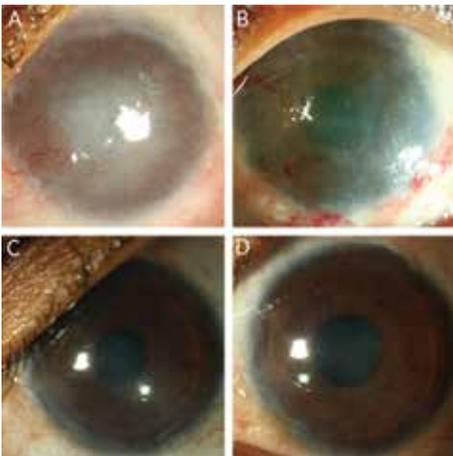


2013 SIGHT + SOUND

FALL EDITION



An example of four stages of one eye as it is treated for corneal blindness with corneal stem cells.

Fox Center Leads Exciting New Development for Corneal Stem Cell Treatment

By Zack Butovich

Just over two years ago, The Eye & Ear Foundation received a large contribution from the Western Pennsylvania Medical Eye Bank Foundation to support a brand new research project in corneal stem cell culturing and development, to be headed by Dr. James Funderburgh. We included a story about the Medical Eye Bank Foundation and its gift for corneal research in our 2011 *Sight+Sound Annual Report*.

It didn't take long for Dr. Funderburgh and his team to figure out a way to isolate stem cells from the corneal layer of the eye using a revolutionary surgical technique. Dr. Yiqin Du, who would later set up a glaucoma stem cell therapy research lab due to a large donation from an anonymous donor, helped perfect the stem cell isolation technique, creating a reliable and consistent way to generate stem cells.

Since then, Dr. Funderburgh and his lab have discovered that damaged and clouded corneas (which lead to corneal blindness) can be healed to full functionality by injecting stem cells near the affected area in animal models, eliminating the need for corneal transplants and other corrective surgeries. Studies consistently demonstrated corneal repair (both clearing cloudiness and healing scar tissue, making a once visibly damaged cornea nearly indistinguishable from a healthy one) when damaged cornea is injected with a stem cell solution.

Taking the research one step further, Dr. Funderburgh and his team devised a way to extract stem cells from damaged cornea, and then using them to repair the tissue. "We quickly discovered that autologous cells were the best," Dr. Funderburgh said, "Cells from [a patient's] own body would avoid problems, "such as tissue rejections, immunological problems, and some infections."

Corneal blindness affects approximately 50,000 people in the United States every year. The typical treatment for corneal blindness is a corneal transplant, where a donated cornea is provided to the patient, and is surgically implanted, similar to an organ transplant. This treatment is typically very effective, and the grafts are only rejected approximately 10% of the time. The United States is fortunate in that donor corneal tissue is widely available, and transplantation is a relatively simple procedure.

However, in still developing nations, corneal blindness is far more prevalent. In India, corneal blindness affects approximately 1,000,000 people per year, in part due to less emphasis on eye protection for hazardous jobs and more widespread tobacco use. Making matters more difficult is the dearth of available donor tissue and the capacity to provide the necessary standard follow up treatments to patients.

In an effort to help remedy this issue, Dr. Funderburgh brought Dr. Sayan Basu, a corneal surgeon from the L.V. Prasad Eye Institute in Hyderabad, India, to learn how to employ the corneal stem cell technique in animal models early this year. Dr. Basu's primary objective

continued on page 3

In This Issue

New Developments in Care for Chronic Rhinosinusitis	2
Foundation Board Member Makes Generous Contribution to Help Continue Revolution in Eye Care	3
Solutions for Congenital Conditions in Children's Ears	4
Inspiring Woman Dancing to Raise Support	5
Voice Center Ready to Vocalize Need for Clinical Research	6
The Third Annual International Conference on Vision Restoration	7
The Opening of the Snyder Lab for Retinal Regeneration	8

New Developments in Care for Chronic Rhinosinusitis

By Berrylin J. Ferguson, MD, FACS

Professor, Department of Otolaryngology

Chronic Rhinosinusitis (CRS) is defined in patients with problems with their nose and sinus, such as discolored nasal drainage, nasal blockage, facial pain or pressure, or decreased sense of smell for three months or longer. Many of these patients may have allergic rhinitis, nasal polyps, nonallergic rhinitis, dental infections, or even other disorders that mimic the symptoms of CRS.

