

Dear friends and supporters,

Welcome to our second update for 2021. With an increasing sense of 'returning to normal', I have been able to attend a conference in person for the first time in 18 months. I spoke about the ongoing study "Deciphering age-related macular degeneration (AMD) with deep Phenotyping and Machine Learning". This project brings together clinicians and computer scientists to try and understand what causes early AMD to progress. Our work was well received and Cathy Yelf, Chief Executive of the Macular Society, considers this to be "the most important study in AMD anywhere in the world". It was great to meet with colleagues in person to stimulate new research ideas on how we can treat AMD.



We recently took part in a gene therapy trial for X linked retinitis pigmentosa. Unfortunately the patients who received the gene therapy did not have a statistically significant improvement in their visual field tests compared to those patients who acted as controls and didn't have the treatment. Other tests done in the study did show some benefit in the patients who had the gene therapy such as improvements in their vision in low light conditions. The data from the trial is still being analysed to decide on the best way forward with this potential therapy. These results illustrate why it is important to rigorously test new treatments in clinical trials to ensure that patients do get treatments that produce clinically meaningful results.

Our on-line Lecture, held in May, attracted over 200 guests from around the world, including Germany, the United States and the Channel Islands. I am grateful to all who helped make it such a success, including all our speakers and the University Events Team who organised the event. The talks can be viewed on the [University of Southampton YouTube channel](#).

We were hugely grateful to receive a substantial legacy in favour of Gift of Sight earlier this year. We are now recruiting two new PhD students to work in vision research. This very personal gift will help with future research studies and also train the next generation of scientists and is a wonderful example of how legacy gifts of all sizes make such an important difference to our work.

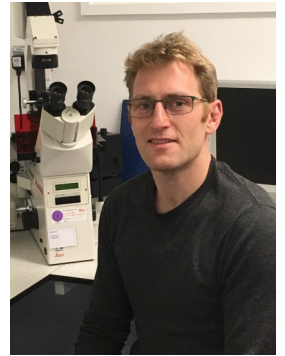
Finally, I ran the Southampton ABP 10k race at the beginning of September to raise funds for Gift of Sight. It was good to be running outside again in an organised event. If you would like to sponsor me belatedly I would be delighted to have your support and donations can be made using the '[Donate](#)' button on our website. Please mention 'on behalf of Prof Lotery's run'.

I am, as always, very grateful for your considerable help. Thank you.

With my very best wishes,

Andrew Lotery MD, FRCOphth
Professor of Ophthalmology
University of Southampton

Dr Jörn Lakowski MD PhD
Senior Research Fellow in Vision Sciences



Since moving into our new stem cell facility, we have made great strides towards addressing key objectives in our current project investigating cone photoreceptor loss in retinitis pigmentosa. Using “mini-retinas” called organoids, grown from human pluripotent stem cells, we have focused on studying the role of a key receptor involved in sensing an important survival signal for cones, which is lost in retinitis pigmentosa (RP). So far, we have found that organoids in which we have genetically removed this receptor mimic cone photoreceptor loss similar to the situation that occurs in retinas effected by RP. This is significant because we now have an experimental system in which we can not only better understand the molecular causes of RP but also test various approaches to stop, or at least slow down, photoreceptor cell loss. As this represents a genuine human cell-based system, insights gleaned from our work should much better translate into the clinical setting compared to work carried out in the standard animal models such as mice or fish.

As part of this project we have also generated organoids in which we genetically engineered cones to emit a red fluorescent signal, which allows us to track and isolate them for further studies. This is particularly important for our planned drug screens in which we will test more than 2000 already clinically approved compounds in a cone survival assay.

We recently submitted a paper describing this new cone reporter stem cell line and are now addressing the reviewer’s comments. Interestingly, using this new experimental system we have been able to study the earliest times in the life of cone photoreceptors and have been able to observe, thanks to the new EVOS imaging platform purchased with the help of Gift of Sight, cone cell migration in real time within the mini-retinas. This has not previously been achieved and will open up a new line of research relating to developing a cell therapy approach for inherited retinal dystrophies, which rely on donor (cone) cell migration after subretinal transplantation.

Adnan Khan- NIHR Clinical Lecturer in Ophthalmology



Adnan is continuing his clinical research together with Professor Andrew Lotery. A new clinical study assessing the detection and impact of immune system ageing (known as immunosenescence) on the development of macular degeneration, has received UK ethics approval to recruit patients. The study, informally known as 'The Immuno AMD Study' is recruiting patients with a new diagnosis of dry or wet macular degeneration and utilises the latest proteomic technology. Proteomics allows for the exquisitely sensitive detection of low levels of protein in tissue, tissue fluids and blood. This study will be undertaken in collaboration with Professor Paul Skipp at the Southampton Centre for Proteomic Research (CPR). It will not only be supported by funding from Gift of Sight but, in addition, has been chosen as the recipient of a competitive innovation Award from Wessex Medical Research and support from The de Laszlo Foundation.

