



Retina Foundation
of the Southwest

2016 Impact Report

Celebrating 35 Years of Research Excellence

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Leading Research ... Saving Sight



Retina Foundation of the Southwest

Thanks to your support, the Retina Foundation of the Southwest is recognized as a nonprofit organization leading the way in research for age-related macular degeneration, pediatric eye disorders, and inherited eye diseases. In 2016, the Retina Foundation worked on 34 clinical treatment trials, serving a total of 2,308 patients referred by their ophthalmologist or retina specialist. The Retina Foundation is the next stop when current treatments do not exist for patients. We work to innovate treatments that will work.

Your unwavering commitment and support of our mission to prevent vision loss and restore sight through innovative research and treatment is what makes the difference and enables us to lead in advancing research that saves sight.



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Dear Friends,

Since 1982, the Retina Foundation of the Southwest's mission to prevent vision loss and restore sight through innovative research and treatment has resulted in numerous successes. It takes tremendous dedication, talent, and teamwork that would not be possible without the support from our donors, volunteers, foundations, community-minded corporations, and the National Eye Institute. Your partnership over these 35 years is our foundation and we sincerely thank you.

As we celebrate our 35th Anniversary this year, we pause to reflect on the many accomplishments that have been achieved since our humble beginning in the basement of Presbyterian Hospital. Our scale, by definition is small, but our purpose and impact is unmatched in our research on pediatric eye disorders, inherited eye diseases, and age-related macular degeneration.

- Drs. Eileen and David Birch, the first two scientists hired in 1982, have dedicated their lives to conducting sight-saving research at the Retina Foundation of the Southwest.
- We discovered that DHA in breast milk is necessary for infant eye and brain development. Now, enhanced baby formula containing DHA is sold worldwide.
- We altered surgical practice through our discovery that congenital cataracts must be removed during the first weeks of life to enable normal vision and brain development. Because of our research, cataracts are now routinely removed in infants within the first six weeks of life.
- We are the first institution to show that "lazy eye" (amblyopia) can be effectively treated with binocular iPad game play, rather than the onerous patching of the fellow eye.
- We have characterized visual function in patients with newly identified gene mutations, paving the way to treatment through gene therapy.
- Our home vision test and iPhone app, called myVisionTrack™, is FDA approved. This new test has the potential to prevent vision loss for seniors by providing a method for ophthalmologists to remotely monitor their patients in between appointments.
- We were the first institution to enroll patients for a clinical trial on dry age-related macular degeneration involving adult human neural (brain) stem cells.

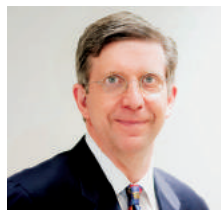
Our achievements to date, attained by the support from each one of you, are commendable. However, our work is not yet done. With your steadfast and passionate commitment to the Retina Foundation of the Southwest, we are confident that we will continue to achieve breakthroughs in *Leading Research....Saving Sight*.

On behalf of the Retina Foundation of the Southwest, thank you for your continued and generous support during the past 35 years. We value the relationships we have built together and look forward to your continued confidence and support of our research endeavors.

With gratitude and appreciation,

A handwritten signature in black ink, appearing to read 'D. Callanan'.

David Callanan, M.D.
Chairman of the Board

A handwritten signature in black ink, appearing to read 'Karl A. Csaky'.

Karl Csaky, M.D., Ph.D.
Managing & Medical Director

35 YEARS OF INNOVATION

A Timeline of Achievement

The Retina Foundation of the Southwest opens July 1, 1982

Congenital cataracts must be removed during the first weeks of life to enable the development of normal vision

Initiation of a series of studies establishing the ERG a-wave as a direct measure of photoreceptor function

Creation of the first model of Stargardt disease, the *abca4* (*abcr*) knockout mouse

1982

1985

1986

1989

1990

1991

1995

1996

Electrical signals from the eye can be recorded and analyzed on personal computers

Focal ERG measures cone function in macular disease

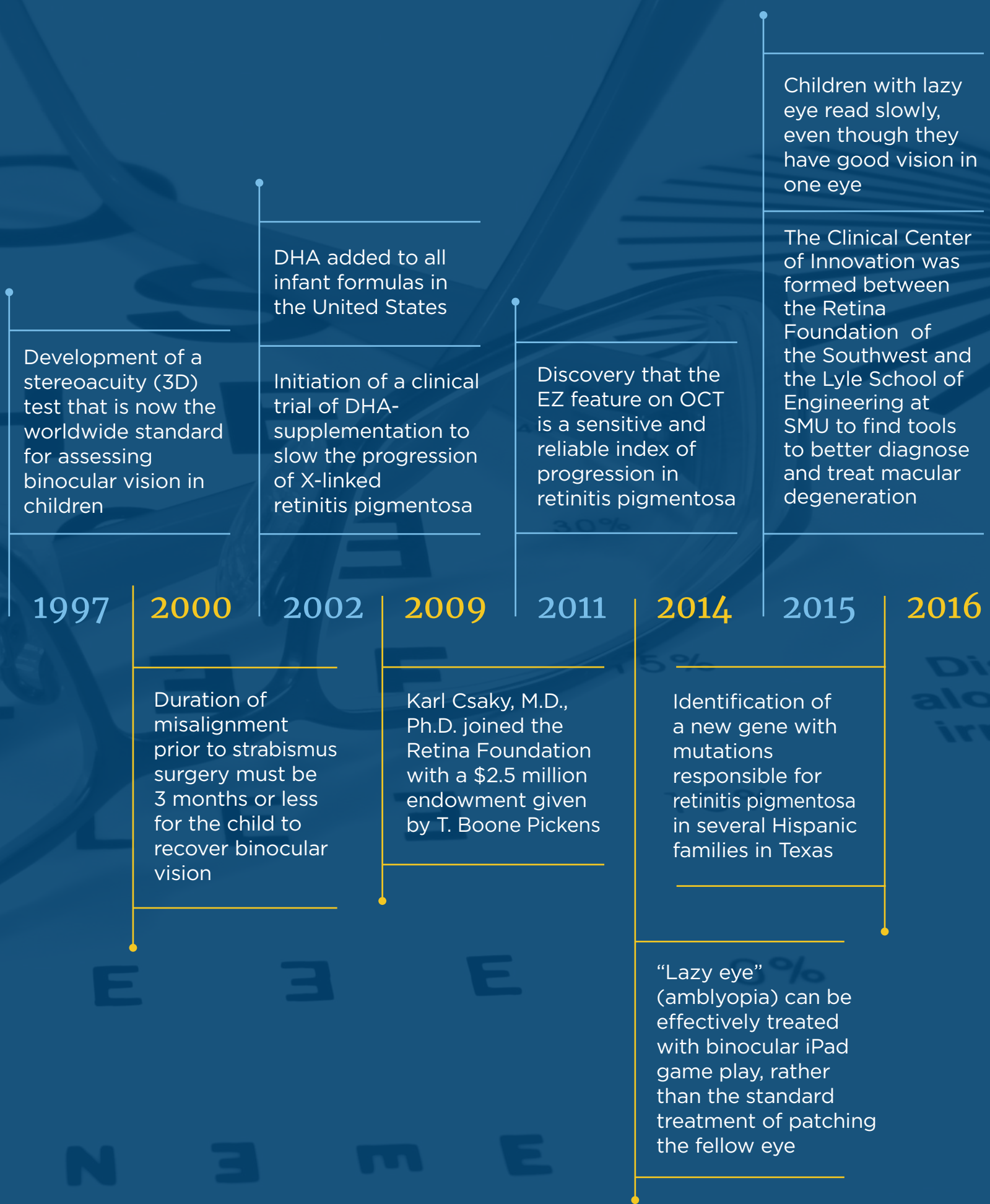
Identification of DHA as a key component of breast milk to support optimal development of the retina and brain

Establishment of the Southwest Eye Registry for patients with inherited retinal diseases and allied disorders



Retina Foundation
of the Southwest

Leading Research ... Saving Sight



1997

2000

2002

2009

2011

2014

2015

2016

Development of a stereoacuity (3D) test that is now the worldwide standard for assessing binocular vision in children

DHA added to all infant formulas in the United States

Initiation of a clinical trial of DHA-supplementation to slow the progression of X-linked retinitis pigmentosa

Discovery that the EZ feature on OCT is a sensitive and reliable index of progression in retinitis pigmentosa

Children with lazy eye read slowly, even though they have good vision in one eye

The Clinical Center of Innovation was formed between the Retina Foundation of the Southwest and the Lyle School of Engineering at SMU to find tools to better diagnose and treat macular degeneration

Duration of misalignment prior to strabismus surgery must be 3 months or less for the child to recover binocular vision

Karl Csaky, M.D., Ph.D. joined the Retina Foundation with a \$2.5 million endowment given by T. Boone Pickens

Identification of a new gene with mutations responsible for retinitis pigmentosa in several Hispanic families in Texas

“Lazy eye” (amblyopia) can be effectively treated with binocular iPad game play, rather than the standard treatment of patching the fellow eye

35THINGS

You May Not Know About the *Retina Foundation of the Southwest*

1. The Retina Foundation was originally established to educate the general public about various causes and treatment for eye diseases and disorders.
2. The first day of vision research at the Retina Foundation of the Southwest was July 1, 1982.
3. Drs. Eileen and David Birch, the first two scientists hired in 1982, have dedicated their lives to conducting sight-saving research at the Retina Foundation of the Southwest.
4. The first National Eye Institute grants were received in 1983. Both Drs. Eileen and David Birch have been continually funded since.
5. In 2009, the Retina Foundation of the Southwest was able to expand research on age-related macular degeneration (AMD) by recruiting Dr. Karl Csaky as the T. Boone Pickens Senior Scientist and Director of the Molecular Ophthalmology Laboratory.
6. Today, the Retina Foundation of the Southwest is one of the country's premier vision research facilities.
7. Located in Dallas, Texas the Retina Foundation of the Southwest is a leader in research on age-related macular degeneration (AMD), pediatric eye disorders, and inherited eye diseases.
8. The mission of the Retina Foundation of the Southwest is to prevent vision loss and restore sight.



