cambridge eye trust

OUR VISION

Cambridge Eye Trust Newsletter 2016

Volume 5 issue 1

Welcome to the 2016 edition of the Cambridge Eye Trust Newsletter.

As a Cambridge Charity we are dedicated to helping save sight. In this edition we are highlighting research, innovation, educational and patient best care initiatives that the Trust is supporting in Cambridge, East Anglia and internationally.

We would like to share with you how donations to our Charity really are making a difference now and in the future to eye patients and their families!

To learn more about the Cambridge Eye Trust visit **www.cambridgeeyetrust.org.uk.**

Fight for Sight grant: Leading to better care

Professor Madhavan Rajan has recently been awarded a research grant by the charity Fight for Sight (Nov 2015) to undertake a clinical trial to evaluate visual outcomes following innovative approaches to corneal transplantation at Addenbrooke's Hospital, Cambridge.

Background: Corneal disorders resulting in corneal opacification is a significant cause of blindness in the UK and remains the second commonest cause of blindness in developing world. Recent innovations in corneal transplant techniques (endothelial keratoplasty) have shown significant benefit to patients in relation to visual function, rapid post-operative recovery, minimal hospital stay and fewer complications.

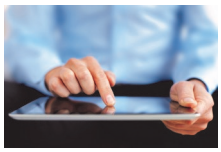
How will the research help people with sight loss? The study would identify and establish the predictability and safety of new corneal transplant techniques and will lead to better surgical strategies in health care delivery for patients with corneal blindness. The results would benefit UK eye banks in transplant allocation planning and provide an important evidence base for patients with corneal blindness to make informed decisions regarding surgical treatments.

Focus on Research: Gene Therapy for Glaucoma

Glaucoma is the leading cause of irreversible blindness worldwide.

Read on page 3 how funding support from the Cambridge Eye Trust is helping research teams in Cambridge improve generations of patients lives.

Test your own vision: Visual acuity testing at Addenbrooke's



Together with University of Cambridge Computer Sciences students (who were awarded the Computing Labs prize for this work), Dr Peter Thomas and Miss Louise Allen have developed an automated system designed to allow patients (adults and children) to test their own vision in clinic using tablet technology. The aim is to improve the patient experience by reducing waiting times and streamlining the flow through clinic whilst maintaining a high standard of care.

EDITION HIGHLIGHTS:

Retirement of Peter Watson: Outgoing Chair of the Cambridge Eye Trust

Mr Peter Watson, renowned Cambridge Ophthalmologist and Founder of the Cambridge Ophthalmological Symposium, has announced his retirement as Chairman of the Cambridge Eye Trust. The role will be taken on by Nick Sarkies, Consultant Ophthalmologist at Addenbrooke's Hospital, a longstanding Trustee of the Trust.

Peter Watson, Chairman of Cambridge Eye Trust: 1997—2015

Peter Watson is acknowledged as a giant in the field of Ophthalmology and is recognised internationally for his pioneering work on the mechanisms and treatment of blinding eye disease.

During his career, Peter has revolutionised the practice of ophthalmology. In the 1970s, working together with the late John Cairns, he developed an operation for glaucoma called the trabeculectomy which remains to this day the most commonly performed surgical treatment for glaucoma worldwide; glaucoma is the leading cause of irreversible blindness in the world and trabeculectomy has had a huge effect in reducing the burden of blindness due to this disease. Peter's other enormous contributions to the field of ophthalmology include world-leading research on the mechanisms of scleral disease and the mechanisms of corneal graft rejection.

> ***"As Founder and Chairman of the Cambridge Eye Trust, he [Peter] has helped raise over £1.5 million to support and advance eye research in Cambridge to improve treatment for our patients."***

Peter achieved more in his career than most of us would in several, and has continued to contribute since his "retirement" from the NHS in 1995. He has remained incredibly active in the field of ophthalmology at a local, national and international level and he is one of a tiny number of 'elder statesmen' from the UK to have held some of the most important posts in world ophthalmology, including recently the Presidency of the Academia Ophthalmologica Internationalis, the most senior organisation in the field.

