



RESEARCH UNITS, CENTRES AND INSTITUTES

Annual Report Template

Please refer to the University of Auckland Policy on Research Units, Centres and Institutes for more information on reporting and accountability requirements (clause 2.5). A copy of this policy is available from the University Policy Register.

Section 1a - IDENTIFICATION INFORMATION:

Title of Unit, Centre or Institute:	New Zealand National Eye Centre (NZ-NEC)
Name of Director:	Professor Charles McGhee, HoD Department of Ophthalmology
Name of Deputy Director:	Professor Paul Donaldson, Professor Steven Dakin

Section 1b – ENDORSEMENT OF REPORT:

Signatures:	<i>Please sign in appropriate space below</i>
Professor Charles McGhee - Director (Required for all Units/Centres/Institutes)	
Head of Department (Required only for Department/School Units)	
Dean (Required for Faculty/University Centres/Institutes)	

Section 2 – ADVISORY BOARDS AND MEETING DATES:

Names of Oversight Advisory Board members (for Faculty and University Centres that have Oversight Boards)	
Names of Expert Advisory Board members (for Faculty and University Centres that have Expert Advisory Boards)	
Names of Management Committee Members (for University and Faculty Centres)	<p>Professor Charles McGhee</p> <p>Professor Paul Donaldson</p> <p>Professor Steven Dakin</p> <p>Sue Raynel – Manager NZ-NEC</p> <p>Hutokshi Chinoy – Administrative Manager</p>
Dates of advisory board and management committee meetings that took place during the year	

Section 3 – PARTICIPATING MEMBERS AND EMPLOYEES/STUDENTS:

Names and Departments of participating members	<p>Department of Ophthalmology, Faculty of Medical and Health Sciences; School of Optometry and Vision Science; Molecular Vision Laboratory.</p> <p>Affiliated members: New Zealand National Eye Bank; Glaucoma New Zealand; Clinical and Experimental Ophthalmology; Department of Anatomy with Radiology; University of Auckland Bio-engineering Institute</p>
List names, positions, and FTEs of all staff employed and postgraduate students involved in the Unit or Centre	<p>No staff are employed directly by NZ-NEC but provide assistance at discretion of the Departmental HoD's.</p> <p>See appendix for list of staff within NZ-NEC</p>

Section 4 – INTRODUCTION:

<p>Provide here a brief introduction to the report (maximum of 300 words)</p>	<p>The NZ-NEC submitted a three year centre report and received positive feedback from the Faculty Review Committee. Their recommendations have been commented upon further in this report.</p> <p>In 2016 we had a successful in attaining research funding from competitive grants, philanthropy and industry in excess of \$3.7 million dollars. Grants came from a wide variety of sources including: Marsden Fund \$1,150,000; ADHB \$675,000; HRC \$448,963.00; Catwalk Trust \$362,548; Cure Kids \$100,000; Industry projects via UniServices \$390,000; philanthropic donations of over \$260,000.</p> <p>Members of NZ-NEC have continued to develop national and international research collaborations in 2016. National collaborations include a large animal study underway at Lincoln University, Christchurch and international collaborations include projects with The University of Tasmania, Australia (\$AUD 912,880); the State University of New York, at Stony Brook, USA (\$US432,000); and the University of Lincoln, England (£UK202,820). These projects are funded for 2-5 years. The amounts of the international grants are not included in the NZ-NEC research fund total for 2016 as they are held in other organisations.</p> <p>There have been 10 book chapters and 105 peer reviewed publications from members in 2016.</p> <p>The glaucoma project continues and to date 8 optometrists have been credentialed by ADHB glaucoma specialists. Health Alliance on behalf of ADHB are in the process of contracting out to community optometrists the care of specific groups of glaucoma patients.</p>
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Section 5 – AIMS, GOALS AND FUTURE PLANS:

<p>a. General Aims:</p> <p>Briefly describe the general aims (plans and objectives/goals) of the unit or centre. Identify how they address the University and Faculty Strategic Plan.</p>	<p>Vision: to eliminate preventable blindness and reduce visual impairment</p> <p>Mission: to become a foremost international vision research, clinical and teaching centre through excellence, innovation and collaboration</p> <p>Goals: To develop and increase the profile of eye health, vision research and education – in New Zealand/Aotearoa and internationally by: Laboratory research Clinical research and Clinical Services</p>
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	<p>Application of research into practice Innovation Collaboration Teaching and Learning Community Outreach Public Health Policy</p>
<p>b. Goals for Reporting Year:</p> <p>Describe the specific goals for the reporting year.</p>	<p>Submit an 'Eye Health' programme grant to HRC</p> <p>Expand on community programmes</p> <p>Research undertaken continues to produce innovations with scientific and clinical application</p>
<p>c. Plans for Upcoming Year:</p> <p>Outline the plans for the next year. Identify any resource implications.</p>	<p>Continue with expanding community programmes</p> <p>Increase our research collaborations within UoA, nationally and internationally</p> <p>Submit HRC programme grant</p>

Section 6 – MAJOR ACHIEVEMENTS AND OTHER NOTABLE ACTIVITIES:

