

## Coating contact lens with stem cells may fight blindness

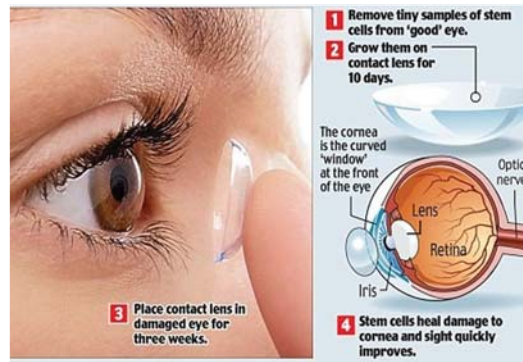
A 'contact lens' loaded with stem cells could be a way to naturally repair or retain sight. A team from the University of New South Wales in Sydney harnessed the power of stem cells - 'master cells' with the ability to turn into other cell types - to fight the curse of blindness. The procedure uses a person's own cells to heal damage to the cornea - the transparent outermost layer of the eye. Depletion or damage to stem cells results in limbal-stem cell deficiency (LSCD) - a painful and blinding disease. In order to prevent this, a study was initiated to find out if stem cell coated contact lens could be used to fight this disease. SC

transfer technique using an FDA approved contact lens is safe for treatment of LSCD. The procedure involves a small tissue biopsy (size of a pinhead) that is harvested from a healthy eye in a region containing stem cells. This biopsy is then placed on a commonly used therapeutic contact lens and immersed in a pink solution containing the patient's own serum. Once the contact lens is covered in cells, (and this generally takes 10 days) it is ready to be placed on the

patient's diseased eye. But before doing so, the patient's ocular surface is gently scraped with a scalpel blade to remove any abnormal cells.

the stem cells to transfer from the contact lens to the patient's cornea. The entire procedure takes about 20-30 minutes and patients go home within 2-3

hours. They are monitored at regular intervals over the first few months. One advantage of this treatment is that it uses a person's own cells which removes any need for donors and means the transplant will not be rejected. Stable and transparent corneal epithelium was restored in each patient and there was no recurrence of conjunctivalization

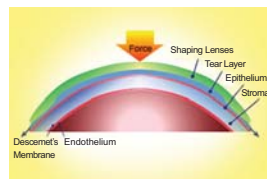


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## Contact Lens: Aid to limit & reverse myopia?

Recent studies suggest that orthokeratology, using night-wear rigid contact lenses to reshape the cornea, is effective for correcting low to moderate myopia, and may slow progression by reducing axial length growth by about 45 per cent over three years.

Orthokeratology utilises rigid contact lenses of a "reverse geometry" design, which incorporate a steeper "reverse" curve at the mid-periphery joining the flatter central base curve to the alignment curve in the periphery. Worn overnight, the lenses temporarily reshape the cornea, flattening and reducing power in the central optical zone. The corrective effect increases over about the first 10 nights of wear,

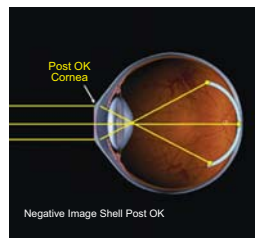


and patients generally regress up to 0.5 D as the cornea reshapes over the course of each day, which can be compensated by slightly overcorrecting. Orthokeratology is also reversible, with the cornea reverting to its original shape when lens use ceases.

The lenses can correct up to -4.0 dioptres of sphere, but can be used up to -6.0 dioptres, and reduce astigmatism about half. They are removed in the morning and there is no lens wear or use of any visual

aid during the day if the treatment works well. New designs are also being used to correct hyperopia and presbyopia.

However, while nine published studies since 2005 all found that orthokeratology reduces axial length growth, most were not truly randomised. Further research is needed to confirm long-term efficacy and evaluate the potential for rebound after temporary treatment.