9. The vision of the Retina Foundation of the Southwest is *Leading Research...Saving Sight!*
10. Our goal is to continue advancing sight saving treatments to make a lifetime of good vision a reality for everyone.
11. We have five specialized research laboratories and 32 staff members.
12. More than 26 postdoctoral fellows and 83 interns have been trained in sight-saving research at the Retina Foundation of the Southwest.
13. Our research is peer-reviewed and supported by prominent national agencies such as the National Eye Institute (NEI) and the Food and Drug Administration (FDA).
14. Through hundreds of clinical trials, the Retina Foundation of the Southwest has been granted FDA approval for treatments and tools developed for saving sight.
15. We discovered that DHA in breast milk is necessary for infant eye and brain development. Now, enhanced baby formula containing DHA is sold worldwide.

- 16.** We were the first institution to enroll patients in a clinical trial on dry age-related macular degeneration involving adult human neural (brain) stem cells.
- 17.** We transformed surgical practice through our discovery that congenital cataracts must be removed during the first weeks of life to enable normal vision and brain development. Because of our research, cataracts are now routinely removed in infants within the first six weeks of life.
- 18.** Our home vision test and iPhone app, called myVisionTrack™, is FDA approved. This new test has the potential to prevent vision loss for seniors by providing a method for ophthalmologists to remotely monitor their patients in between appointments.
- 19.** We helped discover the functions of two genes that cause Stargardt disease (juvenile macular degeneration) and four genes that cause autosomal dominant retinitis pigmentosa.
- 20.** Our research led to the FDA approval of the Argus II Retinal Prosthesis System. Our patients, who are blind due to advanced retinitis pigmentosa, are able to distinguish letters, objects, trees and much more when using this “bionic eye” artificial retina.
- 21.** Our research found a more effective way to detect “lazy eye” (amblyopia) in preschool children. The Pediatric Vision Scanner directly assesses misalignment between the two eyes instead of risk factors, which can lead to misdiagnosis.
- 22.** The Southwest Eye Registry at the Retina Foundation is the only depository of DNA samples for genetic eye diseases in the southwest. This work has led to the discovery of a number of genes that cause various eye diseases.
- 23.** We are the first institution to show that “lazy eye” (amblyopia) can be effectively treated with binocular iPad game play, rather than the standard of care of patching the fellow eye.
- 24.** In 2015, through a grant from the W.W. Caruth, Jr. Foundation at Communities Foundation of Texas, the Retina Foundation of the Southwest and the Bobby B. Lyle School of Engineering at Southern Methodist University collaborated to create the Clinical Center of Innovation for Age-Related Macular Degeneration.

- 25.** Scientists at the Retina Foundation of the Southwest have produced a total of more than 700 publications...and counting.
- 26.** Patients seen at the Retina Foundation of the Southwest are referred by their ophthalmologists and/or retina specialists to help in the diagnosis and treatment of their vision loss.
- 27.** Each year approximately 2,300 patients ranging from infants to seniors receive in-depth visual testing at no charge to advance our research and clinical trials.
- 28.** Over the past 35 years, the Retina Foundation of the Southwest has expanded our work space from 900 to 19,083 square feet.
- 29.** The Retina Foundation of the Southwest is supported by government grants, foundation grants, and contributions/gifts from generous individuals.
- 30.** More than 80 cents of every dollar donated to the Retina Foundation goes directly to research and vision testing services.
- 31.** With help from the Crystal Charity Ball and the Silverthorne Family, the Retina Foundation is nearing completion of the \$3.6M Vision of the Future Capital Campaign.
- 32.** The Retina Foundation of the Southwest has received the highest possible rating 4 stars from Charity Navigator for our strong financial health, accountability, and transparency.
- 33.** The Retina Foundation of the Southwest is a nonprofit 501(c)(3) research organization. Our tax ID is 51-0151514.
- 34.** The Retina Foundation of the Southwest is located at the southeast corner of Walnut Hill Lane and North Central Expressway at 9600 N. Central Expressway, Suite 200, Dallas, Texas 75231.
- 35.** You can learn more about the Retina Foundation of the Southwest on our new website at www.retinafoundation.org.

Big Research for Tiny Eyes

Cataracts are the most common cause of vision loss in adults and the primary cause of blindness in the world. Cataracts do not, however, only affect adults. Sometimes, babies are born with cataracts that prevent their tiny eyes from seeing the world clearly. Researchers have learned that genetics are the most common cause of cataracts in babies and young children, and Cynthia's family is an example of this fact.

Cynthia underwent surgery to remove her cataracts when she was just 6 months old. Throughout her childhood, she wore thick coke-bottle glasses. Finally, at age 19, Cynthia underwent a second surgery to insert lens implants on top of her eye. This allowed her to stop wearing the glasses and leave behind the stigma of being different.

Because of her vision, Cynthia has never been able to drive a car or read small print. Cynthia's cataracts clouded her vision and interfered with the developing connections between her eyes and her brain. Because her cataracts were removed after she was too old, she will never be able to recover normal vision. Nevertheless, she has been successful for many years now working as a Technical Designer at the headquarters of a large department store. She believes in using the vision you have, learning to compensate for what you don't have, and getting the job done.

Cynthia has set a great example for her four sons with her tireless energy, go-getter attitude, and positive outlook on life. While she may not be able to drive her children to school, baseball practice, or a friend's house, she has always supported their activities and encouraged their growth.

Cynthia is grateful to the researchers at the Retina Foundation of the Southwest for giving her sons a chance at normal vision and a normal life. Years of research at the Retina Foundation of the Southwest led to the

transformation of surgical practice through our discovery that cataracts in infants must be removed during the first few weeks of life to allow for normal vision and brain development.

Because of our research, Cynthia's doctor was able to tell her that her first born son, Aaron, might have a chance at recovering 20/20 vision if operated on within 6 weeks of his life. Hopeful that the surgery could give her son perfect vision, Cynthia agreed to the procedure. Aaron is now one year away from graduating college with perfect vision and plans to continue playing baseball and to attend Physical Therapy school next August.



A child's earliest years can have effects that last a lifetime. A baby's brain and eyes are developing rapidly during the first three years of life. Thanks to decades of research at the Retina Foundation of the Southwest, baby formulas have been enriched with nourishing DHA (docosahexaenoic acid) and ARA (arachidonic acid) and sold worldwide for the past 15 years.

Our collaborative studies with UT Southwestern and Mead Johnson have proven that DHA and ARA, naturally found in breast milk, are essential fatty acids necessary for an infant's eye and brain development. Babies who receive DHA and ARA from birth to their first birthday have more mature responses to light and sound, and they tend to have stronger immunity against allergies and respiratory illnesses. Additionally, our research shows that DHA and ARA strengthen the membranes of babies retinal photoreceptors (rods and cones) in their eyes. Rods and cones each contribute to our sight, allowing us to see brighter and lower level light.

The Retina Foundation of the Southwest is continuing to research the benefits of DHA and ARA in a toddler's diet. We are working with a group of toddlers and their parents to add these fatty acids to their diets and then performing cognitive and executive function tests to learn the benefits of this type of supplementation. Data analysis is in progress and we hope to deliver results soon.

A close-up photograph of a woman with long blonde hair feeding a baby. The woman is looking down at the baby, and the baby is holding a bottle of formula. The text 'Baby Formula Contains Vision Nourishing DHA' is overlaid on the right side of the image.

Baby Formula Contains Vision Nourishing DHA

iPad Games Helped Alice



Alice was five years old when her pediatrician noticed she had poor vision in her left eye and referred her to a pediatric ophthalmologist. With normal vision, a child can read all 11 lines on an eye chart from the big E at the top (20/200) down to the small 20/20 letters at the bottom, but Alice could only read the top 5 lines, meaning she had 20/80 vision. Her pediatric ophthalmologist did a complete eye examination and found that Alice was more farsighted in her left eye than in her right eye, so he prescribed glasses to see if this would improve Alice's vision.