<p>Report against the specific goals listed in 5b above</p>	<p><i>HRC programme grant:</i> This is on-going. An off-site meeting has been organised for April 2017 with all research groups within NZ-NEC to discuss/plan submission.</p> <p><i>Community Programmes: There have been several successful community based initiatives this year.</i></p> <ol style="list-style-type: none"> 1. Glaucoma project – 8 optometrists (4 from the community and 4 from SOVS) have been credentialed to review glaucoma patients in collaboration with the Ophthalmology Department, Auckland District Health Board. The patients will remain under the umbrella of eye services at ADHB with the community optometrists contracted to see a number of patients annually in their own practices to decrease the burden on the eye clinic. We are waiting for the contracts with community optometrists to be formalised by Health Alliance. There are another 4 optometrists who have just commenced up-skilling 2. School of Optometry and Vision Science had two visits from the Whakapiki Ake MASH (Māori Achieving Success in Health) programme. This is the first year that SOVS has taken part in Whakapiki Ake, which is a recruitment programme that actively engages with rangatahi Māori enrolled in secondary schools to promote eye health as a career. The theme of the MASH visit was about diabetes and
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	<p>its impact on health. The primary focus was on: simulating the effects of diabetes-related vision degradation on everyday life tasks and imaging the eye using a biomicroscope in order to spot the diabetes related pathologies.</p> <p>“During each visit, we hosted 30 Māori students who were extremely positive about the experience. We conducted a survey at the end of each session to evaluate the success of these visits. We were extremely encouraged by the outcome of our latest survey,” says Dr Ehsan Vaghefi.</p> <p>It is envisaged that this programme will elicit more applications from Māori into optometry. To further facilitate this, 2017 will see the introduction of two new He Rau Aroha Māori Scholarships for Bachelor of Optometry applicants.</p> <p>3. SOVS Part IV students recently participated in the Family Violence workshop. The SOVS plans to implement this workshop into their undergraduate programme to ensure graduates are able to support victims of family violence in their practicing career.</p> <p>4. Dr Mohammed Ziaie, Senior Cornea Fellow, Department of Ophthalmology was interviewed by the Listener magazine about contact lens wear and the risk of losing their sight by not being scrupulous about hygiene.</p> <p>5. Dr Shuan Dai, Senior Honorary Clinical Lecturer and Paediatric Ophthalmologist, was interviewed by the Herald about the \$121,000 Optical Coherence Tomography (OCT) eye scanner which has been purchased by Starship Foundation and paid for by Power Company, Mercury. This piece of equipment will provide an accurate diagnosis for children with visual impairment. This is a first of its kind equipment in Australasia.</p> <p><i>Research undertaken continues to produce innovations with scientific and clinical application</i></p> <p>Professor Steven Dakin was a member of an international team who have developed a new eye chart test for early detection of an age-related eye disease as it is designed to be more sensitive to the early signs of AMD. Researchers at the School of Optometry and Vision Science at the University of Auckland, the University of Ulster, and Moorfields Eye Hospital in London, have collaborated to develop the new eye chart test.</p>
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<p>Summary of major developments and achievements. Identify how these activities contribute to the research capability of the department or faculty (beyond what would be achieved through the activities of the individual members). Please provide greater detail for anything noteworthy that may give useful publicity to the University</p>	<p>NZ-NEC is one of the partners, along with the Royal Australia and New Zealand College of Ophthalmologists (RANZCO) and the University of Auckland, in the successful bid to co-host the 35th Asia Pacific Academy of Ophthalmology (APAO) Congress in 2020 in Auckland. This will be the first major conference to be held in the new Sky City Events Centre and the largest conference to be held in New Zealand with up to 5,000 delegates.</p> <p>Dr James McKelvie (PhD), Senior Corneal fellow in Ophthalmology won the second prize in the Velocity \$100K Challenge in the New Ventures category for his "CAT-TRAX", a web based application which will dramatically reduce waiting times for cataract surgery, increase efficiency and cut costs.</p> <p>A new paper by Ehsan Vaghefi, Paul Donaldson and Duncan Wu, looking at computational modelling of lens fluid dynamics has made the cover of IEEE Reviews in Biomedical Engineering.</p> <p>Dr Jie Zhang, Postdoctoral fellow in Ophthalmology has been awarded a Marsden Fast-Start grant to investigate the proliferative and regenerative potential of adult stem cells recently found in the Transition Zone of the eye.</p> <p>Professor Trevor Sherwin has been selected to do the prestigious Ida Mann lecture at the 48th Annual RANZCO Congress in Perth Australia in Nov 2017.</p> <p>Tina Gao, School of Optometry and Vision Science was awarded a U21 graduate mobility scholarship to advance her collaboration with the internationally renowned visual neuroscience group within the School of Psychology at the University of Nottingham, UK.</p> <p>Dr Hannah Kersten recruited to a joint appointment between the Department of Ophthalmology and the School of Optometry and Vision Science</p> <p>A new eye chart for early detection of AMD has been developed by Professor Steven Dakin (School of Optometry and Vision Science), working with researchers from the University of Ulster and Moorfields Eye Hospital in London.</p> <p>Dr Ilva Rupenthal received an HRC Research Excellence Award in May 2016 for her outstanding contribution to health research excellence as an emerging researcher at the University of Auckland.</p>
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	<p>HRC emerging researcher first grants were received by Dr Jie Zhang (\$149,609) and Dr Stuti Misra (\$149,354) over the next 2 years.</p> <p>Jason Turuwhenua, School of Bioengineering and SOVS, is leading an international group of researchers to develop tests suitable for use with children as young as 2-years old. In 2016, the group received funding of \$1 million over two years from the Ministry of Business, Innovation and Employment (MBIE), to allow them to develop practical eye tests to be deployed in clinics.</p> <p>Dr Shuan Dai is the recipient of the Distinguished Clinical Teacher Award 2016 from the Faculty of Medical and Health Sciences at the University of Auckland.</p> <p>Associate Professor Jennifer Craig’s presentation on ‘intranasal neurostimulation for dry eye’ was identified as a ‘Hot Topic’ at the American Academy of Optometry.</p> <p>A/P Trevor Sherwin was promoted to Professor, Dr Andrea Vincent promoted to A/Professor in Department of Ophthalmology and Bhav Solanki and Wanda Lam in SOVS were both promoted to the highest grade of professional teaching fellow (PTF 4) in 2016.</p> <p>Students within NZ-NEC have had another successful year:</p> <ul style="list-style-type: none"> • Yeri Kim, PhD student, won first place at the SOM Doctoral Showcase held on 6th December. • Priyanka Agarwal, PhD student, BOTU won the best poster prize in the cornea/ocular surface section at the European Vision and Eye Research Conference in France. • Himanshu Wadhwa BMedSc.Hons student won the Fisher & Paykel Healthcare oral competition at EXPOSURE 2016 • HealthX 2016: Hans Vellara, PhD student was runner up AMRF Doctoral oral presentation award, Himanshu Wadhwa BMedSc.Hons student – Second runner up non-Doctoral oral presentation award. • Himanshu Wadhwa, BMedSc.Hons student, with collaborators Salim Ismail and Jane McGhee, won the BIRU confocal and overall prize for his sphere cell image
<p>Comment on any co-operative commercial activities, research with other University or Government laboratories or research</p>	<p>1. Dr Carol Greene, Professor Trevor Sherwin and Professor Colin Green have had their work on cell reprogramming furthered with funding from the Faculty Research and Development Fund, an HRC Explorer Grant and a Return on Science Fund grant. A large animal study is underway at Lincoln University,</p>

