Aims To determine if there is a sustained difference in colour perception after short-term use of RLRL.
Methods Participants aged 6–25 years old who met the eligibility criteria were recruited and underwent visual acuity assessment, macular optical coherence tomography (OCT), and colour vision assessment using the colour assessment diagnosis (CAD) test. After this, they came for three visits where they received RLRL. The CAD test was performed immediately after and repeated after a 5-minute interval. At the next appointments, this process was repeated, with a final OCT scan taken at the end. Participants were asked to report about their experience using RLRL.
Results A significant difference in colour perception was observed between measures immediately after exposure to RLRL and after 5-minutes at each visit ($P<0.01$ for all). Use of the machine after 3 doses of red-light therapy over two days demonstrated no significant change to colour perception ($P>0.05$). Participant results indicated that they'd likely use RLRL for myopia management (median score=4 out of 5).
Conclusion RLRL appears to only have an immediate, reversible effect on colour perception returning to normal after 5 minutes, with no visual effects, suggesting its safety in short-term use. Further research on longer term use is required.
Acknowledgements Brad-ATTAIN

P-09 KERATOPIGMENTATION FOR TRAUMATIC GLARE AFTER PHACOEMULSIFICATION

Camelia Vasile, Indy Sian, Kieran O'Kane, Aminah Jawaheer. *Musgrove Park Hospital, Taunton, UK*

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Introduction Keratopigmentation was first documented almost 2000 years ago, using reduced copper sulphate to mask a corneal leucoma. Over time, copper was replaced with metallic powders, allogeneic uveal pigment and both Indian and Chinese ink.
Aims Keratopigmentation was used to improve cosmetic appearance and sight and decrease light scattering and glare.
Methods A 73-year-old man was referred to the corneal clinic with ongoing glare, intermittent monocular diplopia and photophobia after a complex phacoemulsification which left an iris defect at the 9 o'clock position.

Seven months after cataract surgery, visual acuity was 6/9 bilaterally, with an IOP of 14mmHg in the affected eye.

After discussion regarding the risks and benefits (failure-no symptomatic improvement, visual field loss, loss of visual acuity, corneal decompensation, further surgery (including iris prosthesis), colour change/fading, neovascularisation the patient consent and wished to be listed for corneal tattooing.

The procedure was performed in the Ophthalmic Theatre Suite. Kandahar ink was used as has fewer incidences of reaction due to its composition.

An intrastromal technique was used to aid ink distribution and stability.

The patient was given some steroids and antibiotic drops to use after the surgery.
Results The patient was reviewed four weeks later and reported that glare symptoms had settled. After 10 weeks the corneal suture was removed.

His glare had improved further, with corrected visual acuity 6/6 with pinhole.
Conclusion Keratopigmentation is an effective way of managing the resultant glare and photophobia, improving quality of life. It represents a simple, low risk alternative for many other indications besides iris trauma.

P-10 A CADAVERIC DEMONSTRATION OF A NOVEL SURGICAL APPROACH FOR TREATMENT OF PTOSIS

[1]Fatima Kalabi, [2]Huw Oliphant, [3]Chris Schultz, [2]Saul Rajak. *[1]Brighton and Sussex Medical School, University of Sussex, Brighton, UK; [2]Brighton and Sussex Medical School, Sussex Eye Hospital, Brighton, UK; [3]Sussex Eye Hospital, Brighton, UK*

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Introduction Frontalis suspension surgery (FSS) is the established surgical treatment for severe ptosis. Limitations of this technique includes need for patient engagement to raise the eyelid, oedema and infection at the incision sites, as well as facial scarring. This study carries out an anatomical investigation into an alternative surgical approach which aims to minimise these limitations.
Aims To carry out a cadaveric demonstration of surgical techniques, comparing FSS to an alternative approach.
Methods A fresh frozen cadaveric head specimen was used to demonstrate the FSS procedure and the alternative approach. Outcomes were recorded by photographs. This included the post-operative palpebral fissure height (PFH), as well as the capacity for the eyelids to close post-operation. The aesthetic outcome of both procedures was also analysed.
Results The proposed surgical technique and the FSS method both achieved a post-op PFH measurement within the normal range at 7mm following procedures. The study also demonstrated that the proposed technique allowed for full eyelid closure against the retracting tension of the sling. The aesthetic outcome of the proposed surgical method was superior to the FSS technique by achieving a natural eye contour while eliminating brow incision scars.
Conclusion The study presents a successful cadaveric demonstration of a novel surgical procedure for treatment of severe ptosis. This procedure offers resolutions for multiple adverse effects of FSS, as well as functional and aesthetic limitations. However, the higher risk of lagophthalmos is an anticipated concern. This requires further research into the mechanical compatibility of this technique in vivo.

P-11 CHARACTERISATION OF HUMAN PHARC FIBROBLASTS HARBOURING A NONSENSE MUTATION IN *ABHD12* GENE AND SUBSEQUENT GENERATION OF A IPSC LINE

[1]Sara Romero-Vázquez, [1,2,3,4]Mariya Moosajee. *[1]Development Ageing and Disease, UCL Institute of Ophthalmology, London, UK; [2]The Francis Crick Institute, London, UK; [3]Moorfields Eye Hospital NHS Foundation Trust, London, UK; [4]Great Ormond Street Hospital for Children NHS Foundation Trust, London, UK*

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Introduction Several mutations in *ABHD12* gene have been linked to PHARC syndrome, and nonsense mutations represent almost one third of the reported mutations in PHARC. The use of induced pluripotent cells (iPSC) helps to create faithful models to investigate the pathological mechanisms operating in the retina of PHARC patients, and thus facilitates the assessment of potential therapeutic interventions.