After Alice wore glasses for 3 months with little improvement, Alice's ophthalmologist recommended that her parents take her to the Retina Foundation of the Southwest and enroll her in our binocular amblyopia iPad treatment study. The iPad game is expertly engineered to provide the amblyopic eye full contrast, strong images of miners that Alice guides through mazes, avoiding obstacles, to collect gold nuggets and then carry them to dim, low-contrast mining carts seen only by the eye with good vision. This game design allows amblyopic children to overcome suppression and use the two eyes together to recover vision. Each day that Alice played successfully, the dim carts of gold grew clearer and clearer as her vision improved. She completed all 42 levels in just 4 weeks and recovered normal vision.



New Age Technology Leads to Better Vision Testing

In the new age of general purpose and personal computers, scientists at the Retina Foundation of the Southwest saw an opportunity to advance vision research. Together, with Columbia University and the University of Illinois, we pioneered the use of computing power from a PC to capture and download electrical signals from the eye of patients with low vision, caused by genetic eye diseases, as they responded to different light stimuli tests. This groundbreaking research resulted in a new understanding of the causes of retinal degeneration.

From being able to only capture one response at a time, recording it with a picture, to capturing multiple signals simultaneously and analyzing the responses online was something that had never been done before — and this changed the world of vision research. With this advancement in technology, scientists can now accurately evaluate the status of a patient's retina and how far it has progressed in the degeneration.

Scientists at the Retina Foundation, under the direction of Dr. David Birch, went on to use this new technology to establish norms for the electroretinogram (ERG), giving the scientific community an index on how various eye diseases progress. Once the norms were established, the ERG was widely used in clinical trials.

Rods and Cones are Critical to Good Eye Sight

Photoreceptors, commonly known as rods and cones, are the cells in the retina that respond to light. Photoreceptors are responsible for vision at low and high levels of light. Measuring the function of photoreceptors allows scientists to determine visual acuity, light sensitivity, achromatic and color vision, and likelihood of night blindness. Although getting this measurement used to be challenging, thanks to the work of the Retina Foundation of the Southwest a-wave model fitting was developed to directly measure photoreceptor function.

The a-wave test allows researchers to measure the activity of a patient's rods and cones, specifically the quality and quantity of photoreceptor function. This test has been instrumental in helping guide researchers to a better understanding of inherited eye disease.





FDA Supports Ellipsoid Zone

Tracking the progression of retinal degeneration is necessary to understanding the condition and evaluating a cure. The Retina Foundation of the Southwest has used an anatomical measure, the ellipsoid zone (EZ) to track the progression of retinitis pigmentosa (RP), an inherited eye disease characterized by gradual vision loss of peripheral and night vision which, in many cases, ultimately leads to legal blindness.

After a multitude of studies, our researchers found that the ellipsoid zone (EZ) is an area in the eye that is associated with healthy vision. Changes in the width of the EZ correlate directly with changes in the visual field – the smaller the width of the EZ, the greater the loss in vision. The Retina Foundation was able to make this discovery by taking higher resolution images of the back of the eye with an optical coherence tomography (OCT) scan, or a non-invasive imaging test that uses light waves to take cross-section pictures of the retina.

Because of our work, the Food and Drug Administration (FDA) acknowledged the validity of EZ width as an outcome measure in prospective clinical trials for RP.

Diane Takes Preventative Steps

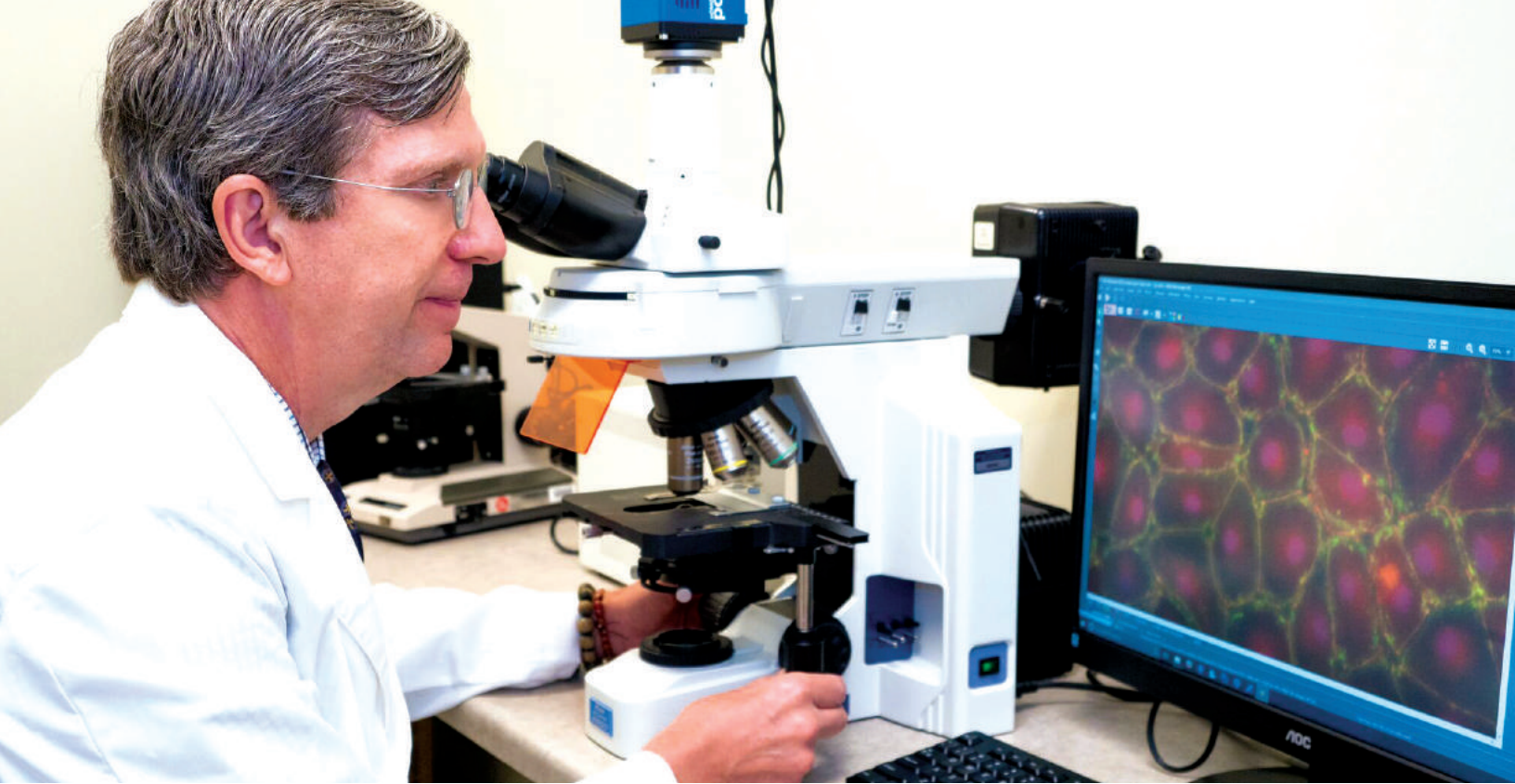
With more than 18 million individuals affected, age-related macular degeneration (AMD) is the leading cause of vision loss in individuals over the age of 50 in the United States. The eye disease initially begins as dry degeneration caused by the buildup of fatty deposits under the central portion of your vision, known as the macula, causing blurred vision and distortion of straight lines.

Because of her genetics, Diane is at risk of developing age-related macular degeneration. Both her mother and sister were diagnosed with having the dry form of AMD. At this time, there is no known treatment or cure for dry AMD. However, if the degeneration progresses to wet degeneration, as is the case for 10% of AMD patients every year, there are treatment options.

Six years ago, not much could be done to predict the likelihood of Diane having AMD as there were only 4 known genes linked to AMD. Luckily, research in this area is advancing quickly, and in the last few years scientists have identified 13 more responsible genes. Diane came to the Retina Foundation for vision testing this past spring and learned that she and her sister, who has AMD, share seven out of eight of the same genes. The gene that Diane is missing is the one responsible for AMD. Diane will continue to have her eyes examined every year, but it is not likely that she will develop AMD.

To further ensure her eye health, Diane has continued to lead a smoke-free life, exercising regularly and eating healthy. She has recently modified her diet after attending a Retina Foundation educational dinner and learning that an improved diet, such as the Mediterranean diet, is a suggested way to strengthen eyesight and prevent disease. Diane has added more salmon, dark green vegetables, and broccoli sprouts to her weekly meal plans. For all that is outside of our control, eye health is largely within our control. Healthy lifestyle choices can help prevent the irreversible disease of AMD from taking hold or, at a minimum, slow its progression.