Over the last decade, a tool has been developed to personalize the care of each patient with nose and sinus symptoms called the Rational Patient Experiment (RPE). The patient is instructed to try one medicine at a time and to continue the medication if it helps relieve the symptoms (within a few days) and to stop the medication after several days if there is no improvement in symptoms. If the medication provides partial improvement in symptoms they can continue that medication and add the next medication listed on the RPE form to test whether the combination of these medications more effectively relieves symptoms. The RPE does not require a specific diagnosis for implementation, and by guiding the patient through a rational therapeutic trial, it allows the patient to determine which interventions are providing relief for their symptoms. In patients with CRS symptoms, fully 40% have no evidence of sinus disease on examinations or sinus CT, yet they often benefit from the same medications and interventions which are approved for allergic rhinitis. There are currently no medications that have been approved by the Food and Drug Administration for the treatment of CRS, with the exception of nasal steroid sprays for nasal polyps. The number of patients afflicted with chronic nose and sinus problems is substantial. Allergic rhinitis, the most common and best studied cause of rhinitis, is present in almost 20%



Dr. Berrylin J. Ferguson MD, FACS

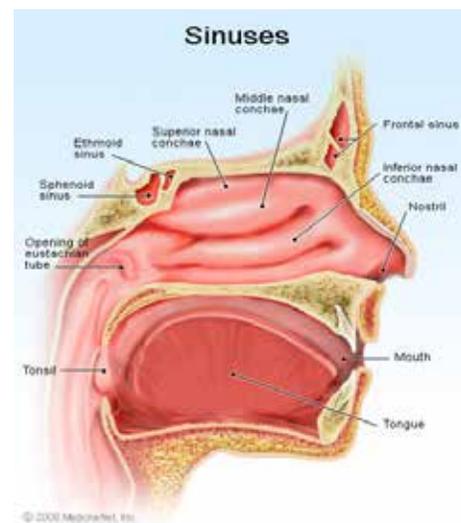
of the adult population in the United States and is increasing every year in both children and adults. Allergic rhinitis significantly impairs quality of life. The total direct and indirect cost of allergic rhinitis was recently estimated to be \$5.3 billion per year. A 2011 analysis determined that patients with allergic rhinitis averaged three additional office visits, nine more prescriptions filled, and \$1500 in incremental healthcare costs in one year compared to similar patients without allergic rhinitis [3]. Upper airway inflammatory disorders such as allergic rhinitis and CRS can be associated with asthma exacerbations and can contribute to sleep disorders and fatigue. Recent research has shown that management of allergic rhinitis is very important in treating OSA patients in order to eliminate stress and fatigue and to minimize daytime sleepiness and quality of life.

Only patients who continue to have significant symptoms despite the RPE would possibly move on to CT imaging. Prior to undergoing sinus surgery, it is a basic tenet that patients must have failed "maximal medical therapy." For most of the literature this means a broad spectrum antibiotic and a nasal steroid spray. While evidence overwhelmingly supports the efficacy of nasal steroid sprays in improving CRS symptoms, no such evidence exists for efficacy of antibiotics in CRS. The RPE allows a much richer exploration of "maximal medical therapy" for patients with CRS symptoms

and it does it in a rational fashion, avoiding the continuation of ineffective therapies for prolonged periods.

Patients with CRS are estimated to account for 18-22 million physician visits in the United States each year with a direct treatment cost of \$3.4-5 billion annually. Despite lack of evidence of efficacy, CRS is the fifth most common disease treated with antibiotics.