Peter's charitable work continues with enormous energy and enthusiasm to this day. As Founder and Chairman of the Cambridge Eye Trust, he has helped raise over £1.5 million to support and advance eye research in Cambridge to improve treatment for our patients. He still works tirelessly to encourage potential donors to help the charity, organising charity concerts and other events in support of the Trust on a regular basis. He founded the Cambridge Ophthalmological Symposium in 1970 which has run every year since and is one of the major international research meetings in the ophthalmology calendar. Such is his continuing research activity that he continues to contribute actively to the Symposium every year, driving it forward to new territories and achievements.

Internationally, Peter was responsible for setting up and running the International Council for Ophthalmology (ICO) Examinations, a structure which has driven up the standards of ophthalmology in many countries around the world. The ICO Examinations remain the only worldwide medical-specialty examinations. They are independent and free from any outside influence and can be taken in the candidate's own country. To date, over 19,500 candidates have sat these examinations. The questions are prepared by an international group of examiners and set at the same standard as the highest board and qualifying examinations anywhere in the world.

Though Peter's energy and enthusiasm will be greatly missed by the Cambridge Eye Trust it is without doubt that he will continue to be a crucial source of experience and good sense as the Trust moves forward into the future. In the meantime we wish Nick Sarkies very well in his new role!

Tribute written by Professor Keith Martin on behalf of the Trust

Would you like to donate to the Cambridge Eye Trust?

DONATE

If you would like us to help us to support our Cambridge ophthalmology clinical and research units to continue their internationally leading work visit: www.cambridgeeyetrust.org.uk or go to the back page of this newsletter to find out about other ways of donating.

Extending education - Peter Watson Learning Resource Center, Pakistan

The library at the Pakistan Institute of Rehabilitation Sciences (PIRS) at ISRA University, Islamabad has been named after Mr Peter Watson following a generous donation of over 2,000 books.

PIRS was established by CHEF-International to promote training in Vision Sciences, Audiology, Physical Rehabilitation and Mental Health. The institute aims to raise awareness of disability within the wider community to ensure equal opportunities for all and enable the full and active participation of every member of society.

Prof. Muhammad Daud Khan (Chairman of Board of Governors CHEF International), Mr Peter Watson, Mrs Watson and Prof. Allen Foster.

Focus on Research: Gene therapy for Glaucoma

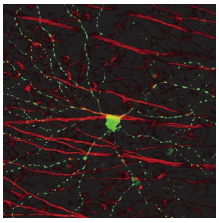
Professor Keith Martin's work to develop a treatment for glaucoma using gene therapy to prevent blindness in the most severely affected patients has recently received significant investment to move the work towards human clinical trials. In parallel to other work currently supported by the Cambridge Eye Trust, Seed investment funding for a company spun off from Prof Martin's lab, Quethera Ltd, has been secured from Midven's Rainbow Seed Fund alongside co-investor Cambridge Enterprise (the commercialisation arm of the University of Cambridge) to continue pre-clinical development of the therapy. Further support has been awarded by Innovate UK and a Wellcome Trust Pathfinder Grant.

Glaucoma is the leading cause of irreversible blindness worldwide. In England and Wales, the NHS estimates that there are more than 500,000 people who have glaucoma. Many more people have undiagnosed glaucoma because they are unaware that their vision has been damaged by the disease. Recent estimates predict that by 2020 there will be 11 million people worldwide blind due to glaucoma.