Research for Individualized AMD Treatment

The Retina Foundation of the Southwest is working hard to identify the factors that contribute to the progression of the wet form of age-related macular degeneration (AMD). Wet AMD is responsible for more than 80% of severe vision loss and blindness attributable to AMD. In addition to environmental factors, such as smoking, and lifestyle factors, including exercising and eating right, AMD is also strongly linked to occurrences inside the body, specifically the formation of blood vessels in the eye.

Scientists have found, by isolating the damaged cells and examining those cells under a microscope, that circulating blood cells can contribute to vision loss. Our ultimate goal from looking at these cells is to develop better treatment options for patients with wet AMD. By knowing what the different stages of wet AMD look like on a molecular level, researchers at the Retina Foundation hope to be able to create individualized treatments for patients with varying stages of the disease.

Patient-First Diagnostics and Treatments

The Retina Foundation of the Southwest is in pursuit of better diagnostics and treatments for age-related macular degeneration (AMD). Together, with the chemistry experts at Southern Methodist University, we are generating ideas and developing prototypes for a new drug delivery strategy for the wet form of AMD. One in ten individuals with AMD advance from the dry form to the wet form of this degenerative eye disease. This shift from dry to wet AMD often results in a greater loss of central vision, limiting one's ability to read or drive. This more severe form of AMD is currently treated with drugs that are injected into the eye every 6–8 weeks or as needed. The Retina Foundation is working to develop a better drug delivery system that will be more comfortable for the patients and require less office visits.

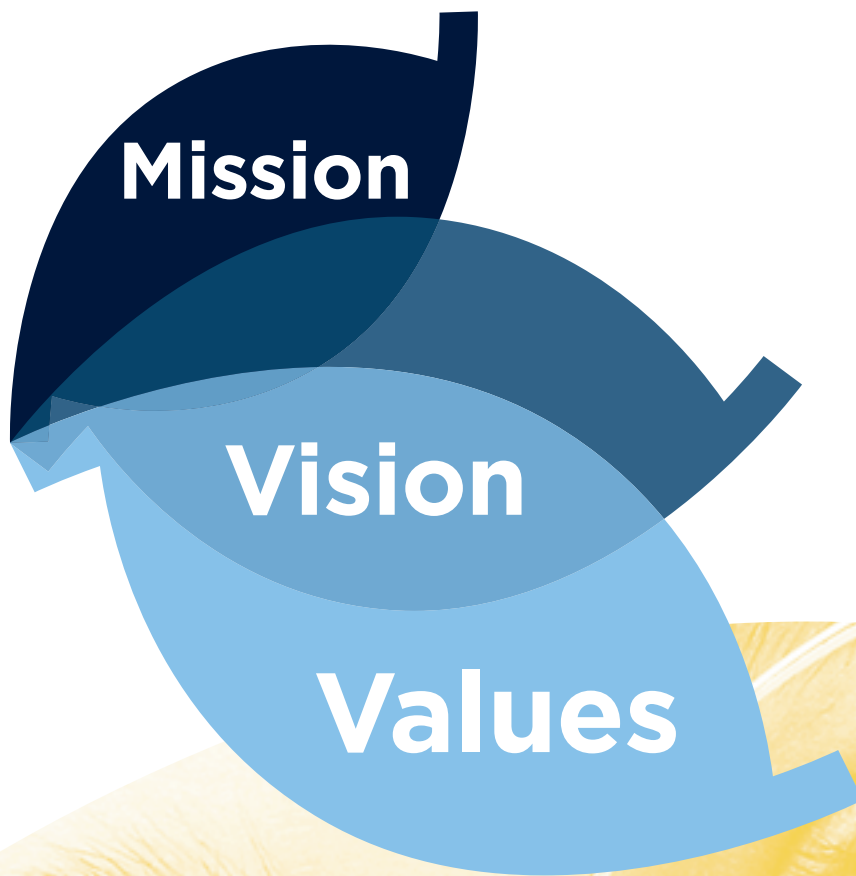
Because AMD is a highly individualized disease with two different forms and many different stages, our overall goal is to create personalized medicine tailored for each individual patient. By putting understanding of patients' needs at the front and center, we hope to see the quality of life improve for millions of people with life-altering AMD. The Retina Foundation plans to succeed by proving that when engineers, artists, chemists, photographers, biologists, and clinicians work together, research is more efficient, bringing the necessary tools to clinical trials with less time and cost. If proven successful, we could very well see a sweeping change in the approach to medical research for other diseases, saving precious time and money for generations to come.



20 Years of Racing for Sight

The Retina Foundation is proud to have raised more than \$6 million dollars for life-changing research through **Racing for Sight** over the past 20 years.





**Retina Foundation
of the Southwest**

Leading Research ... Saving Sight

MISSION

The enduring mission of the Retina Foundation of the Southwest is to prevent vision loss and restore sight through innovative research and treatment.

VISION

Our vision, *Leading Research... Saving Sight*, serves as the framework and guides every aspect of what we do.

VALUES

The core values that form the foundation of our culture and serve as a compass for our actions include:

1. Leadership
2. Integrity
3. Compassion
4. Patient Education
5. Stewardship

GET INVOLVED...

You Can Make a Difference!

Get Our Monthly Newsletter in Your Inbox

We welcome you to stay in the know with news and events from the Retina Foundation by subscribing to the monthly e-newsletter at www.retinafoundation.org/#subscription.

Join Us for a Tour of the Retina Foundation of the Southwest

Come see all that is happening at the Retina Foundation to restore vision! To schedule a tour of our facility, please contact Amy Lobner at alobner@retinafoundation.org or 214.363.3911, ext. 102.



Participate in a Clinical Trial

To learn about the clinical trials being conducted at the Retina Foundation, please visit www.clinicaltrials.gov and keyword search Retina Foundation.

Phyllis G. & William B. Snyder Legacy Society

By joining our Legacy Society, you can ensure that innovative treatments and research to prevent vision loss and restore sight continue for generations to come. You can make a Legacy Gift by adding the Retina Foundation of the Southwest to an existing will or trust. Making a Legacy Gift to the Retina Foundation has the potential to offer you and/or your heirs significant financial and tax advantages. Make the decision today, and give the gift of sight well beyond your lifetime.





Become a Benefactor

Join our Circle of Friends with a monthly, quarterly, semi-annual, or annual gift to help others by giving the gift of sight!

- Supporter: \$250
- Contributor: \$500
- Collaborator: \$1,000
- Transformer: \$5,000
- Accelerator: \$10,000
- Illuminator: \$25,000
- Innovator: \$100,000

Matching Employee Gifts

Often times, businesses and organizations will encourage charitable giving by matching employee contributions. Please ask if your employer will match your contribution to the Retina Foundation.



Consider Sponsoring a Retina Foundation Special Event

The innovative research we conduct is made possible with the help of individuals, foundations, and corporations. Your generosity is what makes a difference in the lives of others! To learn more about how you can be a sponsor and partner with us, please contact Jean Buys at jbuys@retinafoundation.org or 214.363.3911, ext. 109.



2016 Year in Review



8,297

Patients enrolled in
Southwest Eye Registry

Clinical Trials Total 34

D. Birch-**12**, E. Birch-**14**,
K. Csaky-**4**, Y. Wang-**4**



2,308

**Patients Participated
in Research Studies**

Rose Silverthorne Retinal Degenerations Laboratory-**600**
Crystal Charity Ball Pediatric Vision Laboratory-**1,300**
Molecular Ophthalmology Laboratory-**282**
Macular Function Laboratory-**126**