The second part of the RPE goes beyond medications and seeks to help the patient get at the underlying cause of their nasal symptoms. This includes instructions in an Elimination Challenge Food Diet, adequate hydration and alternative medications such as high dose Omega 3. Consultations covering associated co-morbidities such as obstructive sleep apnea, headache, paradoxical vocal fold dysfunction, and asthma are often made for the patient as we aim to treat the whole patient and the interconnecting and associated disorders that can affect sino-nasal symptoms. S+S



Fox Center Leads Exciting New Development for Corneal Stem Cell Treatment

continued from front page

was to learn how to isolate corneal stem cells and consequently re-implant the cells in patients. Though this type of stem cell transplant technique has never been tested with a human trial (due to strict FDA regulations in the US), it is feasible in India. Dr. Basu returned to India in August, having become proficient in stem cell isolation and implantation. Dr. Funderburgh and his lab

remain very excited for the results of Dr. Basu's lab and work in Hyderabad, which is expected to begin experiments with human models as early as Spring of 2014.

The implications of this corneal stem cell technique are immense. As mentioned above, Dr. Yiqin Du is currently employing a similar technique by isolating cells in the trabecular meshwork of the eye in efforts to cure damage from glaucoma. Additionally Dr. Igor Nasonkin is using retinal ganglion cells and other types of stem cells in similar fashion to heal damage from macular degeneration in the retina.

This new technology, developed in part with the Louis J. Fox Center for Vision Restoration and the Eye & Ear Foundation, with support from the Western Pennsylvania Medical Eye Bank Foundation, can have a tremendous impact on the lives of those suffering from corneal blindness. **S+S**

Foundation Board Member Makes Generous Contribution to Help Continue Revolution in Eye Care

by Zack Butovich

In November of 2012, Bruce Wiegand, former President/CEO and General Counsel of the Phillips Companies, became a member of the Board of Directors of the Eye & Ear Foundation. A Pittsburgh native, Mr. Wiegand recalls coming to see Dr. Joseph Novak as a teenager for his ophthalmic care in the earliest days of the Eye and Ear Institute and Foundation.

More recently, in April of this year, Mr. Wiegand and his wife Barbara, through their family foundation, established their commitment to the future of our research institution with a \$500,000 pledge to create the Wiegand Fellowship in Ophthalmology in honor of Dr. Joel S. Schuman, the 2012 awardee of the highly prestigious Champalimaud Award for his work in inventing and developing Optical Coherence Tomography (OCT) technology.

OCT technology is a revolutionary device that enables ophthalmologists to visualize cross-sections of the eye and more effectively diagnose, track, and analyze diseases (such as glaucoma or macular degeneration) that affect the eye. Speaking about the gift, Dr. Schuman has said, "I am truly touched by the wonderful contribution the Wiegands have made to my laboratory in honor of my Champalimaud Award. Their gift will enable a fellowship in glaucoma imaging, fostering both current and future research into the causes of and cure for glaucoma. I am grateful for their confidence in me and generosity in making this gift."

The Wiegands first came to our Eye Center to see Dr. Dhaliwal, due to complications



Bruce and Barbara Wiegand (source: Trib Total Media)

from previous cataract surgeries performed elsewhere. Mr. Wiegand was subsequently directed to Dr. Schuman who used the OCT technology to track the spread of damage in Mr. Wiegand's eye. "I am very pleased with the care I am receiving at the Eye Center. The doctors are exceptional in their fields and provide outstanding patient care," Mr. Wiegand has said.

The Fellowship endowed through the contribution will enable a highly skilled ophthalmologist to focus on novel developments in visual imaging. This research will provide important advancements in technology that can diagnose, track, and treat glaucoma and its related effects. This gift fills a critical gap for Dr. Schuman, by bringing in people from various parts of the world, introducing new, global perspectives to old problems, ultimately providing better care for our patients.