groups	<p>Christchurch for final proof of concept of this patent protected technology aimed at the treatment of keratoconus in the first instance, and potentially myopia.</p> <ol style="list-style-type: none"> 2. CoDa Therapeutics / OcuNexus: In 2015 there was renewed interest in ocular indications and a better understanding of our mode of action developed. In January 2017 the company restructured with an ocular focus, a new name (OcuNexus Therapeutics Inc.). Professor Colin Green continues to provide advice and has been appointed as Chief Scientist for the new company. 3. BOTU continued the project with Novaliq, Germany, using the developed ex vivo model to evaluate the penetration of various formulations into the ocular tissues after topical application. This model allows screening of ocular formulations at an early stage of development and could reduce the cost and complexity of testing routines currently used by the pharmaceutical industry. Presenting her data on Cyclosporine A penetration at the European Association of Vision and Eye Research meeting in Nice in September 2016 won Priyanka Agarwal the prize for best poster in the corneal/ocular surface category. Results from this research were also presented at ISER in Tokyo, Japan, and Asia-ARVO in Brisbane, Australia. 4. Professor Paul Donaldson (Physiology) and Dr Ehsan Vaghefi (Optometry) have in collaboration with Professor Thomas White from the State University of New York, at Stony Brook been awarded funding (\$US432,000) from the National Eye Institute (NEI) in the United States for a period of 5 years to examine the effects of aging the lens transport systems that determine ion and water homeostasis, water content, and therefore the optical properties of the normal and cataract lens. 5. Corneal Accommodation – Complete Proof of Concept with Hons student in 2017 to get this into a viable device for translation. Collaboration between Professor Colin Green, Charles McGhee and Dr Stuti Misra. 6. Professor Colin Green is a collaborator on a Diabetes UK grant with the University of Lincoln, England. This grant (£UK202,820) is to look at connexin hemi-
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	<p>channel roles in kidney fibrosis in diabetes.</p> <p>7. A/Professor Andrea Vincent is an associate investigator on a \$AUD 912,880 grant investigating Gene Identification for Keratoconus from the National Health and Medical Research Council, Australia.</p> <p>8. Professor Steven Dakin in collaboration with researchers from the University of Ulster, and Moorfields Eye Hospital in London, has developed a new eye chart test for the early detection of AMD.</p> <p>Patents:</p> <p>Green CR, Greene CA, Sherwin T. Ophthalmic compositions and methods of use. NZ Provisional Patent 705727, March 2015; PCT/NZ2016/050033 March 2016</p>
<p>Comment on any courses given or workshops and seminars held</p>	<p>Monthly NZ-NEC seminars were held in 2016 with a slight change in format with PhD students and senior researchers on alternating months. These sessions continue to be well attended.</p> <p>The glaucoma course for upskilling of community optometrists continues. To date 8 optometrists have been credentialed.</p>

Section 7 - Reviews

<p>Date of last review</p>	<p>August 2016</p>
<p>Review Recommendations</p> <p>List the recommendations of the review and give an update of progress on addressing the recommendations.</p>	<ol style="list-style-type: none"> 1. Submission of an HRC programme grant – an off-site half day seminar is planned for April 2017 for all groups to meet and discuss NZ-NEC programme grant submission. 2. Role of Professor Steven Dakin need to be strengthened and clarified – Prof Dakin likely to take up co-vice chair of NZ-NEC and will be involved in management meetings. Any other involvement to be determined at next management meeting. 3. Increase participation of School of Optometry and Vision Science and Molecular Vision Laboratory within the Centre, to develop more collaborative research opportunities for the future – this will be discussed at meeting in March of management committee.

