rewires’ the visual system to treat pediatric amblyopia and will help launch the career of a basic neuroscience investigator.
Dr. Marcela Garita-Hernandez from Massachusetts Eye and Ear, Harvard Medical School, Boston, Massachusetts was awarded a $70,000 grant entitled: **Modeling NMNAT1-Associated Early Onset Retinal Degeneration Using hiPSC-Derived Retinal Organoids**

Blindness can be caused by mutations affecting the different cells of the retina. One of these cell types are the photoreceptors, which are the specialized neurons which convert light signals into electrical information that travels to the brain allowing us to see. Work in Dr. Garita-Hernandez’s lab identified a gene called NMNAT1 to be involved in an early type of retinal degeneration known as Leber Congenital Amaurosis (LCA). Despite being needed in all cells of the body, mutations in NMNAT1 cause almost exclusively the death of photoreceptor cells, causing a severe vision loss since birth. Human induced pluripotent stem cells (hiPSC) have the potential to differentiate into photoreceptors and other cells of the retina mimicking retinal development. The aim of this study is to generate a human model of NMNAT1-associated early onset retinal degeneration using hiPSC and determine why photoreceptors are particularly sensitive to alterations in NMNAT1 gene. To do this, Dr. Garita-Hernandez will edit the DNA of hiPSC to introduce an NMNAT1 mutation found in patients. She will then generate photoreceptors from the hiPSC and compare the gene expression in the sick photoreceptors compared to those of healthy controls to help understand the disease better to design therapies for NMNAT1-associated LCA.

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Dr. TJ Hollingsworth from Hamilton Eye Institute, University of Tennessee Health Science Center, Memphis, Tennessee was awarded a $70,000 grant to study: **Suppression of Chronic Retinal Inflammation to Maintain Visual Function in a Spontaneous Polygenetic Mouse Model of Early Onset Inherited Retinal Dystrophy**

Inherited diseases of the retina, which ultimately all result in blindness, are difficult to treat. This difficulty can be linked to highly varied disease attributes. For example, some of these diseases begin causing blindness at birth while others have a later onset of symptoms; some affect daytime and color vision first while others affect dim-light and peripheral vision first; some forms of retinal disease progress slowly...
Dr. Biraj Mahato from Children’s Hospital Los Angeles was awarded a $70,000 grant for the research entitled: *Chemically reprogrammed Müller cell derived retinal ganglion cells to study and treat optic nerve hypoplasia*

Retinal ganglion cells (RGCs) are the principal neuron in the retina that transmit light signal from the photoreceptors to the brain ultimately leading to the perception of vision. Loss of RGCs is a final common endpoint in many childhood blindness such as optic nerve hypoplasia (ONH). While stem cells are an intriguing tool to replace damaged retinal cells, there are many hurdles and challenges that have yet to be overcome, such as tumor growth, time and laborintensive manufacturing processes and political and ethical controversies, forcing scientists to search for alternate strategies. This proposal attempts to characterize resident tissue specific cell derived RGCs that would ultimately lead to a regenerative therapy for ONH patients.

Dr. Thomas Mendel from the Ohio State University Wexner Medical Center was awarded a grant for $69,266 for his research entitled: *Gene Therapy for Pediatric Retinopathy from Batten Disease*

Batten disease is one of the most common and devastating diseases of the brain and nervous system in children. This family of diseases is caused by mutations in 1 of 13 genes that normally allow nerve cells to break down waste products. Without the ability to breakdown cellular waste, those nerve cells become diseased and lead to rapid blindness, coordination and strength loss, decline in intelligence, and eventually seizures and premature death, usually before a child is 10 years old.
Thankfully, there has been some promising success by treating some patients with gene therapy in their spinal columns, helping to insert a working copy of the gene into the neural cells in the brain that are naturally bathed in spinal fluid. However this gene therapy isn’t yet reaching the eye following injection in the spinal column, so the patients are still going blind.

This project aims to determine how best to deliver the gene therapy to the eye and the tissue in the back of the eye that turns light into a nerve signal, the retina. First Dr. Mendel will look at if he should inject the gene in front of or behind the retina with different surgical techniques. Second and very importantly, he will monitor closely for not only gene function, but also any signs of inflammation.