OCT technology has become an essential part of ophthalmic care in any physician's office. The machine transforms the ability of clinicians to watch the course of glaucoma. Conventional care generally requires an ophthalmologist to look into the eye at the retina for damage, and to make a subjective judgment about the state of the eye. OCT shifts the paradigm of observation by performing non-invasive, non-contact, quantitative, objective measurements of the eye. OCT allows clinicians to map the eye and retina, as if opening up the back of the eye and looking at the microscopic vessels and tissues. In this manner when diseases like glaucoma affect the eye, physicians can see exactly how, when, and where tissue is being damaged, and take more appropriate and effective courses of treatment.

Mr. Wiegand commented, "We are excited to be able to support the continuation of Dr. Schuman's world class, cutting edge research, which has already had an immense global impact on the treatment of glaucoma."

He also noted, "The particular importance of individual and private institutional philanthropy in the current environment of severe government cutbacks. Eye and Ear is an amazing research institution in Pittsburgh, and we should all be thankful and proud that it is located in our hometown."

The Eye & Ear Foundation is incredibly grateful for the Wiegands' support, and is excited for the future of ocular imaging and glaucoma treatments. Keep an eye out for future updates to follow. **S+S**

Dr. Waxman Awarded Two Highly Prestigious Awards

In May and July of this year, Dr. Jake Waxman received two prestigious awards celebrating his enormous achievements as both an educator and dedicated service member to the community. The Leonard Tow Humanism in Medicine Faculty Award was presented by the Arnold P. Gold Foundation to Dr. Waxman for "serving as an important role model for humanistic behavior." Dr. Waxman was selected as the winner by poll of the medical student body. The Jefferson Award for Public Service is a national service award created by Jacqueline Kennedy, Senator Robert Taft, and Sam Beard in 1972. Winners are selected at a regional level annually, and are then recognized at an event in Washington D.C., where the national winner is named. Dr. Waxman received the Jefferson Award for his tireless efforts with the Guerilla Eye Service and providing free ophthalmic care to residents of underserved communities throughout Pittsburgh and Western Pennsylvania. The Jefferson Award is often referred to as the Nobel Prize for Volunteerism and previous awardees have included Oprah Winfrey, Bill Gates, and Gen. Colin Powell. The Jefferson Award is an incredible honor given to those "ordinary people who do extraordinary things. Unsung heroes committed to helping others without expectation of reward." Please join us all in congratulating Dr. Waxman.



Solutions for Congenital Conditions in Children's Ears

By Robert Yellon, MD

Dr. Robert Yellon, Co-Director of the Division of Pediatric Otolaryngology and Professor of Otolaryngology at the University of Pittsburgh School of Medicine, is one of only a few highly skilled surgeons in the world who performs reconstructive surgery to correct birth defects, including missing ear canals (aural atresia), missing outer ears (microtia), and excessively prominent ears. With his expertise, the Department of Otolaryngology at the University of Pittsburgh School of Medicine and the Children's Hospital of Pittsburgh of UPMC, Division of Pediatric Otolaryngology have become a referral center for giving hope to these patients.

Microtia is a condition in which children are born with only a misplaced earlobe mastoid of a normal external ear; some of these children will also be born without an ear canal, a condition called aural atresia. One out of every six thousand children are born with these conditions which often occur together. In children with microtia, reconstruction begins at about seven years of age, and is comprised of four staged surgeries. The first stage includes harvesting cartilage from the child's rib. This is sculpted into the shape of an external ear and implanted under the scalp. Three months later, the present but misplaced earlobe is moved into proper position. Third, the implanted ear is partially separated from the head

to create a space behind the ear. Fourth, the bump in front of the ear (tragus) is reconstructed to complete the new external ear.

For children born without an ear canal, CT scans determine whether the internal ear structures are favorable for reconstruction of the ear canal and hearing (atresioplasty). If the CT scan shows the necessary structures in the middle and internal ear, an advanced reconstructive surgery creates an ear canal for hearing (atresioplasty).