> "Glaucoma is a debilitating disease. To be involved with a company that will provide a one-off long-term therapy is incredibly exciting."
>
> Bradley Hardiman

High pressure inside the eye is the strongest risk factor for glaucoma, however a significant number of people with glaucoma have eye pressures within the normal range. While glaucoma is a multi-factorial disease, blindness is a direct result of damage to retinal ganglion cells, the nerve cells that connect the eye to the brain via the optic nerve. There are no current treatments that directly prevent nerve damage in glaucoma. All current therapeutic approaches for glaucoma, including all licensed medications as well as laser and surgical techniques, work by lowering the pressure inside the eye. However, even in populations with access to the best treatments currently available, an estimated 1 in 8 patients will still eventually become blind in at least one eye.

Quethera is developing a gene therapy to provide long-term neuroprotection for nerve cells that will maintain vision in patients with all forms of glaucoma. The therapy will enhance the natural biochemical protective cellular pathways that have become degraded in patients with glaucoma. The aim is to develop a therapy that prevents progressive visual loss in glaucoma patients and thus reduce the burden of blindness due to the disease worldwide.



A Retinal Ganglion Cell

Professor Martin said: "It is heart-breaking that so many people with glaucoma around the world continue to go blind. My dream is to reduce this risk both for our own patients locally and for very many others elsewhere. I am delighted to have received this support to help us to bring an exciting new therapeutic approach to glaucoma towards the clinic."

Bradley Hardiman, Investment Manager with Cambridge Enterprise Seed Funds said: "Glaucoma is a debilitating disease. To be involved with a company that will provide a one-off long-term therapy is incredibly exciting."

Bringing infant eye care closer: Retinopathy of prematurity telemedicine

Retinopathy of prematurity (ROP) can cause blindness if not treated promptly. Many premature babies develop ROP but in the majority, the condition resolves spontaneously without treatment. Babies born weighing less than 1,250g (2.7lb) are at high risk of sight-threatening retinopathy.

Recognising when ROP threatens sight requires years of clinical experience which is not available at general hospitals as too few babies present with the condition. Premature babies are so vulnerable that even an ambulance ride puts them at risk. Yet, if doctors suspect severe ROP, babies born in the East of England have to travel up to 70 miles to Cambridge for testing because Miss Louise Allen is the only clinician in the region with the necessary expertise.

Miss Allen has received funding to equip local hospitals with specialist cameras and has trained local doctors to capture digital images of babies' retinas and email these to CUH for review and diagnosis. Only infants with a confirmed diagnosis would travel to Cambridge for urgent laser treatment.

The equipment is now available in the following hospitals: Peterborough, Kings Lynn, West Suffolk, Norfolk and Norwich University Hospital, Ipswich, Colchester, Chelmsford and Harlow.

This technological innovation aims to overcome the challenge of geographical distance, improving access to specialist care for vulnerable babies; eliminating the risks of patient transfers; reducing stress and disruption for families; and building expertise through clinical networks.

Bridging the gap between local hospitals and specialists in Cambridge will create knowledge transfer, improving local Ophthalmologists' skills in retinal examination and understanding of ROP.

Once evaluated in Cambridge, the public benefit of this pilot could be multiplied across hospitals throughout the wider NHS.

International clinic update - Improving eye care in Botswana

Addenbrooke's consultants Keith Martin, Anthony Vivian, Brinda Muthusamy and Malcolm Kerr-Muir travelled to Princess Marina Hospital and Sekgoma Memorial Hospital in Botswana with Addenbrooke's Abroad in 2015 in an effort to improve eye care services.

Eye care is acknowledged as a particular area of unmet need in Botswana, with figures from Vision Aid Overseas estimating that 730,000 people have refractive error and over 21,000 people are blind. 80% of this visual impairment is avoidable if diagnosed early and so the Botswana Ministry of Health's prevention of blindness unit has established two tertiary centres of excellence and a VISION 2020 LINKS partnership with Addenbrooke's.

> ***"there's such a lot we can do, at the moment we're only just scratching the surface"***

The project supports the provision of expert training, advice and support to ophthalmic staff by short and long term advisors to improve and develop services to prevent blindness and low vision.