Section 8 – FINANCIAL REPORT

<p>State whether the Unit or Centre has its own Activity Centre/s and list the Activity Centre/s being used</p>	<p>NZ-NEC does not have its own cost centre</p>
<p>State sources of funding, for example, from research funds from outside bodies, from the Department or Faculty, or other</p>	
<p>List any significant resource allocation decisions taken by the Oversight Board during this reporting year (if applicable)</p>	
<p>Include a statement of financial performance (contact Faculty Accountant for assistance), or give a clear explanation of the reasons if there has been no financial activity</p>	

Section 9 – RESEARCH OUTPUTS

<p>Include a list of publications and other research outputs</p>	<p>Books/Book Chapters:</p> <ol style="list-style-type: none">1. Histopathology (from Keratoconus Pathology to Pathogenesis)" by Sherwin T , Ismail S, Loh I-P, McGhee JJ in Keratoconus: Recent Advances in Diagnosis and Treatment. Ed J. Alio. Springer 20172. Kim Y and Green CR. Assessing Connexin Hemichannel Function. In: Gap Junction and Pannexin Channels, "A Volume in the Methods in Signal Transduction Series". Ed: Donglin Bai and Juan C. Sáez. CRC Press, Taylor & Francis Group 2016.3. McGhee CNJ, Crawford AZ, Meyer JJ, Patel DV. Chemical injuries of the eye. In: Cornea, Fourth Edition. Mosby Elsevier, 2016. Krachmer JH, Mannis MJ, Holland EJ (eds).4. Meyer JJ. Keratopathy Actinic. In: Encyclopedia of Ophthalmology. Springer-Verlag Berlin Heidelberg, 2018. Schmidt-Erfurth E, Kohnen T (eds).5. Meyer JJ. Keratinoid Degeneration. In: Encyclopedia of Ophthalmology. Springer-Verlag Berlin Heidelberg, 2018. Schmidt-Erfurth E, Kohnen T (eds).6. Meyer JJ. Climatic Droplet Keratopathy (Spheroidal Degeneration). In: Encyclopedia of Ophthalmology. Springer-Verlag Berlin Heidelberg, 2018. Schmidt-Erfurth E, Kohnen T (eds).7. LIM, J.C., VORONTSOVA, I., MARTIS, R.M., DONALDSON, P.J. Animal models in cataract research. In: Conn PM, editor. Animal models for the study of human diseases; 2nd edition. Netherlands: Elsevier; in press8. Brochner, O. & Raynel S. (2016) The Retina, Chapter 21, in Ophthalmic Care. M&K Publishing, UK. Marsden, J. (ed); in press9. Raynel, S. Ward, B. & Slight, C. (2016). The Uveal Tract, Chapter 19, in Ophthalmic Care, M&K Publishing, UK. Marsden, J. (ed); in press10. Craig JP, Downie LE. The tear film in contact lens wear. Phillips and Speedwell (eds.) In: Contact Lenses 6e. Elsevier, UK (in press)
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Peer Reviewed Journal publications:

1. Kim Y, Griffin JM, Harris PWR, Chan SHC, Nicholson LFB, Brimble MA, O'Carroll SJ, Green CR. Characterizing the mode of action of extracellular Connexin43 channel blocking mimetic peptides in an in vitro ischemia injury model. *Biochim Biophys Acta*. 2017; 1861:68-78.
2. Mao Y, Tonkin RS, Nguyen T, O'Carroll SJ, Nicholson LFB, Green CR, Moalem-Taylor G, Gorrie CA. Systemic administration of Connexin43 mimetic peptide improves functional recovery following traumatic spinal cord injury in adult rats. *J Neurotrauma*. 2016; 33:1-13.
3. Greene CA, Green CR, Dickinson ME, Johnson V, Sherwin T. Keratocytes are induced to produce collagen type II: A new strategy for in vivo corneal matrix regeneration. *Exp Cell Res*. 2016; 347:241-249.
4. Willebrords J, Crespo Yanguas S, Maes M, Decrock E, Wang N, Leybaert L, Kwak BR, Green CR, Cogliati B, Vinken M. Connexins and their channels in inflammation. *Crit Rev Biochem Mol Biol*. 2016 Jul 7:1-27. [Epub ahead of print]
5. Guo CX, Nor MNM, Danesh-Meyer HV, Vessey K, Fletcher EL, O'Carroll SJ, Acosta ML, Green CR. Connexin43 mimetic peptide improves retinal function and reduces inflammation in a light damaged albino rat model'. *Investigative Ophthalmology and Visual Science*, 2016; 57: 3961-3973.
6. Li H, He J, Yu H, Green CR, Chang J. Bioglass promotes wound healing by affecting gap junction connexin 43 mediated endothelial cell behavior. *Biomaterials*. 2016; 84:64-75.
7. Kim Y, Davidson JO, Phillips AR, Green CR and Gunn AJ. The role of hemichannels in CNS inflammation and the inflammasome pathway. In: *Ion channels as therapeutic targets. Advances in Protein Chemistry and Structural Biology* 74. 2016.
8. Becker DL, Phillips AR, Duft BJ, Kim Y and Green CR. Translating connexin biology into therapeutics. *Semin Cell Devel Biol*. 2016; 50:49-58. Review.
9. Danesh-Meyer HV, Zhang J, Acosta ML, Rupenthal ID and Green CR. Connexin43 in retinal injury and disease. *Prog Retin Eye Res*. 2016; 51:41-68. PMID: 26432657. Review.
10. Kim BZ, Patel DV, McGhee CN. The Auckland Cataract Study 2: clinical outcomes of phacoemulsification cataract surgery in a public teaching hospital. *Clinical and*