Bone Anchored Hearing Aids

For many children with aural atresia, the CT scan indicates that atresioplasty is not possible. For such children, an implant called the Bone Anchored Hearing Aid (BAHA) is placed in the skull behind the ear to improve hearing.

Prominent Ears/Otoplasty

Some children are born with very protruding ears. This can cause major psychological problems for the child stemming from being teased by their playmates about their protruding ears. For such children, specialized otoplasty surgery is performed to make the appearance of the ears more normal.

These reconstructive surgeries are crucial to normal hearing, speech, and psychological development for children. We are fortunate to be able to help young children to not have to face the difficulties of birth defects of their ears. **S+S**



Inspiring Woman Dancing to Raise Support

By Zack Butovich

Melody Goodspeed enjoyed the color of life until June 6, 2003, when she lost 100% of her vision to an unfortunate combination of thrombosis (a large blood clot) in the top of her head, related illnesses, and subsequent long term pressure on her optic nerve over several months.

“Either give up or fight. I chose to fight harder than I ever had before... Those three months being very difficult, but life never gives you more than you can handle.”

– Melody Goodspeed

Months earlier, at the age of 26, Melody was working as a special education teacher for young children with emotional disabilities. She loved her job and her relationships with the kids in her charge. She developed close friends where she worked and was pursuing a Master’s Degree in Special Education. However, frequent and violently painful headaches soon plagued her ability to function and work consistently. After spending a few months in and out of hospitals and enduring many surgeries, Melody’s body reacted poorly to medications – her immune system tried to fight through the thrombosis as if it were a tumor.

Sadly, this has left Melody with complete blindness. After fighting through consequent health issues and a heavy depression (often associated with those who lose their sight), Melody decided that she wanted to help other people. She wanted to persevere through the disability, and find ways to help other people persevere as well. “After several months of being at rock bottom, I decided I had two choices,” Melody recalls, “Either give up or fight. I chose to fight harder than I ever had before... Those three months being very difficult, but life never gives you more than you can handle...”

Melody went to a rehabilitation center in Richmond, VA where she learned

computer software and assisted living skills. When Melody returned home she continued working on these skills and decided it was time to re-enter the world. She volunteered at a Library rewinding tapes two days a week. Melody says, “It was scary, but I knew I had to push myself and get back into the world. This experience was the first stepping stone in my recovery to find life.” Eventually, Melody felt strong enough to start going back to school to receive extra training, ultimately receiving a Certificate in Contract Management from the University of Virginia. She has now been gainfully employed for five years in the world of Government Contracting.

More recently, Melody heard about the BrainPort while talking to a neurologist at John’s Hopkins University about possibilities for sight. The physician mentioned the work Dr. Amy Nau is performing at the University of Pittsburgh and the Louis J. Fox Center for Vision Restoration.

The Brainport device is a combination of a camera attached to a pair of sunglasses connected to a small, handheld controller and a sensory pad that is placed on the tongue. The controller takes a signal from the camera and turns it into an electrical signal, which then is transmitted to the pad and placed on the user’s tongue. After practice, many users of the BrainPort have been able to shoreline walls or sidewalks, avoid obstacles in their way, tell the difference between shapes in front of them, or, most remarkably even read large letters and words.

In Melody’s case, she was able to (after practice) throw a ball around with her three-year-old son and read some words. Melody has been a subject in a large, multi-site study for the BrainPort that has included many cities across the country for the past year. “I enjoy it quite a bit, it is amazing to see the image of my son and loved ones” Melody says. “It lets me do things I hadn’t done before, like seeing my son hand me a book.”

After working with Dr. Nau, Melody wanted to do more to help spread



Melody Goodspeed and her seeing-eye dog, Daisy

the word of the Fox Center and the revolutionary work being conducted there. Dr. Nau quickly put her in contact with our Eye & Ear Foundation.

Over the last few months, the Foundation worked alongside Melody to host a “Zumbathon” fundraiser called “Dance for Sight.” Melody’s company graciously offered to cover event costs, and all proceeds would come to the Foundation in support of optic nerve regeneration research at the Fox Center.