Dr. Kelly Mulfaul from the University of Iowa Institute for Vision Research, Iowa City, Iowa was awarded a $70,000 grant for the research proposal entitled: *The identification of neuroprotective mechanisms in human iPSC derived retinal neurons*

Batten disease is a rare but devastating progressive genetic disorder. Children between the ages of 5-10 years old experience vision loss which often progresses to complete blindness. As teenagers’ patients develop loss of motor skills, cognitive decline and ultimately die prematurely in their twenties. The rapid progression of this neurodegenerative disease creates suffering for the affected child their parents and siblings. Currently no cure exists for Batten disease. Dr. Mulfaul has used skin biopsies from two independent Batten disease patients to make induced pluripotent stem cells and have used CRISPR technology to correct the mutation causing Batten disease. Dr. Mulfaul will make retinal organoids which contain the cell types responsible for vision, from both the patient cells and the corrected cells, and they will use single cell RNA sequencing to identify genes and pathways that are altered in Batten disease. This will allow Dr. Mulfaul to identify targets that they can use for the generation of therapies to restore vision.

Dr. Kazuya Oikawa from University of Iowa Institute for Vision Research, Iowa City, Iowa was awarded a $70,000 grant entitled: *Neuroinflammation in Pediatric Glaucoma*

Primary congenital glaucoma is an eye disease that affects babies and young children. In this severe form of glaucoma, increased pressure inside the eye (intraocular pressure, or IOP) damages the visual sensing structures in the back of the eye, and can ultimately lead to permanent blindness in a significant number of patients.
However, the underlying mechanisms by which high IOP leads to vision loss patients with primary congenital glaucoma are not fully understood. Our previous studies found that the immune cell population in the optic nerve are activated soon after IOP becomes elevated. Prior research studies suggest that controlling this immune cell activity has the potential to protect the visual sensing tissues from irreversible damage by high IOP in adult animals. However, it remains unclear if this approach could also be applicable to younger patients. The goal of this project is to better understand the mechanisms involved in immune cell activation in the developing visual system in glaucoma. Dr. Oikawa will be using a well-characterized animal model that naturally develops primary congenital glaucoma early in life due to a mutation in a gene which also causes congenital glaucoma in humans. Dr. Oikawa will use cutting-edge techniques to study how high IOP changes the activity of the immune cells in the developing and adult visual system in glaucoma at a single cell molecular level and tissue level. These experiments will help identify potential new targets for the development of effective treatments specifically tailored for pediatric glaucoma.

Dr. Brian Soetikno from the Stanford University School of Medicine was awarded a $70,000 grant titled: Developing quantitative biomarkers for optic disc drusen using deep learning-based image segmentation and macrophage imaging

Optic disc drusen (ODD) is a rare disease of the optic nerve head, in which calcium deposits can cause vision loss in both children and adults. Advanced imaging technologies, such as optical coherence tomography (OCT), have allowed visualization of ODD for diagnosis. In addition, clinicians can obtain image-based quantitative measurements, which correlate with the patient’s visual prognosis. However, many of these measurements require manual annotation, which is time-consuming to perform. In addition, improvements in the processing of OCT angiography (OCTA) have enabled imaging of macrophage-like cells (MLC) on the retina’s surface. This could provide information about immunity and inflammation, which may play a role in vision loss in ODD. However, these image findings have not been explored in ODD. Dr. Soetikno is proposing three aims meant to improve the automated collection of quantitative measurements from OCT images. In Aim 1, he will develop an annotated imaging dataset, specifically for pediatric ODD.

In Aim 2, he will develop a novel algorithm for segmenting ODD in OCT using recent advances in deep learning. In Aim 3, he will investigate whether MLCs on OCTA relate to vision loss in ODD. Ultimately, these studies will help Dr. Soetikno develop automatic imaging algorithms and tools to improve the care of ODD in pediatric patients.
Dr. Mitra F. Tedrick from National Eye Institute, Bethesda, Maryland was awarded a $65,000 grant for the research entitled: **Stem cell-based drug discovery platform targeting lipid handling defects in Stargardt Disease**