Aims We aimed to characterise human dermal fibroblasts (HDF) from a PHARC patient harbouring a nonsense mutation in *ABHD12* gene; and to generate one human iPSC line from the PHARC HDF.
Methods HDF from a PHARC patient harbouring a nonsense mutation in *ABHD12* gene were isolated and cultured. Gene expression was assessed by qPCR. *ABHD12* presence was detected by SDS-PAGE and immunoblotting. Proteins involved in primary cilia morphogenesis were examined by immunofluorescence. HDF were reprogrammed into iPSC using integration free episomal reprogramming plasmids.
Results *ABHD12* possess two alternative splicing isoforms (*ABHD12-a* and *ABHD12-b*). At a protein level, WT HDF express both of them, while PHARC HDF only express *ABHD12-b*. Cilia in PHARC HDF are less numerous and shorter than in WT. The transcript levels of *GRP78/BiP*, involved in unfolded protein response activation, are downregulated in PHARC compared to WT HDF. The iPSC line generated exhibits pluripotency markers and differentiation potential *in vitro*.
Conclusion A proportion of *ABHD12* transcripts are escaping the nonsense mediated decay in PHARC HDF. Moreover, we report for the first time a defective cilia formation and a reduction in *GRP78/BiP* mRNA levels in PHARC HDF.

P-12 CONTRAST-MODULATED CROWDED ACUITY AND INTEROCULAR DIFFERENCES IN AMBLYOPIC CHILDREN

[1]Louisa A Haine, [1]Monika A Formankiewicz, [1]Sarah JH Lalor, [1]Akash S Chima, [1,2]Sarah J Waugh. *[1]Anglia Ruskin University, Cambridge, UK; [2]University of Huddersfield, Huddersfield, UK*

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Introduction Amblyopia is a neurodevelopmental disorder characterised by deficits in visual acuity (VA). Amblyopes with strabismus are more sensitive to visual crowding so it is important to use crowded VA tests to enhance interocular differences (IOD), such as the 'Enhanced Cambridge Crowding Test' (ECC). Research in adults has indicated that crowding magnitude is increased when contrast-modulated noise (CM) stimuli are used compared to luminance-generated stimuli. CM stimuli may therefore be advantageous to use to detect amblyopia in children.
Aims This study aimed to establish whether an ECC test presented with CM optotypes (CM-ECC) offers greater sensitivity for paediatric amblyopia detection than the Sonksen logMAR Test (SLT), a standard hospital test.
Methods Monocular VA thresholds were examined in groups of children: a control group (n=24) and amblyopic groups (n=43; n=22 anisometropic amblyopes, n=21 strabismic/mixed amblyopes), aged 3–11 years. VA thresholds for both 'crowded' and isolated luminance (L) and CM optotypes were obtained from self-paced, interleaved, two-down, one-up staircases combined with a four-alternative, forced-choice (4AFC) paradigm. VA was also obtained according to SLT instructions.
Results While the CM-ECC yielded significantly larger (logMAR) acuities (**P<.001**), neither crowding magnitudes (P=.635) nor IODs (P=.306) were different from those obtained with SLT.
Conclusion As a paediatric visual screening tool, the CM-ECC provides no additional diagnostic benefit over the SLT.

P-13 DISTANCE ESTIMATION WITH STATIC AND DYNAMIC SOUNDS

[1]Anna Koblitz, [2]Andrew Kolarik, [1]Ian van der Linde, [1]William Campbell, [1]Shahina Pardhan. *[1]Anglia Ruskin University, Cambridge, UK; [2]University of East Anglia, Norwich, UK*

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Introduction Previous studies found that approaching sounds are perceived to stop closer to participants than receding sounds (with the same end position). This effect is called the auditory looming bias. However, most studies asked participants for ratings of change in loudness and not for actual distance estimations of moving sounds. Additionally, most studies didn't compare moving sounds to static sounds and there are no studies on the auditory looming bias in visually impaired individuals.
Aims Our aim was to compare distance estimations for moving and static sounds.
Methods To investigate how moving sounds are perceived, we generated virtual sounds (1-kHz pure tone and white noise) that approach and recede from the participants or are static at different distances in an anechoic room. The sounds were simulated to move 11m at three different distances (near, medium, and far away). 14 participants were asked to listen to the sounds and estimate their start and end distance, they were also asked to rate the change in loudness of the moving sounds.
Results First preliminary results indicate that moving sounds are perceived to end further away from the participants compared to static sounds at the same distance. There also seems to be no auditory looming bias when participants were asked for distance estimations.
Conclusion Our results show that there might be a difference in accuracy of distance estimations for moving compared to static sounds. Additionally, we want to investigate the auditory looming bias in visually impaired participants and compare their distance estimations to those of age-matched normally sighted participants.

P-14 THE DEVELOPMENT OF DEXAMETHASONE NANOPARTICLES TO TREAT DIABETIC RETINOPATHY

[1]Sherrin Gotru, [1]Victoria Kearns, [1,2]Tom McDonald. *[1]Department of Eye and Vision Sciences, University of Liverpool, Liverpool, UK; [2]Department of Chemistry, University of Manchester, Manchester, UK*

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Introduction Diabetic retinopathy (DR) affects millions of individuals on a global scale. Current treatment for DR encompasses different drug delivery systems. Typically, intravitreal injections carry a half-life which is less than 5 days. Therefore, frequent injections are required increase the risks and complications that come with this procedure. An *in situ* forming drug delivery implant comprising nanoparticles and stimuli-responsive nanoparticles could overcome these drawbacks.