On September 14th, Dance for Sight took place in Herndon, a city just west of Washington D.C., to huge success. Raising nearly \$10,000 for optic nerve research, Melody, with her tireless efforts, made a big difference in support of the Foundation. And for all that work, Melody is already on to the next event. “Our next steps are to plan something in Baltimore,” she says. Stay tuned for future updates. **S+S**



Dr. David Eibling, Nominated for the First Class Patriot Achievement Award

In May of this year, Dr. David Eibling, a Professor in our Department of Otolaryngology, was nominated for the First Class Patriot Achievement Award from the Financial Planning Association of Pittsburgh (FPA). The award is presented annually at the FPA's "Saluting Service" event, to an active duty or veteran service member who has shown extraordinary dedication to serving their community. Dr. Eibling, a career military otolaryngologist and a Colonel in the U.S. Air Force, has been awarded many medals in his service including First Annual Excalibur Award from the Society of Air Force Clinical Surgeons and Air Force Meritorious Service Medal, and is often recognized for his significant achievements at the Veterans Affairs Hospital in Pittsburgh. He has been recognized as Teacher of the Year several times from the University of Pittsburgh School of Medicine students, and has been honored for designing many innovative new ways of monitoring patients in the hospital. Please join us in congratulating Dr. Eibling for this wonderful recognition.

Voice Center Ready to Vocalize Need for Clinical Research

By Zack Butovich



Dr. Clark A. Rosen

The UPMC Voice Center is a research center and clinical arm of the Department of Otolaryngology, which focuses specifically on issues with the vocal cords, larynx, and parts of the throat. The Center cares for a wide variety of patients whose careers and daily life depend upon their being able to use their voices, such professional singers, speakers, business leaders, and teachers.

Dr. Clark A. Rosen is a Professor in the Department of Otolaryngology, the Director of the Voice Center, and a leading clinician in the care and treatment of voice disorders. "We have a hidden gem in Dr. Rosen," says Sam Zacharias, a member of the University of Pittsburgh Board of Trustees and former Chairman of Institutional Advancement at Pitt. Mr. Zacharias first saw Dr. Rosen a little over two years ago, and quickly learned about the high level of care he was receiving. "It didn't take long for me to learn what a superstar he really was," Mr. Zacharias says.

Originally located on the second floor of the Eye and Ear Institute in Oakland, the Center was growing too big for the relatively small space it was using. It didn't take long for Dr. Jonas T. Johnson, the Chairman of the Department of Otolaryngology, to recognize the strength of the program and the need to find more space and funding. Similarly, Dr. Eugene Myers, the former Chair of the Department, recognized the importance the Voice Center would have in the community, and stepped in to help secure a large donation from the Eye & Ear Foundation, which helped bring Dr. Rosen to Pittsburgh while simultaneously moving the Voice Center to a state-of-the-art space in Mercy Hospital near downtown.

The Voice Center is a world-class clinical care facility, similar to only a handful of other voice related care centers in the country. Dr. Rosen is at the top of the field, and every year, outstanding otolaryngologists come from all over the country and world to take on a Fellowship with Dr. Rosen and gain an expertise in voice disorders.

However, Mr. Zacharias notes, "The Center needs to have more exposure...it hasn't gotten the attention it should have gotten." To change that, Mr. Zacharias is using his experience with Pitt's \$2 billion campaign and combining it with the Eye & Ear Foundation, to help raise the profile of the Voice Center. "As a grateful patient," he says, "and someone who cares a lot about the University, and the strengths of the Medical Center, I want to put a good plan together," to help the Voice Center gain its due recognition.

Specific goals include fundraising for a new clinical and translational research "Center of Excellence." This Center would separate the Voice Center from similar institutions by providing translational research – that is, research that adapts the basic science refined in a laboratory, into actual treatments that can be administered to patients. Most voice related institutes focus their efforts on basic science work, but Dr. Rosen believes his center can lead the way in new care for patients.