## Smartphones can simplify retinal screening

Ret-iKon is a retinal examination technique by using only a smartphone and an indirect lens. It allows an observer to take retinal images, collect demographic data, adjust the flash brightness and upload this information to a database. This can be done by holding an ophthalmic lens in the dominant hand, and a smartphone (with a video feature) about 23 cm to 25 cm away from the eye using the other hand. The phone's flashlight should be parallel to the lens and approximately 8 cm from the eye. Correct positioning will reveal the posterior fundus filling the entire lens.



Figure 1 & 2 Images taken through a 25.00 D lens.

Figure 3. 30.00 D lens.

The Ret-iKon was created at the University of North Carolina to facilitate prevention of blindness around the world. With practice, this technique can be used successfully by both ophthalmologists and non-ophthalmologists to examine the posterior fundus.

## Retinitis pigmentosa identified by simple blood or urine test



Rong Wen, M.D., Ph.D., left, and Byron Lam, M.D.

Research led by physician-scientists at Miller School of Medicine, University of Miami, has produced a breakthrough discovery in diagnosing retinitis pigmentosa, a blinding disease that affects about 1 in 4,000 people in the United States.

The researchers discovered a key marker in blood and urine that can identify people who carry genetic mutations in a gene responsible for retinitis pigmentosa (RP). "A simple urine test can tell who has the RP causing

mutations," said Dr. Rong Wen. "Collecting urine is non-invasive and easy, especially from young children."

The first mutation in this gene, named DHDDS, was identified in 2011 by scientists at the Miller School of Medicine, on behalf of a South Florida couple who were searching for the reason why three of their children were blinded by RP. Mutations in this

gene are more common in persons of Ashkenazi Jewish heritage than in the general population.

RP is a group of inherited eye diseases that cause progressive vision loss and blindness due to degeneration of the retina, the layer of light-sensitive tissue at the back of the eye.

This diagnostic test is a powerful tool that will help in developing treatments for RP caused by DHDDS mutations.



## Daily multi-vitamin use could reduce cataract risk for men

New research from Brigham and Women's Hospital and Harvard Medical School, both in Boston, MA, has found that long-term daily use of multi-vitamin supplements could reduce the risk of cataract for men.

Half of the men were randomly assigned to receive a common daily multi-vitamin, alongside vitamin C, vitamin E and beta carotene supplements, while the other half of the participants took a placebo. Vitamins were given to participants at doses in line with US dietary allowance recommendations.

The researchers followed the men for an average of 11.2 years to determine how many in each group developed new cases of cataract or age-related macular degeneration (AMD). Results of the study revealed a 9% risk reduction for the condition.

## Exercise may slow down the process of blindness

A new study suggests aerobic exercise may slow the progression of diseases that destroy the retina and eventually cause blindness. In mice exposed to harmful bright lights, the ones that had regularly run on treadmills had much better function in their retinas than mice that had not been exercising.

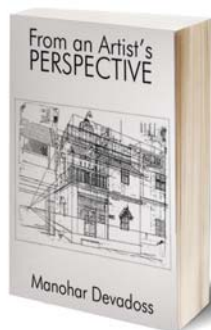
The researchers suggest the findings, which they report in the *Journal of Neuroscience*, point to exercise as a possible treatment for slowing down human eye diseases like age-related macular degeneration (AMD), a leading cause of blindness in the elderly. It has also been suggested that aerobic exercise works by stimulating a protein called brain-derived neurotrophic factor (BDNF), which helps brain cells grow and stay healthy.

## OUR COLLABORATOR: ARAVIND EYE CARE SYSTEM

[www.aravind.org](http://www.aravind.org)

### BIOGRAPHY

## An Artist's Perspective



Well known Chennai-based author and artist, Manohar Devadoss, is special to us, having been under the care of doctors at Aravind Eye Hospital, Madurai, for many years. On March 30, 2014 he shared insights from his latest book, *From an Artist's Perspective*, to the Madurai Reader's Club at the Hospital premises.

Manohar Devadoss (78) grew up in the Madurai of the 1940s, roaming the city under the great temple towers of Goddess Meenakshi. In 1963 he married Mahema, a fine arts major from Stella Maris College in Madras who taught him the basics of oil painting. That was the beginning of the creative side of his life, and he practically "stumbled into being an artist," as he puts it.