\$3,907,634

**Raised from Individuals
and Foundations**

Total Donors: **402**

New Donors: **106**



105

Volunteers

4/4

Charity Navigator Rating
Highest Possible Rating



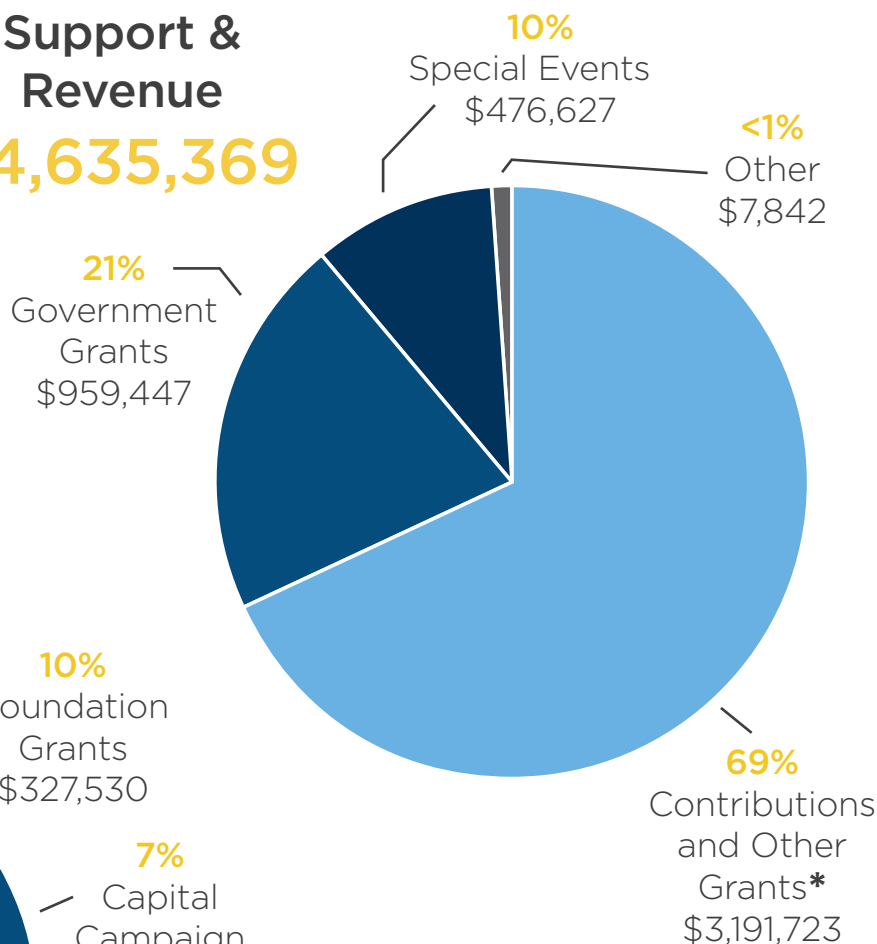
GOLD

Guidestar Rating

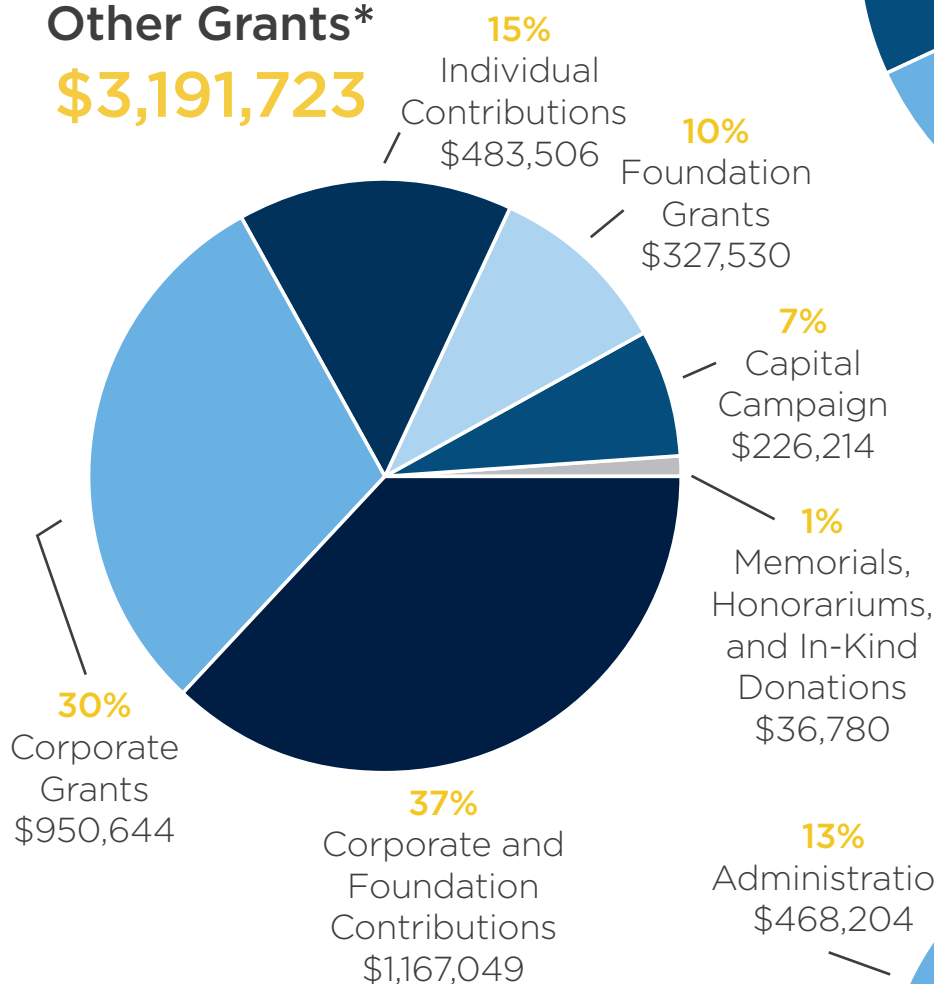
Demonstrating Commitment
to Transparency