The 2015-2019 National Eye Care Action plan for Botswana was formulated at a workshop convened by the Ministry of Health on 5-7 March 2015 and facilitated by Professor Allen Foster and Addenbrooke's Abroad team. The overall aim is to reduce the magnitude of visual impairment by at least 25% and to reduce the magnitude of blindness by at least 30%.

Particular objectives include the development of a sufficient and good quality sustainable cataract service to eliminate the waiting list and blindness from cataract, both by increasing the number of cataract surgeries and improving the percentage of people that receive a good outcome from surgery. Another strong focus is the development of comprehensive eye care services to reduce blindness and visual impairment from refractive error in children, glaucoma, diabetic retinopathy and corneal diseases as well as the provision of essential resources required for a good eye care service, both in the form of human resources and eye care consumables and equipment.

Debbie Jankowski, a specialist ophthalmic nurse at Addenbrooke's has previously travelled to Botswana to train ophthalmic nurses in retinal photography and diabetic retinopathy: "*there's such a lot we can do, at the moment we're only just scratching the surface*".

Improving screening for congenital cataracts in newborns

A cataract is a cloudy lens of the eye that can make vision blurred or obscure vision completely. Congenital cataracts are cataracts which are present at birth or soon after.

Although congenital cataracts are rare in babies and children (affecting three to four in every 10,000 infants in the UK), they are potentially blinding if not detected and removed quickly. Babies are therefore routinely screened for cataracts within three days of birth and then at their six week GP check. If found, severe cataracts require surgical removal by eight weeks of age.

The current screening test uses a reddish reflection of light from the back of the eye (known as 'red reflex') to highlight the cataract. However, this technique can result in up to 50% of cataracts in newborns being missed, leading to delays in diagnosis and patients having less chance of improved vision.

Miss Louise Allen, a specialist paediatric eye surgeon at Addenbrooke's, has proposed implementing an alternative technique using an infra-red light source and digital camera to improve reflectivity and detection.

Her team has been awarded £25,000 by the Addenbrooke's Charitable Trust and are working with eg technology, a company based in Cambridge, to develop the prototype ahead of planned clinical trials in Cambridge and Botswana.

45th Cambridge Ophthalmological Symposium 2015 - Light

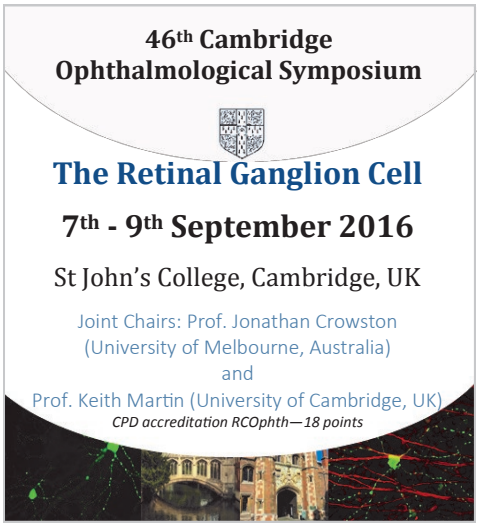
St John's College, Cambridge welcomed scientists and clinicians to the 45th Cambridge Ophthalmological Congress in September 2015, a meeting facilitated by the Cambridge Eye Trust.

2015 was designated by the United Nations as the "Year of Light" so the Symposium, Chaired by Professor John Marshall took "Light" as its programme theme. Throughout this 2-day residential meeting attendees had the opportunity to learn from a range of experts about new advances in research and clinical practice, including lessons learnt from astronomy about resolution and optics.

INTERNATIONAL YEAR OF LIGHT 2015

The recent underlying advances in physics and the effect on the physiology of the eye were discussed in detail together with the use of light in the diagnosis and treatment of eye disease. This led to positive debate about how new research in physics and engineering could show the way forward in possible major advances in surgery and investigation of ocular disorders.

The 46th Symposium: The Retinal Ganglion Cell will take place 7th - 9th September 2016. The sessions will be jointly chaired by Professor Jonathan Crowston (Australia) and Professor Keith Martin (UK).