Stargardt disease is a rare inherited retinal degeneration, affecting 1 in 10,000 children in the U.S., with no current treatment. Progressive photoreceptor (PR) cell death induced by atrophied retinal pigment epithelium (RPE) leads to vision loss in patients. The disease is primarily caused by mutations in gene ABCA4. Earlier stages of Stargardt disease are characterized by the accumulation of lipid-rich lipofuscin deposits in the RPE, suggesting a defect in lipid homeostasis in the eye. Substantial genetic heterogeneity caused by more than 800 mutations in ABCA4 is associated with the differences in severity of disease phenotype in individuals harboring these mutations. Recently, others and we have identified ABCA4 on the apical surface of RPE cells, challenging the current dogma that ABCA4 is a PR-specific protein. The discovery of ABCA4 expression in RPE cells provides a new link to disease pathogenesis and the potential to discover a well-informed treatment. Dr. Tedrick has developed an in vitro model for Stargardt disease using ABCA4 mutant induced pluripotent stem cell (iPSC)-derived RPE. Compared to healthy iPSC-RPE, Stargardt iPSC-RPE demonstrates disease phenotype of lipid deposition and progressive RPE atrophy. Dr. Tedrick’s ability to recapitulate Stargardt disease phenotype in ABCA4 mutant iPSC-RPE without the use of Stargardt POS suggests a cell-autonomous lipid metabolism defect in these cells. Here Dr. Tedrick is proposing a high-throughput drug screening to discover drugs that can improve lipid metabolism and handling in RPE cells and ameliorate Stargardt disease phenotype in the iPSC-RPE model. In addition, Dr. Tedrick will validate their drug discovery candidate/s using Stargardt patient-RPE with different genotypes and phenotypic subtypes. Our experiments seek to find drugs that can improve lipid metabolism/handling in these cells but do not interfere with their normal functioning.

Dr. Tianxi Wang from the Boston Children’s Hospital, Harvard Medical School was awarded a grant for $70,000 for the research entitled: **Inflammatory Signals from Photoreceptors Regulate Retinopathy of Prematurity via SOCS3**

Abnormal retinal blood vessel growth (neovascularization) in preterm infants, called retinopathy of prematurity (ROP), is a common cause of blindness in children. The disease affects the vision of ROP patients throughout their lifetimes. Current surgical correction is invasive and only partially prevents their vision loss. Identifying less-invasive therapies depends on gaining better understandings of how neuroinflammation and altered photoreceptor function are involved in the creation of ROP. Retinal neovascularization in such eye diseases is linked to irregular inflammation and photoreceptor function but not well understood. To develop
Dr. Lingli Zhou from the Johns Hopkins University School of Medicine, Baltimore, Maryland was awarded a $70,000 grant for the research proposal entitled: *Role and mechanism of Sema3F in retinopathy of prematurity*

Retinopathy of prematurity (ROP) is one of the leading causes of childhood blindness in the United States and worldwide. It is critical to identify and understand additional factors that regulate vascular disease progression, that could then be targeted for human ROP treatment. Here Dr. Zhou shows that Sema3F protein is a novel regulator of abnormal pathologic blood vessels in the retina. Sema3F is expressed in both premature human retina and the mouse model of oxygen induced retinopathy, a model of ROP. Depletion of neuronal Sema3F inhibits pathologic neovascularization and blood retinal barrier breakdown in OIR. Sema3F binds to endothelial cells and pericytes. There is particularly strong binding of Sema3F to pericytes in the presence of VEGF. Interestingly, Dr. Zhou’s studies did not demonstrate any direct effect of Sema3F on endothelial cells. Since pericytes are known to regulate endothelial cell growth and barrier function, Dr. Zhou’s hypothesis is that Sema3F is a novel regulator of pathologic angiogenesis, via direct regulation of pericytes. For this project, Dr. Zhou therefore proposes the following aims: 1) To investigate the effect of targeting the Sema3F coreceptor Nrp2 on neovascularization and blood-retinal barrier breakdown in OIR. 2) To determine the role of Sema3F as a novel regulator of pericyte function. Altogether, this project aims to provide important new insights into the regulation of pathologic retinal neovascularization in ROP by pericytes and also the identification of Sema3F as a novel regulator in ROP that could be targeted in patients.

preventative treatment, Dr. Wang will focus on so-called regulators that totally integrate altered photoreceptor function and neuroinflammation in the eye to control neovascularization. Dr. Wang proposes a unique strategy to prevent ROP through a critical regulator of tissue inflammation—a very likely candidate in controlling ocular abnormal vessel growth. Based on preliminary data, Dr. Wang proposes that SOCS3 in photoreceptors controls development of neovascularization; targeting SOCS3 may treat or prevent neovascularization. Dr. Wang will test this theory using a genetic approach with two aims: (I) to determine whether photoreceptor SOCS3 controls the development of abnormal retinal neovascularization in a ROP mouse model; and (II) to determine whether photoreceptor SOCS3 controls neovascularization by moderating inflammatory signals. This work will determine whether SOCS3, which links altered inflammatory responses in stressed photoreceptor cells with neovascularization, is important for neovascular ROP. The proposed research can help understand ROP disease and lead to new disease treatments.
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