Gift of **SIGHT**

April 2020
NEWSLETTER

Dear friends and supporters

Professor Andrew Lotery

I do hope you are all keeping safe and making the most you can of this unusual situation. I am seeing patients in emergency clinics and my clinical colleagues and I are also seeing patients virtually at the hospital and running laboratory meetings using the same technology. The current Covid-19 pandemic has meant that, whilst we are unable to call patients to the Hospital for some clinical trial appointments, we will continue with those studies where patients would come to harm if they did not attend.

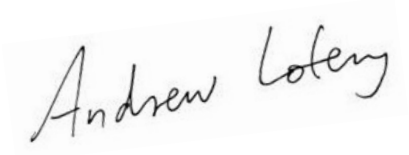
Keeping staff safe is our major priority so unfortunately all laboratory studies have currently had to stop and this means that some of our scientists will lose part of their work. This is a major concern and one of our postdoctoral scientists writes "*The biggest financial impact is the cost of replacing each plate of cells that are now wasted. The transwell plates are surprisingly expensive at £100 per plate and I had 6 ready to use"*. Your generous and ongoing support through Direct Debit donations and generous gifts, together with legacy bequests, means that we will be able to replace the plates when we are able to return to the laboratories.

We will actively restart our academic research and clinical trial studies once the Covid-19 pandemic is over. However, thanks to the wonders of technology, I was able to run a one day meeting with my Wellcome Trust grant collaborators with participants in 5 countries and multiple time zones, using video conferencing. It did mean my colleague in Australia had to stay up until 3 am but even he said it was worth it!

There is some good news! I am delighted that, for the first time, we have a 'full house' of young clinical scientists working their way up the research ladder, although because they are doctors they are currently on 'standby' in case of redeployment. Their details are shared on a later page. So, while research is challenging at present, we will continue as best we can whilst giving priority to supporting the NHS front line. We have reassurance from many of our funders that they understand that research will be delayed and will continue to support us.

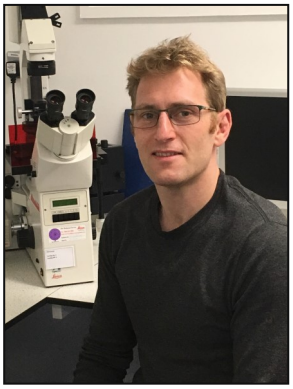
I take this opportunity to recognise and congratulate the many University colleagues who are working around the clock on various projects directly tackling the coronavirus. One example is Professor Paul Elkington and his team, who have developed a unique piece of Personal Protection Equipment in a very short space of time. The PeRSo hood is being trialled in wards at University Hospital Southampton. I think the Covid-19 pandemic emphasises more than anything how vital medical research is.

My heartfelt thanks as always for your help.



Andrew Lotery MD, FRCOphth
Professor of Ophthalmology
University of Southampton

Dr Jorn Lakowski - *Andrew Elkington Track Tenure Research Fellow*


Jorn Lakowski

Since joining the Vision Group in January 2018 it has been a busy time for me on all fronts. Thanks in great part to the initial support from Gift of Sight, I was able to establish a human pluripotent stem cell line very quickly. This forms my main experimental platform to study retinal degeneration and I have carried out a series of important proof of principle experiments. This crucial data, together with support from the University of Southampton and Gift of Sight, allowed me to obtain one of the prestigious Academy of Medical Sciences Springboard Awards in May 2019 worth £98,000.

This two year project, entitled "Modelling retinitis pigmentosa associated cone photoreceptor death using stem cell derived organoids", will take advantage of the latest innovations in human pluripotent stem cell and genome engineering technology. I will investigate why the critically important cones in the retina of patients with an inherited form of blindness (retinitis pigmentosa) die despite not being affected by known disease causing mutations. Although we have gleaned some useful information as to why this may happen using animal models, we still lack any meaningful knowledge in the human system. But how to study such a complex organ as the human retina? Until recently this was virtually impossible. With new advances in stem cell technology it is now possible to grow "mini retinas" from scratch in a cell culture dish, allowing us to investigate a broad range of basic biological and clinical questions.

In the first stage of the project we will grow the "mini-retinas" mimicking retinitis pigmentosa conditions and characterise them. The second stage envisions a decently sized drug screen for chemical compounds which can help cones survive under the hostile, disease causing conditions. Excitingly, this may lead to the discovery of new drugs, which may eventually be used to treat patients suffering from degenerative diseases of the retina and hopefully prevent blindness by preserving critical cone vision. We have made great strides towards preparing our drug screen this year, including generating our genetically engineered stem cell lines, assay development and establishing our analysis pipeline. Sadly, however, the unfolding Covid-19 crisis brought an abrupt halt to all our laboratory work. We are currently limited to computer-based data analysis, grant writing or, in my case, sharing childcare. While this is certainly an undesired delay we will eventually get back into the laboratories to conduct our planned experiments. We hope to identify many useful compounds that we can then optimize and develop into clinical therapies for not only retinitis pigmentosa, but also the many other degenerative conditions which lead to cone photoreceptor loss.


Savannah Lynn

Dr Savannah Lynn

Congratulations to Dr Savannah Lynn who has been awarded a two year Training Fellowship by the National Centre for the Replacement Refinement & Reduction of Animals in Research. Savannah is developing a microfluidic in vitro 3D model of the retina, mimicking the architecture of the human macula and modelling blood flow. She will use this model to investigate age-related macular disease pathology and potential therapeutics.