Cambridge Cornea & Cataract Symposium 2015

The 2015 national symposium was held on 15th April at St John's College, Cambridge organised under the chairmanship of Professor Madhavan Rajan from Vision and Eye Research Unit (VERU) and Consultant Ophthalmic Surgeon at Addenbrooke's Hospital, Cambridge.

It was attended by vision scientists and eye care professionals from all across the UK and featured European and International speakers (Professor Zoltan Nagy, Hungary and Professor Jod Mehta, Singapore).

The 2015 symposium focussed on treatment advances in corneal infections, novel corneal transplantation procedures and technological innovations in cataract surgery and refractive surgery by 14 vision science experts around the globe.

The day provided an excellent opportunity to discuss the latest clinical trends in cornea and cataract surgery with an aim to improve clinical standards and disseminate the latest research knowledge, both at a regional and national level.

Find out more @ vitreoretinalservive.org

Speakers at the 2015 Cambridge Cornea & Cataract Symposium

Best Corneal Paper Award

Best Cornea Research Paper Award was conferred to Professor Rajan's corneal research team at Addenbrooke's Hospital by the expert panel of judges at the UK and Ireland Cataract and Refractive Surgeons Society (UKISCRS) for their work on an innovative surgical technique termed 'Microthin Corneal Endothelial Keratoplasty'. The first prize was received by Dr Harry Roberts on behalf of the corneal team at the annual symposium held on 23rd October 2015.

Leading worldwide advancements in ophthalmology - New appointment

Professor Keith Martin has been elected Vice President of the World Glaucoma Association from January 2016 to December 2017 and will then be President from January 2018 to December 2019.

The World Glaucoma Association (WGA) is an independent, impartial, ethical, global organisation for glaucoma science and care. Its main goals are education, the improvement in public awareness and the recognition of glaucoma, an integration of the resources of the global glaucoma community to enhance glaucoma care, particularly in developing countries and a focus on the use of technology to achieve these goals.

Find out more @ www.worldglaucoma.org

News from the Vitreoretinal Research Group

The Vitreoretinal research group continues its programme of investigation into the causes, prevention and surgical management of retinal detachment. Although retinal detachment affects only 1:10,000 of the population per year, the team provides a regional, national and international service for the management of all aspects of this disorder, particularly for retinal detachment in children for which the group is commissioned by NHS England to provide a national diagnostic service.
Find out more @ www.vitreoretinalservice.org

Royal College of Ophthalmologists welcomes the team to present at the 2016 Annual Congress

Mr Martin Snead, Dr Allan Richards and Mr Greg Fincham have been invited to present a programme on "Inherited Vitreoretinal Disorders" at the annual congress of the Royal College of Ophthalmologists, May 2016.

Ongoing collaborations to improve shared care managements for patients

Dr Rebecca Davie joined the research team in 2015 on a two year research fellowship investigating the incidence of retinal tears in the general population. This study is in collaboration with the academic unit of Optometry and Anglia Ruskin University with the objective of devising and testing an algorithm for the shared care management of "flashes and floaters" between specialist primary care optometrists and Hospital based eye services.

Genetic risk factors for retinal detachment

Dr Laura Towns continues on a 4 year research programme investigating the genetic risk factors for retinal detachment. We have identified a genetic variant in the general population that is significantly associated with a risk of retinal detachment and are currently investigating the functional mechanisms underlying this.

Pioneering research team gains new member

Dr Thomas Nixon will join the research team in summer 2016 on a two year research fellowship which will be laboratory based and building on previous work within the team pioneered by Greg Fincham investigating the cellular aspects of posterior vitreous detachment – the precursor to retinal detachment [Figs 1,2].