When he was just fifteen, Manohar was diagnosed with retinitis pigmentosa, an inherited degenerative eye disease that gradually causes severe vision impairment and often blindness. Because of his condition, he has no color perception, acute tunnel vision, and the little he could see is as if seen through a pinhole. Yet his "drawings are flawless, sharp-edged, heartbreaking reproductions of snapshots from his life".

How is this possible? Manohar uses special eye drops to dilate his pupils and super-strong lights and special magnifiers. He wears gloves because the lights make his hands sweat. Most of all he uses his photographic memory and



uncompromising attention to detail to create camera-like perspectives.

His books *Greenwell Years* (1997), *Dreams, Seasons and Promises* (2002) and *A Poem to Courage* (2002) are based on his own life. He has also published a book of sketches *Multiple Facets of My Madurai*, (2007) and a small portfolio in connection with his art exhibition titled *Mahema and the Butterfly* (2010). His latest book, *From an Artist's Perspective*, sponsored by Ranvir Shah's Prakriti Foundation, has Manohar revealing his secrets on capturing perspective.

### MILESTONES



#### Latest Vision Centre at Kadayam Opened

Aravind - Tirunelveli opened its latest vision centre at Kadayam. Dr. R. Ramakrishnan, Chief medical officer welcomed the guests while the centre was inaugurated by Dr. R. Kim, Chief medical officer, Aravind, Madurai. Lamp lighting ceremony was performed by Ms. Kalyani Paramasivam, Medical Officer, ESI Hospital. Leaders and key persons were present for the occasion. 92 patients were screened of which 86 were new cases and 6 review cases.

#### Aravind Hosts the Annual Meeting of SightLife

Aravind Eye Hospital at Madurai hosted the 4th Annual Conference of SightLife, the largest eye bank in North America. The 3-day conference brought together close to 100 experts to find ways of building capacities of partner eye banks, thereby eliminating corneal blindness globally.

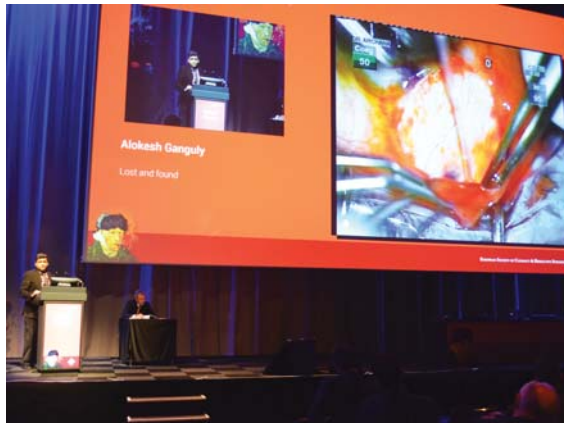
Fifteen eye banks from India and six from abroad participated. Rotary Aravind International Eye Bank won the poster competition organised as part of the conference.

# PBA Eye: Footprints in the world

PBA Eye doctors, in keeping with its mission of providing world class eye treatment to people in eastern India and neighbouring South-east Asia, have been participating in international ophthalmic conferences and seminars for sharing of knowledge and best practices in their respective areas.

Dr. Jayangshu Sengupta, Consultant, Cornea and Refractive surgery, participated in ESCRS, 2013 Amsterdam in October 2013 and presented a paper on "Effects of Methylprednisolone, cyclosporine and lysozyme on keratitis associated fungal pathogens" and delivered instruction courses on "Cornea transplant in Paediatric age group" and "Fungal Keratitis in Eastern India". The paper and instruction courses were well appreciated by the delegates in ESCRS, 2013.

Dr. Sengupta also delivered guest lecture on "Refractive Cataract and Corneal Lamellar Surgery" in West Java Ophthalmic Association conference in Bandung, Indonesia in March 2014.



Dr. Abhijit Chatterjee, Consultant, Retina, Vitreous and Uvea, participated in EVRS-2013 in Greece and presented paper on "High intensity Thermal laser in

non subfoveal polypoidal choroidal vasculopathy" along with videos on "Removal of sub macular scar" and "Macular surgery in different situation". He also participated in EVRS Macular Hole study.