2016 Financials

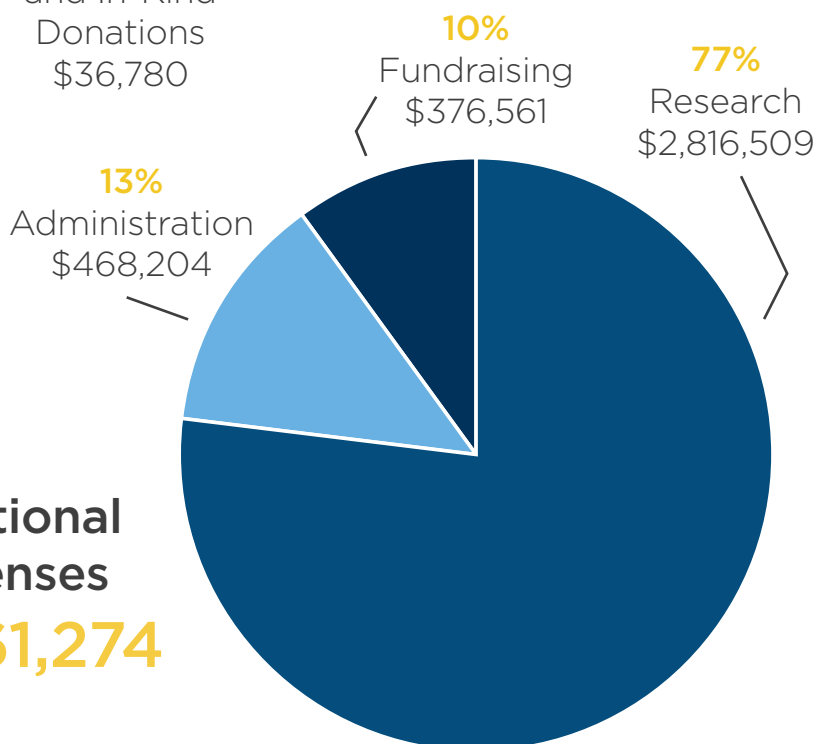
Support & Revenue \$4,635,369



Contributions & Other Grants* \$3,191,723



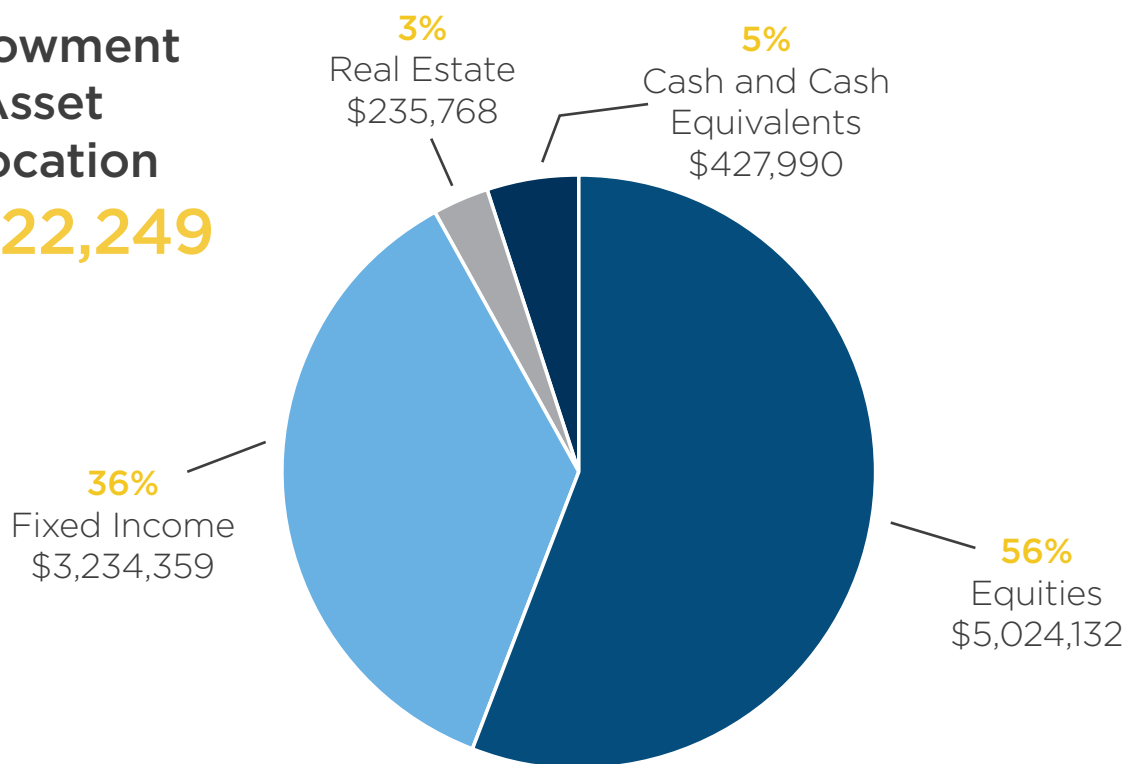
Functional Expenses \$3,661,274



*69% of our Support & Revenue comes from Contributions & Other Grants

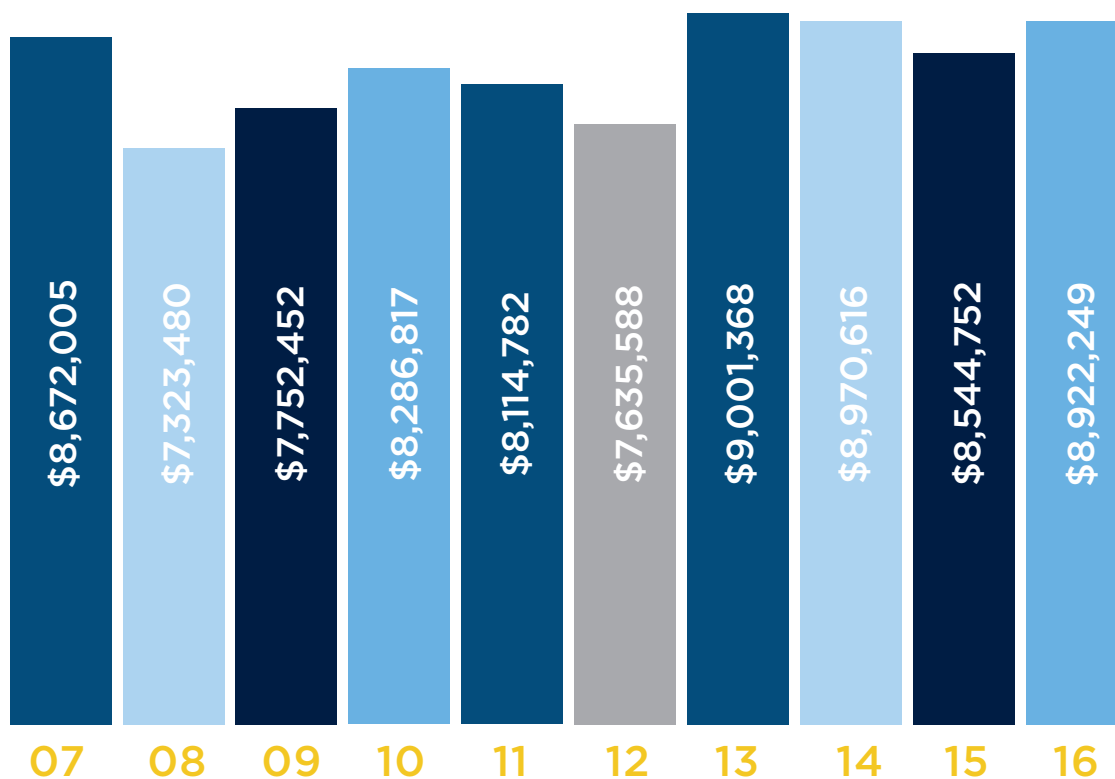
Endowment Asset Allocation

\$8,922,249



Endowment Balances

2007-2016



2016 Annual Giving

Individual & Foundation Support

The Retina Foundation of the Southwest has achieved remarkable success since 1982 because of the tremendous support provided by you, our generous donors. We are pleased to take this opportunity to recognize and thank those who made gifts or provided support of \$250 or more during the 2016 calendar year. Every effort has been made to ensure this list is as accurate as possible, but inevitably some omissions or errors may have occurred. We would appreciate receiving corrections, comments, or questions. Please contact the Retina Foundation at 214.363.3911.

EXEMPLARY BENEFACTOR

Anonymous \$1,000,000

INNOVATOR (\$100,000-\$999,999)

Bridget Russell
Constantin Foundation
Edward C. Fogg III & Lisbeth A. Fogg Charitable Trust
Foundation Fighting Blindness
G.C. Broughton, Jr. Foundation
Helen and Robert McGraw
National Institutes of Health/National Eye Institute
The Max and Minnie Tomerlin Voelcker Fund

ILLUMINATOR (\$25,000–\$99,999)

Dallas Association for the Blind
Estate of Mariane K. St. Claire
Faye Briggs
George & Fay Young Foundation
John and Bonnie Strauss Foundation
Kate and William Bedford
Knights Templar Eye Foundation, Inc.
Nancy and Steve Rogers
ORIX Foundation
Texas Retina Associates
Theodore & Beulah Beasley Foundation

ACCELERATOR (\$10,000–\$24,999)

Bobbi and Richard Massman
Debbie and John Evans
Elizabeth Born Linz Foundation
Fight for Sight
Harry W. Bass, Jr. Foundation
J.W. Bagley Foundation
Joan and Bob O'Brien
Joyce Berkley
Judy and Charles Shelton
Judy and Harold Kaye
Liana and Jeff Yarckin
Linda and Donald Carter
Linda Burk and John Gilmore
Lottye and Bobby Lyle
Michele and Mickey Munir
Patricia and David Stager, Sr.
Phyllis and William Snyder
Robert Wang
Rosewood Corporation
Rosewood Foundation
Roy & Christine Sturgis Charitable Trust
Samara Kline and Andy McCarthy
Sue and William Hutton

TRANSFORMER (\$5,000-\$9,999)

Aditi and Rajiv Anand
Amy and Paul Wilson
Bobbi and Fred White
Dell Employee Engagement Fund
General Atomics
Gurvetch Vision Assistance Fund
JoEllen and Wesley Herman
Joyce Gastler
Karen and Donald Key
Kim and David Callanan
Kristen and Anthony Jackson
Lynne and Deacon Marek
Margaret Ryan
Margot and Ross Perot, Sr.
Marta Bowling
Northern Trust
PepsiCo Foundation
Praveen Pais
Rebecca and Albert Vaiser
Sherry and Rand Spencer
Shirley and Jim Love
Susan and Adam Hurley
Susanna and James Merritt
Thomas Schur
Thompson & Knight Foundation
Thrasher Research Fund

COLLABORATOR (\$2,500-\$4,999)

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Publications and Book Chapters