Adnan and Professor Lotery have published results of the Complement Factor I (CFI) study in the September 2021 edition of the journal *Human Mutation*. In addition, they will soon publish the results of a clinical study assessing levels of pro-inflammatory cytokines (inflammatory chemical signals in the blood) in patients undergoing eye injections to treat macular degeneration.

Angela Cree BSc

Senior Research Manager Vision Sciences

Angela has worked at the University of Southampton for more than twenty years and in Vision Sciences since 2005. She supports basic science and clinical research projects led by Professor Andrew Lotery. She has seen many students and scientists completing their academic commitments and is always interested in following their careers when they move on.



She has been involved in the PINNACLE trial since the initial funding application to the Wellcome Trust in 2016. Angela attends PINNACLE trial management meetings with financial oversight of £3.98 million in expenditure across the 10+ study sites and collaborative institutions in the UK, Europe and the USA. Angela is also responsible for helping complete grant applications with Professor Lotery most of which are lengthy, complicated and demand organisational abilities as well as succinct writing skills. With many other research institutions competing for funding these skills are vital to achieve a successful result.

With a background in biochemistry, molecular biology and genomics, Angela has previously been a co-applicant on National Institute for Health Research (NIHR) funded trials and is a PhD co-supervisor. Her daily workload is surprisingly varied and requires liaison with the finance, human resources, contracting, governance and procurement teams in the University and NHS. In the last week her experience has been helpful in applying for additional study funding, appointing maternity cover, importing antibodies and writing up study findings.

Many of our supporters will know Angela from Gift of Sight events and she has fundraised to support us since joining the research team. One of her first fundraising ventures was the 2007 Peru trek as a member of our small, select team. She has walked parts of the annual Rotary Test Way Walk event many times, including our 26 mile 'Peru Reunion' walk.

Funding for eye research

In our last newsletter Dr Arjuna Ratnayaka explained how he and Dr Jenny Dewing were awarded a UK Government funded Public Policy grant. Their project was to increase public awareness of blinding diseases and help increase investment into ground-breaking discoveries to prevent and treat sight loss. Colleagues at Sight Research UK shared the results of a survey undertaken to decipher why people give to charities involved in patient care rather than research. The outcome reflected a general lack of awareness about eye disease, which may explain the mismatch between the huge cost to the NHS vs research investment to develop new treatments. 10% of out patient hospital appointments are ophthalmic but research receives only 1.5% of Government funding.



As well as putting together a policy document, a video was produced to prove how vital treatments can save sight and retain independence for people suffering with eye disease. We are very grateful to Mr Russell Tribe, a patient who attends Southampton Eye Unit for injections to treat 'wet' age-related macular degeneration. He talks frankly about how receiving regular injections enables him to carry on his daily life and continue his hobbies, which includes a requirement to be able to study small details. Professor Lotery also explains how treatments brought about by basic science research are reducing rates of blindness caused by AMD. We have put a link to the video on the home page of our website or it can be viewed directly [here](#).

THANK YOU and EVENTS

We're always delighted by the help we receive from you. One-off donations, regular Direct Debit payments, gifts in memory of loved ones and legacies all help our scientists to purchase consumables, new equipment and supports salaries for some of the team. Your generosity never ceases to amaze us.

Thanks also to:

- Elizabeth and Kristian Godfrey for asking guests at their wedding to donate to Gift of Sight.
- BDB Pitman for their ongoing support.
- Richard Curtis and his team at The Portsmouth Arms who continue to fundraise for our paediatric research. Our heartfelt congratulations to Rich on being awarded a British Empire Medal in the New Years Honours 2021.

In May members of the Southampton University Ophthalmology Society (SUOS) ran 300km, which is the equivalent of running from Southampton to Sheffield! Thank you Annabel and Stefan for organising this event to raise funds for our vision research.

More recently Jane Hannifan completed 26 miles of the Rotary Romsey Test Way Walk with her friends Gus Hickish and Jenny Bewley. Jane received injections for AMD and thankfully her vision has stabilised. If you would like to help the team increase the total raised please visit their [JustGiving page](#)



Events

We regret that, after much soul searching, we have made a tough decision and have cancelled the Gift of Sight Christmas Concert again this year. The cost of staging the event, together with the uncertainty surrounding potential further coronavirus disruptions, means we cannot guarantee that sufficient seats would sell to make the event profitable.

The good news, however, is that we are organising an event to be held on Sunday 31 July 2022, hosted by Christopher and Sarah Saunders-Davies at The Island, Greatbridge, Romsey. We will give more details in the next newsletter and hope some of you will join us there.

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