Dr. Chatterjee also attended OCT course in New York, USA under guidance of stalwarts, Dr. Richard Spaide and Dr. Lawrence Yanuzzi.

Dr. Alokesh Ganguly, Consultant, Glaucoma, Paediatric and Strabismus, attended ESCRS, 2013 Amsterdam in October 2013 and presented papers on "Three piece PMMA lens implantation in traumatic paediatric cataract" and "Phacotrabeculectomy with and without Amniotic membrane". Videos were presented on "Trabeculectomy with iris fixated and secondary glaucoma", "Combined surgery in subluxated cataract and glaucoma" and "Ahmed glaucoma valve surgery". Dr. Ganguly also participated in World Glaucoma

Conference, 2013 Vancouver. Dr. Suman Saha, Consultant, Micro-Biologist at PBA Eye, attended ESCRS, 2013 Amsterdam in October 2013 and presented papers on "Laboratory Diagnosis of Post operative Endophthalmitis; Comparison Between Traditional Microbiological Procedures and Molecular Diagnostic Technique" and "A 5-Year Report Of In Vitro Antimicrobial Susceptibility Of Bacterial Keratitis Isolates and Normal Ocular Commensals". In addition, he was a faculty member in an instruction course on "Fungal Keratitis".

## Outpatient Department

Open from Monday to Saturday between 8.30 a.m. and 5.30 p.m.

### SPECIALITY CLINICS:

Cataract | Glaucoma | Retina - Vitreous and Uvea Services

Cornea & Refractive Services | Orbit & Oculoplasty

PAEDIATRIC CLINIC: Thursdays & Saturdays

For more details, call: 84 2000 8000

## A memorable case

### A rare case of Cysticercosis



Dr. Sanchita Ray  
DO, DNB.

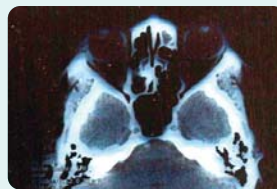
Orbit & Oculoplasty, PBA Eye

“  
A tissue infection, Cysticercosis may cause little or no symptoms for years. The disease is usually spread by eating undercooked pork and raw vegetables containing the tapeworm's eggs.  
”

This is an interesting case of a 37-year-old gentleman, who came with painful swelling over outer aspect of right upper eye lid of six week duration with a history of oral antibiotic treatment in recent past. Mild ptosis (drooping of upper lid) with soft cystic swelling of conjunctiva at and just above the lateral canthus with surrounding conjunctival congestion was observed. Vision and intra ocular pressure was within normal limit. Fundus examination revealed no abnormality. Suggestive differential diagnosis was dacryoadenitis (inflammation of lacrimal gland) and lacrimal gland tumor. Thyroid function test, Rheumatoid factor, ESR, Anti Nuclear Antibody and CT orbit was advised along with oral ciprofloxacin and topical gatifloxacin.

Blood reports were normal. CT brain revealed no focal lesion in brain parenchyma. CT orbit revealed round rim enhancing cystic lesion with a hyper-dense mural nodule within at ocular insertion of right lateral rectus with diffuse swelling of adjoining muscle and suggestive of intramuscular cysticercus in ocular insertion of right lateral rectus. Cysticercosis is an infection with the larval tapeworm stage (cysticerci) of Taenia solium. Oral Albendazole (15mg/kg) and oral wysolone (1mg/kg) was prescribed with regular follow up.

An USG B scan after a month showed cystic lesion in lateral rectus insertion but no scolex (the anterior end of the tapeworm, bearing



suckers and hooks for attachment) was detected. Regular follow up and USG B scan after a year revealed homogenous lateral rectus muscle with no mass lesion.