1. **Bennett LD, Wang YZ, Klein M, Pennesi ME, Jayasundera T, Birch DG.** *Structure/psychophysical relationships in X-linked retinoschisis.* Invest Ophthalmol Vis Sci. 2016; 57: 332-337. PMID: 26830370
2. **Birch DG, Bennett LD, Duncan JL, Pennesi ME.** *Long-term follow-up of patients with retinitis pigmentosa (RP) receiving sustained-release ciliary neurotrophic factor through intraocular encapsulated cell technology implants.* Am J Ophthalmol. 2016; 170:10-14. PMID: 27457255 PMCID: PMC5056139
3. **Birch EE, Morale SE, Jost RM, De La Cruz A, Kelly KR, Wang Y-Z, Bex PJ.** *Assessing suppression in amblyopic children with a dichoptic eye chart.* Investigative Ophthalmology & Visual Science, 2016; 57:5649-54.
4. **Birch EE, O'Connor AR.** *Binocular Vision.* In Taylor & Hoyt's Pediatric Ophthalmology and Strabismus, 5th Edition (Elsevier), 2016.
5. **Birch EE, O'Connor AR.** *Stereopsis.* In Congenital Cataract—A Concise Guide to Diagnosis and Management (Springer), 2016.
6. **Birch EE. Pediatric Eye Disease Investigator Group.** *A randomized trial evaluating short-term effectiveness of overminus lenses in children 3 to 6 years of age with intermittent exotropia.* Ophthalmology, 2016; 123:2127-36.
7. **Birch EE. Pediatric Eye Disease Investigator Group.** *Cataract surgery in children from birth to less than 13 years of age: Baseline characteristics of the cohort.* Ophthalmology, 2016; 123:2462-73.
8. **Birch EE. Pediatric Eye Disease Investigator Group.** *Clinical factors associated with moderate hyperopia in preschool children with normal stereopsis and visual acuity.* Journal of AAPOS, 2016; 20:455-7.
9. **Birch EE. Pediatric Eye Disease Investigator Group.** *Home-based therapy for symptomatic convergence insufficiency in children: A randomized clinical trial.* Optometry & Vision Science, 2016; 93:1457-65.
10. **Birch EE. Pediatric Eye Disease Investigator Group and the Neuro-Ophthalmology Research Disease Investigator Consortium.** *Pediatric Optic Neuritis Prospective Outcomes Study.* J Neuroophthalmol. 2016; 36:115-7.
11. **Birch EE. Pediatric Eye Disease Investigator Group.** *Tonic pupil after botulinum toxin-A injection for treatment of esotropia in children.* Journal of AAPOS, 2016; 20:78-81.
12. **Bowne SJ, Sullivan LS, Wheaton DK, Locke KG, Jones KD, Kobaltd DC, Fulton BS, Birch DG, Daiger SP.** *North Carolina Macular Dystrophy (MCDR1) caused by a novel tandem duplication of the PRDM13 gene.* Molecular Vision 2016; 22:1239-1247.
13. **Buena-Atienza E, Rüther K, Baumann B, Bergholz R, Birch DG, De Baere E, Dollfus H, Greally MT, Gustavsson P, Hamel CP, Heckenlively JR, Leroy BP, Plomp AS, Pott JW, Rose K, Rosenberg T, Stark Z, Verhrij JBG, Weleber R, Zobor D, Weisschuh N, Kohl S, Wissinger B.** *De novo intrachromosomal gene conversion from OPN1MW to OPN1LW in the male germline results in Blue Cone Monochromacy.* Nature/Scientific Reports 2016, DOI:10.1038.
14. **Carr C, Emigh CE, Bennett LD, Pansick AD, Birch DG, Nguyen C.** *Towards a treatment for diabetic retinopathy: Intravitreal toxicity and preclinical safety evaluation of inducible nitric oxide synthase inhibitors.* Retina. 2016; Jul 1 (Epub ahead of print). PMID: 27380429
15. **Castañeda YS, Cheng-Patel CS, Leske DA, Wernimont SM, Hat SR, Liebermann L, Birch EE, Holmes JM.** *Quality of life and functional vision concerns of children with cataracts and their parents.* Eye (Nature), 2016; 30:1251-9.
16. **Catchpole T, Daniels T, Perkins J, Csaky KG.** *Method development to quantify Bv8 expression in circulating CD11b+ cells in patients with neovascular age-related macular degeneration (nvAMD) exhibiting Anti-VEGF refractoriness.* Exp Eye Res. 2016; 148:45-51.

17. **Daiger SP, Sullivan LS, Bowne SJ, Koboldt DC, Blanton SH, Wheaton DK, Avery CE, Cadena ED, Koenekoop RK, Fulton RS, Wilson RK, Weinstock GM, Lewis RA, Birch DG.** *Identification of a novel gene on 10q22 causing autosomal dominant retinitis pigmentosa (adRP).* Adv Exp Med Biol 2016; 854:193-200. PMID: 26427411 PMCID: PMC4906966
18. **da Cruz L, Dorn JD, Dagnelie G, Handa J, Barale P, Sahel J, Stanga PE, Hafezi F, Safran AB, Salzmann J, Santos A, Birch DG, Spencer R, Cideciyan AV, deJuan E, Duncan JL, Elliott D, Fawzi A, Humayun MS, Olmos de Koo LC, Ho AC, Brown G, Haller J, Regillo C, Del Priore L, Arditi A, Greenberg RJ, for the Argus II Study Group.** *Five-year safety and performance results from the Argus II retinal prosthesis system clinical trial.* Ophthalmology 2016 Oct; 123(10):2248-54. PMID: 27453256.
19. **De La Cruz A, Morale SE, Jost RM, Kelly KR, Birch EE.** *Modified test protocol improves sensitivity of the Stereo Fly Test.* American Orthoptic Journal, 2106; 66:122-125.
20. **Ghazi NG, Abboud EB, Nowilaty SR, Alkuraya H, Alhommadi A, Cai H, Hou R, Deng W, Boye SL, Alhommadi A, Al Saikhan F, Al-Dhibi H, Birch DG, Chung C, Colak S, LaVail MM, Vollrath D, Erger K, Wang W, Conlon T, Zhang K, Hauswirth W, Alkuraya F.** *MERTK gene therapy for patients with MERTK-related retinitis pigmentosa.* Hum Genet. 2016; 135:327-343.
21. **Ghodasra DH, Chen A, Arevalo JF, Birch DG, Branham K, Coley B, Dagnelie G, deJuan E, Devenyi RG, Dorn JD, Fisher A, Geruschat DR, Gregori NZ, Greenberg RJ, Hahn P, Ho A, Howson A, Huang SS, Iezzi R, Khan N, Lam BL, Lim JI, Locke K, Markowitz M, Ripley A-M, Rankin M, Schimitzek H, Tripp F, Weiland JD, Yan J, Zacks DN, Jayasundera KT.** *Worldwide Argus II implementation: Recommendations to optimize patient outcomes.* BMC Ophthalmol 2016; 16(1):129. PMID: 27154461
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23. **Holmes JM, Manh VM, Lazar EL, Beck RW, Birch EE, Kraker RT, Erzurum ER, Khuddus N, Summers AI, Wallace DK.** *A randomized trial of a binocular iPad game versus part-time patching in children 5 to 12 years of age with amblyopia.* JAMA Ophthalmology, 2016; 134:1391-1400.
24. **Kelly KR, Jost RM, Dao L, Beauchamp CA, Leffler JN, Birch EE.** *A randomized trial of binocular iPad game vs patching for treatment of amblyopia in children.* JAMA Ophthalmology, 2016; 134:1402-1408
25. **Kelly KR, Felius J, Ramachandran S, John BA, Jost RM, Birch EE.** *Congenitally impaired disparity vergence in children with infantile esotropia.* Investigative Ophthalmology & Visual Science, 2016; 57:2545-51.
26. **Liebermann L, Leske DA, Castañeda YS, Hatt SR, Wernimont SM, Cheng CS, Birch EE, Holmes JM.** *Childhood esotropia: Child and parent concerns.* Journal of AAPOS, 2016; 20:295-300.
27. **Ramachandran R, Cai C, Lee D, Epstein B, Locke KG, Birch DG, Hood DC.** *Reliability of a manual procedure for marking the EZ band endpoint location.* Transl Vis Sci & Tech. 2016; 5(3):1-10. PMID: 27226930 PMCID: PMC4874452
28. **Sadda S, Chakravarthy U, Birch DG, Staurengi EH, Henry E, Brittain C.** *Clinical endpoints for the study of geographic atrophy secondary to AMD.* Retina, 2016; 10:1806-22. PMID:27652913 PMCID: In Process
29. **Shankar SP, Wheaton DK, Birch DG, Sullivan LS, Conneely KN, Bowne SJ, Stone EM, Daiger SP.** *Autosomal dominant retinal dystrophies caused by a founder splice site mutation, c.828+3A>T, in PRPH2 and protein haplotypes in trans as modifiers.* Invest Ophthalmol Vis Sci., 2016; 57(2):349-59. PMID: 26842753
30. **Smith TB, Parker M, Steinkamp PN, Weleber RG, Smith N, Wilson DJ; VPA Clinical Trial Study Group; EZ Working Group.** *Structure-function modeling of OCT and standard automated perimetry in autosomal dominant retinitis pigmentosa.* PloS One, 2016 Feb 4; 11(2). PMID: 26845445 PMCID: PMC4741516
31. **Strauss RW, Ho A, Munoz B, Cideciyan A, Sahal J, Sunness J, Birch DG, Bernstein PS, Michaelides M, Traboulsi E, Zrenner E, Sadda S, Ervin A, West S, Scholl HPN for the Progression of Stargardt Disease Study Group.** *The progression of Stargardt disease (ProgStar). Design and baseline characteristics (ProgStar Report # 1).* Ophthalmology, 2016; 15:1433-5. PMID: 26786511
32. **Ventura MJ, Wheaton D, Xu M, Birch DG, Bowne S, Sullivan L, Daiger S, Jones R, Moser AB, Chen R, Wangler MF.** *Diagnosis of a mild peroxisomal phenotype with next-generation sequencing.* Molecular Genetics and Metabolism. Mol Genet Metab Rep., 2016; 9:75-78. PMID: 27872819. PMCID: PMC5109284
33. **Wang J, Morale SE, Ren X, Birch EE.** *Longitudinal development of refractive error in children with accommodative esotropia: Onset, amblyopia, and anisometropia.* Investigative Ophthalmology & Visual Science, 2016; 57:2203-12.
34. **Weisschuh N, Mayer AK, Strom TM, Glöckle N, Schubach M, Andreasson S, Bernd A, Birch DG, Hamel CP, Heckenlively JR, Jacobson SG, Kellner U, Kunstmann E, Maffei P, Poloschek C, Rohrschneider K, Rosenberg T, Rudolph G, Varsányi D, Weleber RG, Wissinger B.** *Mutation detection in patients with retinal dystrophies using targeted next generation sequencing.* PloS One, 2016 Jan 14; 11(1). PMID: 26766544