This "Center of Excellence" would be in tandem with a new Core Facility, designed to develop and foster young specialists in voice and combine their efforts with specialists from other areas with an interest in laryngology. This unique approach would benefit from a diversity of innovation, create new and unique solutions for prevailing issues in voice care.

The Voice Center every day cares for a wide variety of voice disorders. Ranging from school teachers and college professors to singers at the Pittsburgh Opera and famous actors and actresses, patients come from all over the country for the specialized and highly skilled care of Dr. Rosen and his team. The Eye & Ear Foundation looks forward to working with Sam Zacharias and the Voice Center team as we kick off this exciting campaign. **S+S**

The Third Annual International Conference on Vision Restoration

By J.C. Noreika, M.D., M.B.A.

A recent newspaper article related the story of two 43 year-old Belgium men. Identical twins and totally deaf, they were inseparable, “talked” vigorously through language of their hands, even drove a car. They enjoyed gossip magazines. Having learned that they were incurably losing their sight, both petitioned doctors that they be euthanized. Belgium, the Netherlands, and Luxembourg have legalized euthanasia. Other countries such as France have legislation pending to sanction the practice. In December 2012, these otherwise healthy men bid goodbye to loved ones and each other and died in adjoining hospital beds. They each pointed upward “and were gone.”

It is unlikely that ophthalmologists witness the finality of Marc and Eddy Verbessem’s decision. But, they do contend with the drama of vision loss as it plays out in the lives of patients with corneal disease, retinal degeneration, optic nerve destruction and ischemic insult.

The third annual International Vision Restoration conference sponsored by the UPMC Eye Center, the Louis J. Fox Center for Vision Restoration and the McGowan Institute for Regenerative Medicine was held on June 10 and 11 in Pittsburgh. This unique meeting showcased presentations on the most advanced regenerative research performed in laboratories worldwide. Regrettably, few practicing clinical ophthalmologists attend. Breakthroughs on the threshold of practical vision restoration no longer require fantastical extrapolation from laboratory bench to exam lane to ignite passion for our profession.

The two-day meeting’s organization follows the path of photons and neuronal excitation through the cornea, to the retina and macula, along the ganglion cell pathway ending in the occipital visual cortex. The speakers hail from around the world. The United States was well represented by experts from the Massachusetts Institute of Technology, Cal Tech, the Carnegie Institute of Technology, Rensselaer Polytechnic Institute and prominent departments of ophthalmology in Miami, Michigan, Boston, Indiana, San Diego, Manhattan and, of course, Pittsburgh. In an attempt to broaden the

offerings, live web-generated presentations on synthetic corneal grafts for high risk patients emanated from Stockholm and on the latest Argus II epiretinal digital bioprosthesis from Los Angeles.

Topics on genetics, biochemistry and zebra fish as protocols for, say, retinal photoreceptor regeneration were discussed. These papers provided the framework for hypotheses on the clinical potential of stem-cell therapy in the repair of opaque and scarred corneas, retinal pigment epithelium, and retinal ganglion cells. The progress of both digital bioprosthesis systems emanating from centers in Los Angeles and Boston was reviewed as the quest advances to improve the outcomes of the blind with retinitis pigmentosa. Eschewing the retinal approach, University of Pittsburgh researchers updated their results on artificial vision provided by microdiodal stimulation of the tongue. The sum effect of these nascent technologies is promising.

Presentations on stem cell therapy was particularly compelling. In regard to the cornea, this treatment approach offers the millions of third-world victims of scarring, many of whom are children, the possibility of regaining useful, life-saving visual function. The application of discrete packets of conjunctival stem cells over an amniotic membrane has been found to restore scarred corneas. This work on Simple Limbal Epithelial Transplantation (SLET) will continue in India where the problem is particularly acute.