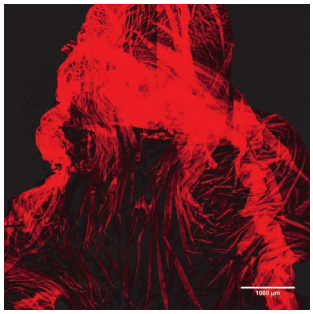


Figure 1

Posterior hyaloid membrane confocal micrograph stained with antibody [red] to identify basement membrane type IV collagen. *Courtesy of Mr Greg Fincham.*

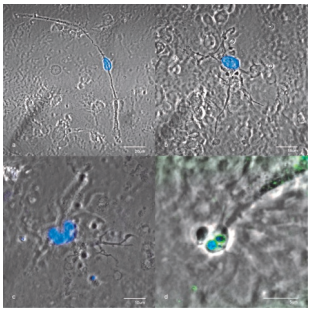


Figure 2

Confocal micrograph with phase contrast overlay demonstrating cells [laminocytes] adherent to the posterior hyaloid membrane in vitreous detachment. Tissue stained with DAPI [blue] to identify nuclei and nuclear material. *Courtesy of Mr Greg Fincham.*

Cambridge Consultant, Oxford Congress leadership - New appointment

Mr Martin Snead has been elected as Master of the Oxford Ophthalmological Congress for 2017.

The Oxford Ophthalmological Congress is the second largest Ophthalmology meeting in the UK. The meeting, now in its 100th year, presents an educational occasion to hear from leaders in general ophthalmology and see new talent present in the Rapid Fire Session. Find out more @ www.ooc.uk.com

Addenbrooke's, presiding in ophthalmology - New appointment

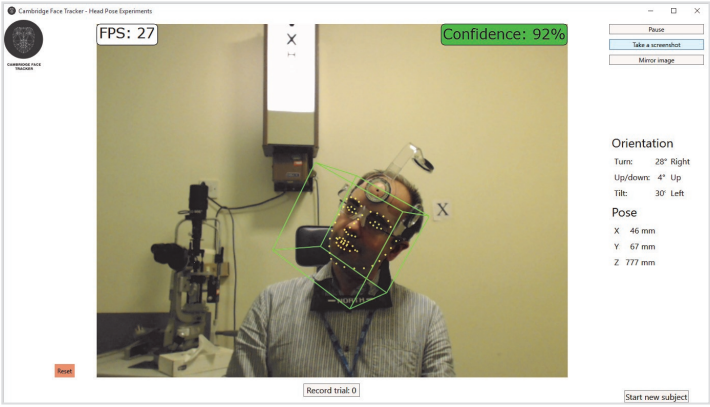
Mr Cornelius Rene, will become President of BOPSS, the British Oculoplastic Surgery Society in June 2016.

The British Oculoplastic Surgery Society aims to advance education, research, public understanding and the quality of clinical practice in the area of ophthalmology known as oculoplastic surgery (this field comprises specialist plastic, reconstructive and aesthetic surgery of the eyelids, orbit, lacrimal drainage system, and the upper and mid-face). Find out more @ www.bopss.co.uk

All about head posture: Cambridge Face Tracker

Patients adopt strange head postures for a variety of reasons ranging from orthopaedic problems of the neck to abnormalities of eye movement. These abnormal head postures can sometimes cause intractable neck pain, and are often the cause of some embarrassment to the patient in social situations. Sometimes we operate on the muscles around the eye simply to correct an abnormal head posture. However, we do not measure head posture in clinic, we just comment on it.

The Cambridge Face Tracker, supported by the Cambridge Eye Trust and developed in collaboration between Dr Peter Thomas and Mr Anthony Vivian at Addenbrooke's and Tadas Baltrusaitis at the University Computing Labs, provides a solution to this problem. Using a webcam to capture live video of the patient, artificial neural networks identify parts of their face and calculate the posture of the head in real time. The photo shows the software in action. We have won a British Isles Paediatric Ophthalmology and Strabismus Association Prize for the work, as well as the region's John Cairns Prize, and are in the process of publishing so that it can be used in eye clinics everywhere.