A tissue infection, Cysticercosis may cause little or no symptoms for years, develop approximately one to two centimeter painless solid bumps in the skin and muscles, or have neurological symptoms if the brain is affected. The disease is usually spread by eating foods that contain the tapeworm's eggs. The foods most commonly believed to be the cause are inadequately cooked pork or uncooked vegetables. Prevention, control and possible elimination will require proper public health interventions. Interventions should in principle require strict meat inspection regimens, health education, thorough cooking of pork and vegetables, sound hygiene, adequate water and sanitation, and improved pig husbandry

practices. Easy access to treatment for both infected individuals and people who are in close contact with them.

The hope is that the combined implementation of all these interventions will produce such an impact on transmission of Taenia solium that elimination of taeniasis/cysticercosis will be an achievable goal in the foreseeable future.



## DOCTOR'S PROFILE

**Dr. Suman Saha**  
*PhD in Microbiology, Consultant Micro-Biologist, PBA Eye*

Dr. Suman Saha is presently a Consultant of Ocular Microbiology and Molecular Biology laboratory in Priyamvada Birla Aravind Eye Hospital. His specialisation is in ocular infection and diagnostic Microbiology. Dr. Saha is closely associated with medical research in the field of ocular infection, for the past six years. His research work has been published in many international and national peer reviewed journals like *Plas One, Analyst, Mycopathologia, Cornea, IJO* etc. He has been selected as faculty in various international forums to deliver lectures and discuss on his research projects.

# MICROBIOLOGY IN OPHTHALMOLOGY: TWO VIEWS

### PATIENT'S STORY

My son is 15 years old and he is a good swimmer. One day after returning from his swimming session he complained about pain in his left eye with redness. Next day we went to a local ophthalmologist who prescribed drops but the symptoms aggravated on applying it. We moved to a multispecialty hospital in Kolkata who referred us to Priyamvada Birla Aravind Eye Hospital. My son was examined at Cornea Department and was sent for Microbiological tests to the Ocular Microbiology laboratory.

Within half an hour, the initial report showed that my son's eye was infected by a parasite. By the time we got the complete microbiology report, my son started getting relief from his complaints with the new medicines. Within six weeks of treatment, his infection was completely cured.

My son and my entire family are extremely thankful to the medical team of Cornea Dept. of PBA Eye for helping in quick recovery of my son.

- Mr. Arindam Sengupta

### DOCTOR'S SPEAK

A teenage boy came to our Specialty clinic referred from a multispecialty hospital with a typical ring-like infiltrate and redness, pain and watering in his left eye. He was treated with antifungals previously. Based on his clinical history, the corneal scraping material was sent to me for Acanthameoba and Fungal screening. Under the microscope, I found huge number of double layered parasite cells. We proceeded for culturing, especially for Acanthameoba sp. After two days the Acanthameoba tracking were found on E. Coli, overlaid non-nutrient agar plates under microscope. Our observations had to be very accurate.

I am very happy to diagnose this infective keratitis case and it is my pleasure to be a part of this successful treatment outcome.

- Dr. Suman Saha

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## Veriti™ Dx Thermal PCR

Endpoint Thermal Cycler for In Vitro Diagnostic Use

The Veriti™ Dx Thermal Cycler is classified as a US FDA Class I Medical Device. It is used for In Vitro diagnosis for infectious diseases. With this instrument, one can precisely set and control the temperature in each block of the thermal PCR, giving maximal versatility, flexibility, and confidence in diagnostic development. This also has easy viewing technology and large navigation buttons with 6.5-inch VGA touch screen.



## E-Gel Imager - The Compact Gel Imaging System

The E-Gel Imager is designed for the documentation and densitometric analysis of stained nucleic acids and proteins in agarose and polyacrylamide gels, including E-Gel agarose gels.

Each E-Gel Imager includes a camera hood and your choice of interchangeable bases: Blue Light Base and UV Light Base.



## Introducing Eastern India's first dedicated Ocular Microbiology Laboratory with PCR

PBA Eye's Advanced Ocular Microbiology Laboratory incorporates the latest diagnostic equipment, including PCR (Polymerase Chain Reaction) facilities, to enable more accurate diagnosis of infectious diseases of the eye. This ensures that each diagnostic report is precise and prompt, so that the right treatment can commence without loss of time.



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 (Belle Vue Complex)

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