Invited Talks & Presentations

1. **Bennett LD, Klein M, Kiser K, Hood DC, Birch DG.** *Detectable rod function in patients with retinitis pigmentosa (RP) with or without a measurable rod electroretinogram (ERG) response.* Association for Research in Vision & Ophthalmology, 2016.
2. **Birch DG.** *Channel Rhodopsin treatment for retinitis pigmentosa.* Retina International, 2016.
3. **Birch DG.** *EZ width/area in retinitis pigmentosa.* FDA/ Association for Research in Vision & Ophthalmology Endpoints Meeting, 2016.
4. **Birch DG.** *New outcome measures for clinical trials in retinal degenerative disease.* Hope for Vision Science Symposium, 2016.
5. **Birch DG.** *Nonproliferative diabetic retinopathy: New evaluation strategies.* Kellogg Eye Center, 2016.
6. **Birch DG.** *Novel approaches to restoring vision to the blind.* Ophthalmic Photographers Society, 2016.
7. **Birch DG.** *Retinal structure – function relationship.* Association for Research in Vision & Ophthalmology, 2016.
8. **Birch DG.** *Strategies for interpretation of microperimetry results.* Lampalizumab Microperimetry Advisory Board Meeting, 2016.
9. **Birch DG.** *Valproic acid (VPA) trial for retinitis pigmentosa.* Retina International, 2016.
10. **Birch, EE.** *Binocular amblyopia treatment.* Invited Speaker, Pediatric Ophthalmology Subspecialty Day, American Academy of Ophthalmology, 2016.
11. **Birch, EE.** *Fixation instability and amblyopia.* Invited Speaker, Fixational Eye Movements Mini-Symposium, Association for Research in Vision & Ophthalmology, 2016.
12. **Birch, EE.** *New advances in amblyopia screening and treatment.* Invited Speaker, Ophthalmic Photographers Society, 2016.
13. **Birch, EE.** *RCT of binocular treatment vs. patching for amblyopia in 4- to 10-year-old children.* Invited Speaker, Lasker Initiative, 2016.
14. **Birch, EE.** *Pediatric Eye Disease Investigator Group. Cataract surgery in children from birth to less than 13 years of age: Baseline characteristics of a North American registry.* American Association for Pediatric Ophthalmology & Strabismus SPOSI Meeting, 2016.
15. **Birch, EE.** *Pediatric Eye Disease Investigator Group. Development of constant exotropia over 3 years in children 12 to 35 months old with untreated intermittent exotropia.* Academy of Optometry, 2016.
16. **Birch, EE.** *Pediatric Eye Disease Investigator Group. Randomized trial of a binocular iPad game versus part-time patching in children 5 to 12 years of age with amblyopia.* American Association for Pediatric Ophthalmology & Strabismus SPOSI Meeting, 2016.
17. **Birch EE, Morale SE, Jost RM, De La Cruz A, Kelly KR, Wang YZ, Bex PJ.** *Assessing suppression in amblyopia with a dichoptic eyechart.* American Association for Pediatric Ophthalmology & Strabismus, 2016.
18. **Castañeda YS, Cheng-Patel CS, Leske DA, Wernimont SM, Hatt SR, Liebermann L, Birch EE, Holmes JM.** *Quality of life and functional vision concerns of children with cataracts and their parents.* Association for Research in Vision & Ophthalmology, 2016.
19. **Csaky KG.** *Functional endpoints in AMD.* Invited Speaker, Classification of AMD Meeting, 2016.

20. **Csaky KG.** *RG7716 (VEGF/Ang2) - Bi-specific antibody.* Invited Speaker, Angiogenesis Meeting, 2016.
21. **Csaky KG.** *Task Group Leader.* Beckman Initiative for Macular Research, 2016
22. **Csaky KG.** *Why most practicing retinal specialists in the United States do not think they will use OCT angiography in their practice.* Invited Speaker, Fourth OCT Angiography Meeting, 2016.
23. **Daiger SP, Bowne SJ, Sullivan LS, Webb-Jones KD, Birch DG, Avery CE, Wang F, Chen R, Wheaton DK.** *Retinal targeted-capture next generation sequencing and CLIA confirmation in patients with a range of inherited retinal degeneration.* Association for Research in Vision & Ophthalmology, 2016.
24. **De La Cruz A, Jost RM, Kelly KR, Birch EE.** *Baseline factors and visual acuity outcome following binocular amblyopia treatment.* Association for Research in Vision & Ophthalmology, 2016.
25. **De La Cruz A, Jost RM, Morale SE, Kelly KR, Birch EE.** *Modified test protocol improves sensitivity of the Stereo Fly Test.* American Association for Pediatric Ophthalmology & Strabismus, 2016.
26. **Ho A, Munoz BE, Strauss RW, Jha A, Lam N, Hu Z, Birch DG, Zrenner E, West SK, Sadda SR, Scholl HP.** *Results from spectral-domain optical coherence tomography (SD-OCT) at baseline compared with normative data: The Natural History of the Progression of Atrophy Secondary to Stargardt Disease (ProgStar) Study.* Association for Research in Vision & Ophthalmology, 2016.
27. **Hoffman D.** *Nutrition and Your Vision.* Visions 2016 National Conference, Foundation Fighting Blindness, 2016.
28. **Ibrahim MA, Strauss RW, Kong X, Ervin AM, Ho A, Sunness JS, Audo IS, Birch DG, Sadda SR, Bittencourt MG, Scholl HP.** *Scotopic and photopic macular functions as assessed with microperimetry (MP1) in patients with Stargardt disease type 1 – The SMART Study.* Association for Research in Vision & Ophthalmology, 2016.
29. **Jost RM, Kelly KR, Dao L, Leffler JN, Beauchamp CL, Birch EE.** *Randomized clinical trial of binocular iPad treatment for amblyopia versus patching.* American Association for Pediatric Ophthalmology & Strabismus, 2016.
30. **Kelly KR, Morale SE, Felius J, Jost RM, Birch EE.** *Amblyopia disrupts the development of eye-hand coordination.* American Association for Pediatric Ophthalmology & Strabismus, 2016.
31. **Kelly KR, Jost RM, Dao L, Beauchamp CL, Leffler JN, Birch EE.** *Binocular iPad game treatment for amblyopia is more successful than patching.* Association for Research in Vision & Ophthalmology, 2016.
32. **Klein M, Bennett LD, Kiser K, Mejia P, Reddin K, Birch DG.** *A comparison of the Medmont dark adapted chromatic perimeter (DAC) with the full-field stimulus threshold (FST) in subjects with retinitis pigmentosa (RP).* Association for Research in Vision & Ophthalmology, 2016.
33. **Leffler JN, Wang J, Morale SE, De La Cruz A, Haider KM, Spencer R, Birch EE.** *Longitudinal refractive development in preterm children following treatment of retinopathy of prematurity (ROP) with intravitreal bevacizumab (IVB).* American Association for Pediatric Ophthalmology & Strabismus, 2016.
34. **Locke KG, Locke-Reddin KI, Hood DC, Birch DG.** *Inner retinal thickness in late stage retinitis pigmentosa.* Association for Research in Vision & Ophthalmology, 2016.
35. **Markoff JI, Birch DG, Sergott R, Kozma-Wiebe P.** *Evaluation of full-field electroretinogram changes after ocriplasmin injection in a substudy of symptomatic vitreomacular adhesion subjects from the OASIS trial.* Association for Research in Vision & Ophthalmology, 2016.
36. **Morale SE, Jost RM, Mutti DO, Birch EE.** *Peripheral refraction and accommodation in infants with esotropia.* Association for Research in Vision & Ophthalmology, 2016.
37. **Nittala MG, Birch DG, Stambolian D, Sadda SR.** *Scotopic and mesopic retinal sensitivity in age-related macular degeneration in an Amish population.* Association for Research in Vision & Ophthalmology, 2016.
38. **Nunez J, Hood DC, Xin D, Tsang SH, Reynaud J, Birch DG, Fortune B, Greenstein VC.** *En-face imaging as a method for monitoring changes in the inner segment (IS)/outer segment (OS) band in retinitis pigmentosa.* Association for Research in Vision & Ophthalmology, 2016.
39. **Sullivan LS, Bowne SJ, Koboldt DC, Fulton RS, Locke KG, Webb-Jones KD, Wheaton DK, Wilson RK, Birch DG, Daiger SP.** *A tandem duplication of PRDM13 in a family with North Carolina Macular Dystrophy (MCRD1).* Association for Research in Vision & Ophthalmology, 2016.
40. **Wang, YZ.** *Updates of myVisionTrack™ (mVT™) clinical studies.* Genentech Meeting, 2016.
41. **Wheaton DK, Webb-Jones KD, Bowne SJ, Sullivan LS, Chen R, Daiger SP, Birch DG.** *Complex multi-allelic inherited retinal dystrophy: Multiple genes contributing independently and concurrently in extended families.* Association for Research in Vision & Ophthalmology, 2016.

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