Elsewhere in the eye, differentiated retinal pigment epithelial cells can be regenerated in the laboratory as a sheetlike functional structure that can be potentially transplanted to preserve the photoreceptors in diseases such as macular degeneration and Stargardt’s disease. Likewise, retinal ganglion cells have been shown to regenerate in laboratory mammals as far as the lateral geniculate nucleus following a crush injury to the optic nerve. Using nanotechnology, silicone sleeves aid the developmental of individual units of the multicellular retinal receptor complex to permit gene manipulation, disease replication and pharmacologic research.



Conference presenters

Pharmacology was addressed by exploring the biochemical pathways of lipofuscin in drusen formation. By manipulating the biochemistry of retinal pigment epithelial cells by using beta-cyclodextrins, it may be possible to “dissolve” drusen. Beta-cyclodextran is already approved by the FDA for use in Niemann-Pick disease.

The two-day meeting drew to a close with the staging of a panel discussion led by a UPMC hand transplant surgeon addressing the feasibility and challenges of whole eye transplantation. That this topic was incorporated in the final program of a serious and prestigious meeting speaks to the far-reaching effects of the various research platforms presented.

To the non-academic clinician, the symposium can appear intimidating with the near-casual expostulation of genetic signaling, up and down regulation and synthesis of induction proteins. Yet, it all holds together providing a Cliffs Notes’ overview of ophthalmology’s future. Regardless of one’s moralistic orientation to the Verbessem’s decision to end their lives rather than lose their vision, the work of these world-class researchers may eventually render the choice moot.

I have attended the last two UPMC’s Vision Restoration conferences and will return to marvel at the progress being made in the fight for those, like the poet John Milton, “who only stand and waite.” **S+S**

Dr. J.C. Noreika is a practicing ophthalmologist in Medina, OH. He did his ophthalmology residency at the Pittsburgh Eye & Ear Hospital.

UPMC Eye Center
(412) 647-2200

**University Ear, Nose &
Throat Specialists of UPMC**
(412) 647-2100

If you no longer wish to receive our newsletter, please submit requests to our mailing address, or email info@eyeandear.org

The official registration and financial information of the Eye & Ear Foundation may be obtained from the Pennsylvania Department of State by calling toll free, within Pennsylvania, **1-800-732-0999**. Registration does not imply endorsement.

eyeandear.org

203 Lothrop Street, Suite 251
Eye and Ear Institute
Pittsburgh, PA 15213
412.864.1300 O
412.864.1305 F



Charles and Louella Snyder

By dedicating this laboratory, we acknowledge the true intent of this philanthropic endeavor. As we continue to innovate with leading-edge science, we are always looking ahead to the next step to a world without blindness.

The Eye & Ear Foundation is Proud to Announce the Opening of The Charles and Louella Snyder Laboratory for Retinal Regeneration

On October 16, 2013, the University of Pittsburgh, in conjunction with the UPMC Eye Center and Louis J. Fox Center for Vision Restoration, and with support from the Eye & Ear Foundation, will officially open the doors of The Charles and Louella Snyder Laboratory for Retinal Regeneration. The Snyder Lab will be headed by Dr. Igor Nasonkin, the Dr. E. Ron Salvitti Assistant Professor and Assistant Director of the Fox Center. Dr. Nasonkin will utilize the lab to focus on his work in epigenetics, stem cell biology, and genomics research.

The Snyder Lab will help propel our focus on retinal regeneration research with an emphasis on diseases like macular degeneration and retinitis pigmentosa. Initial work in the lab will involve the creation of a standard protocol for developing stem cell lines for retinal ganglion cell development, which is crucial for any research delving into retinal regeneration, and Dr. Nasonkin plans to lead the way.

Establishing this state of the art laboratory represents the culmination of the Snyder's support for our work in Retinal Regeneration. The Eye & Ear Foundation is incredibly grateful for their long running support; and extremely excited for what the next few years will bring. Dr. Nasonkin is already making huge steps forward in advanced treatments and cures for macular degeneration and other retinal diseases, and we anticipate much more through the next several years.

Stay tuned for pictures and updates over the next issues of *Sight + Sound* about the Snyder Lab and Dr. Nasonkin and his team's work.