Tracker software in action

Patchless treatment of children's eye problems has to be a positive

Two out of every hundred children experience a problem with the visual development of one eye because they have a squint or are more long-sighted or short-sighted in one eye.

This visual developmental disorder is called amblyopia. For well over a century the standard treatment has involved wearing a patch over the good eye to "penalise" it so that the brain will concentrate on the bad eye and develop a better relationship with it. Children have to wear a patch over their better eye for up to six hours a day, sometimes for many years.

Mr Anthony Vivian and his team are part of a collaborative research project between Addenbrooke's Hospital Paediatric Eye Department and Nottingham University to look at novel ways of treating amblyopia so that children will not have to wear patches to treat their "lazy eye". Instead of penalising the good eye, this treatment concentrates on stimulating the bad eye. It achieves this by using 3D technology that enables us to deliver different messages to each eye in a fun way that children will enjoy. The interactive binocular treatment system (I-BiT™) uses specially developed 3D computer games and shutter glasses to ensure that the brain has to use the bad eye in order to play the game successfully.

Early studies have suggested that only ½ an hour a week playing these newly developed games may be as effective as 2 hours a day of patching treatment. This research is funded by the Wellcome Trust and the next controlled clinical trial is due to start in September.

I-BiT™ treatment suite

We always welcome news about the Cambridge Eye Units we support. If you have news or testimonials about their work to add to the next edition of the newsletter please send these to louise@healthology.eu

Leading training in ophthalmology - New appointment

Mr Anthony Vivian has been appointed the Head of the Postgraduate School of Ophthalmology and Associate Dean at Health Education East of England.

Health Education East of England is responsible for overseeing the organisation and delivery of postgraduate medical training. The training programme aims to provide excellent training in clinical ophthalmology and eye surgery by maximising the skills and expertise that exist in all Units within the Region.

Thank you to our Donors

A big thank you from us to all our supporters who have donated to the Cambridge Eye Trust. We hope you can see from the articles that the funds raised are really making a difference locally and internationally. You have enabled us to support research, innovation, education and clinical best practice in ophthalmology, which will save sight.

Like to make a donation to the Cambridge Eye?

Would you like to help us by making a donation to the Cambridge Eye Trust?

We are always grateful for any donations big or small, they will help us continue towards our vision, to save sight.

If you would like to make a donation there are 3 ways to do so:

1. Sending a cheque made payable to 'Cambridge Eye Trust' to: Mr Nicholas Sarkies, Chairman Cambridge Eye Trust, Wistow, The Green, Hilton, Huntingdon, Cambridgeshire, PE28 9NB
2. Paying directly into the Trust's bank account: CAF Bank, Account number: 00021024, Sort code: 40-52-40. The reference, your name
3. By visiting our website at www.cambridgeeyetrust.org.uk where donations can be made online at the click of a button.

IMPORTANT INFORMATION

about subscriptions

The Cambridge Eye Trust would like to use as much money as possible to support it's vision, to save sight.

Future editions of the Cambridge Eye Foundation newsletter will be distributed electronically via email subscription. Printed copies will be available in Addenbrooke's clinics but not sent by post unless requested. If you would like to continue to receive a copy please email your name and email address for correspondence to **louise@healthology.eu** who will add you to our email subscription list. Thank you

DONATION FORM

I want to support research to save sight and I am making a donation of £_____

Please treat as Gift Aid my donation and any donations I make in the future or have made in the past 4 years to the Cambridge Eye Trust, which is registered as a Charity no. 265140.

(please tick) ☐

I am a UK taxpayer and understand that, if I pay less Income Tax and/or Capital Gains Tax than the Gift Aid claimed on all donations in that tax year, it is my responsibility to pay the difference.

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making donations go further

If you are a UK taxpayer then the Cambridge Eye Trust can increase your donation be an extra £0.25 for every £1.00 you donate by claiming Gift Aid from HM Revenue & Customs at no extra cost to you.

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