Savannah completed her PhD in our group and Gift of Sight funding over the last two years has enabled her to continue her research whilst applying for grants. Her success is evidence of the benefit of Gift of Sight support and means that our vision science group both retains excellent young scientists and enables them to continue their sight-saving projects.

The Four stages of academic trainees.

Photo: Professor Andrew Lotery

Dr Engin Akyol, Academic Clinical Fellow
Dr Rebecca Kaye, Clinical Research Fellow
Dr Adnan Khan, Clinical Lecturer
Ms Helena Lee, MRC Clinician Scientist Fellow,
Associate Professor of Ophthalmology

The next step on the career ladder is a Professorship.

Adnan Khan—NIHR Clinical Lecturer in Ophthalmology

Adnan joined the University of Southampton in April 2019 as a Clinical Lecturer, to carry out postdoctoral research into the immunological mechanisms underlying the development of age-related macular degeneration (AMD). He is undertaking research whilst completing his ophthalmology specialist training at University Hospital Southampton, working closely with Professors Andrew Lotery and Jessica Teeling, a research neuro-immunologist.

With a research background in transplantation immunology, Adnan's current work focuses specifically on the role of T cells ('the soldiers' of the adaptive immune response). There is increasing evidence that, in early macular degeneration, T cells recognise proteins in the macula as 'foreign' as they have previously been unexposed to them. They then strengthen the immune response which leads to the weakening of photoreceptors. Furthermore, a population of T cells called Regulatory T cells (Tregs), can dampen down immune responses, and their presence in AMD may explain why some patients with early forms of macular degeneration never progress to the advanced form.

Gift of Sight donations have provided Adnan with start-up funds to generate initial experimental results. These will be collated and used in applications for a large project grant from major UK medical research funding bodies such as the Medical Research Council or The Wellcome Trust.

Dr Rebecca Kaye—Clinical Research Fellow

Congratulations to Rebecca on winning the Gift of Sight Award for her presentation at the 16th Annual Wessex Ophthalmology SpR Audit and Research Day. Her subject was Choroidal Vascularity in Chronic Central Serous Chorioretinopathy, her project when previously working in our laboratories as an Academic Clinical Fellow. This award will enable Rebecca to present her work at an international ophthalmic conference, hopefully in 2021. As a Clinical Research Fellow with Professor Lotery she will be investigating how different genetic mutations affect the retina in AMD patients using human stem cells and generating eye tissue in a dish. She will also be helping recruit patients to Professor Lotery's study looking at the role of artificial intelligence in AMD.

Helena Lee and Rebecca Kaye

Dr Engin Akyol—Academic Clinical Fellow

Engin has been awarded a nine month placement as an academic clinical fellow in our vision research group. We have the technology to image individual cells in the back of patients' eyes and Engin will be investigating the utility of adaptive optics in retinal disorders. This technique will help us study the structure and arrangement of light seeing cells called 'cones' and has the potential to be used in clinical trials.

Thank You

Carol Concert in Romsey Abbey : December 2019

Our annual Carol Concert in Romsey Abbey raised an amazing £18,000. It was a pleasure to have Kate Adie CBE reading John Betjeman's 'Christmas' and our thanks go to her for driving a long distance in dreadful weather to be with us. Heartfelt thanks to Ally Allfrey, her committee and their families who spent so much time organising the Concert and helping out on the night. We are hoping to hold our next Carol Concert on the 15 December 2020.

Mike Larcombe : Te Araroa, New Zealand

Mike Larcombe

Warmest congratulations to Mike Larcombe on completing the **3,000 km** (1865 mile) Te Araroa trail in New Zealand. Growing up in Hedge End, Southampton, Mike was diagnosed with Nystagmus and was a patient at Southampton Eye Unit. He moved to Brisbane, Australia in 2014 and when his little nephew, Archie, was also diagnosed with the condition Mike resolved to raise funds for Gift of Sight, Nystagmus Network and Blind & Low Vision NZ.

Leaving Bluff in South Island on 16th December 2019, it took Mike 96 days of walking, kayaking and cycling, to reach his destination, Cape Reinga at the at the top of North Island, on 19th March 2020. Whilst making countless new friends Mike overcame many challenges along the way, giving regular updates during his journey, detailing the highs and lows incurred whilst undertaking of such a long, arduous challenge. Mike says: *"On the second day of walking through the Two Thumbs track, on the South Island heading up to Stag's Saddle, the highest point of Te Araroa, I was following the orange markers through thick orange/brown/yellow tussocks. It became increasingly hard to see and find my way and this section that should take 4 hours, took me 8. On the plus side, the third day in that same section of the walk was stunning, surrounded by mountains throughout the day".*

Mike's JustGiving page is still open if you'd like to add your support for his momentous achievement.
www.justgiving.com/fundraising/walk-for-wiggly-eyes-gift-of-sight

Sarah Saunders-Davies

Many thanks to Sarah for raising funds for Gift of Sight and Timsbury Church in lieu of birthday presents earlier this year. Support of this kind is always very gratefully received and we pass on our very best wishes and thanks to her and her generous friends for supporting our vital research.

The Covid-19 pandemic has meant the postponement of all Gift of Sight events for the time being.

Please read our Privacy statement at https://www.giftofsight.org.uk/gift-sight-privacy-statement

Grateful thanks to Esso Petroleum at Fawley for sponsoring our newsletters

Contact: Ailsa Walter
Our office is currently closed. For information please telephone **023 8059 9073.**
Calls will be forwarded to our mobile phone during the Covid-19 pandemic.
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Web: www.giftofsight.org.uk

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