	<p>Experimental Ophthalmology (In press)</p> <p>11. Bhikoo R, Vellara H, McKelvie J, McGhee CNJ, Patel DV. The effect of abnormal stromal protein on the biomechanical properties of the cornea. Clinical and Experimental Optometry (In press)</p> <p>12. Mathan JJ, Patel DV, McGhee CNJ, Patel HY. Analysis of glaucoma subtypes and corresponding demographics in a New Zealand population. Biomedicine Hub (In press)</p> <p>13. Crawford AZ, McKelvie J, McGhee CNJ, Patel DV. Patient characteristics and indications for corneal transplantation in Auckland 1999-2009. Cornea (In press)</p> <p>14. Gokul A, Patel DV, Watters G, McGhee CN. The Natural History of Corneal Topographic Progression of Keratoconus after Age 30 years in Non-contact Lens Wearers. British Journal of Ophthalmology (Epub ahead of print)</p> <p>15. Patel DV. Systemic associations of corneal deposits: a review and photographic guide. Clinical and Experimental Ophthalmology 2016 (Epub ahead of print)</p> <p>16. Fogagnolo P, Lester M, Liang H, Patel DV. Advances in Confocal Microscopy of the Eye. Biomed Res Int 2016 Epub ahead of print</p> <p>17. Vellara HR, Hart R, Gokul A, McGhee CN, Patel DV. In vivo ocular biomechanical compliance in thyroid eye disease Br J Ophthalmol. 2016 Dec 9. pii: bjophthalmol-2016-309532. doi: 10.1136/bjophthalmol-2016-309532. [Epub ahead of print] PMID: 27941044</p> <p>18. Kim BZ, Patel DV, Sherwin T, McGhee CN. The Auckland Cataract Study: assessing preoperative risk stratification systems for phacoemulsification surgery in a teaching hospital. American Journal of Ophthalmology 2016 Epub ahead of print</p> <p>19. Kim BZ, Jordan CA, McGhee CNJ, Patel DV. A prospective study of Scheimpflug analysis of corneal haze after corneal collagen cross-linking in keratoconus. Journal of Cataract and Refractive surgery 2016;42(7):1053-9</p> <p>20. Gokul A, Patel DV, McGhee CN. Dr John Nottingham's 1854 landmark treatise on conical cornea considered in the context of current knowledge of keratoconus. Cornea 2016;35(5):673-8</p> <p>21. Misra SL, Braatvedt GD, Patel DV. Impact of diabetes mellitus on the ocular surface: a review. Clinical and</p>
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	<p>Experimental Ophthalmology 2016;44(4):278-88</p> <p>22. Meyer JJ, Gokul A, Vellara HR, Prime Z, McGhee CN. Repeatability and agreement of Orbscan II, Pentacam HR and Galilei tomography systems in corneas with keratoconus. <i>Am J Ophthalmol.</i> 2016 Dec 16. pii: S0002-9394(16)30599-2. doi: 10.1016/j.ajo.2016.12.003. [Epub ahead of print] PMID: 27993593</p> <p>23. Meyer JJ, McGhee CN. <i>Cornea.</i> Acute Corneal Hydrops Complicated by Microbial Keratitis: Case Series Reveals Poor Immediate and Long-Term Prognosis. 2016 Jul;35(7):1019-22. doi: 10.1097/ICO.0000000000000883. PMID: 27191669</p> <p>24. Meyer JJ, McGhee CN. Incidence, severity and outcomes of traumatic wound dehiscence following penetrating and deep anterior lamellar keratoplasty. <i>Br J Ophthalmol.</i> 2016 Oct;100(10):1412-5. doi: 10.1136/bjophthalmol-2015-307604. PMID: 26858088</p> <p>25. Meyer JJ, Gokul A, Crawford AZ, McGhee CN. Penetrating Keratoplasty for Keratoconus With and Without Resolved Corneal Hydrops: Long-term Results. <i>Am J Ophthalmol.</i> 2016 Sep;169:282-9. doi: 10.1016/j.ajo.2016.07.001. PMID: 27422170</p> <p>26. Bobba S, Di Girolamo N, Mills R, Daniell M, Chan E, Harkin DG, Cronin BG, Crawford G, McGhee C, Watson S. Nature and incidence of severe limbal stem cell deficiency in Australia and New Zealand. <i>Clin Exp Ophthalmol.</i> 2016 Aug 9. doi: 10.1111/ceo.12813. [Epub ahead of print]</p> <p>27. Crawford AZ, Meyer JJ, Patel DV, Ormonde SE, McGhee CNJ. Complications related to sutures following penetrating and deep anterior lamellar keratoplasty. <i>Clin Exp Ophthalmol.</i> 2016 Mar;44(2):142-3. doi: 10.1111/ceo.12635. No abstract available. PMID: 26290274</p> <p>28. Naylor, RW; McGhee, CN J; Cowan, CA; Davidson, AJ; Holm, TM; Sherwin, T. Derivation of Corneal Keratocyte-Like Cells from Human Induced Pluripotent Stem Cells. <i>PloS one</i> 2016 11: e0165464</p> <p>29. Mathan JJ, Ismail S, McGhee JJ, McGhee CNJ, Sherwin T. Sphere-forming cells from peripheral cornea demonstrate the ability to re-populate the ocular surface. <i>Stem Cell Research and Therapy</i> 2016 7(1).</p> <p>30. Greene, CA; Green, CR; Dickinson, ME; Johnson, V; Sherwin, T . Keratocytes are induced to produce collagen type II: A new strategy for in vivo corneal matrix</p>
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	<p>regeneration. <i>Experimental Cell Research</i> 2016 347: 241-249</p> <p>31. Kim BZ; Meyer JJ; Brookes NH; Moffatt SL; Twohill HC; Pendergrast DG; Sherwin T; McGhee CN. New Zealand trends in corneal transplantation over the 25 years 1991-2015. <i>British Journal of Ophthalmology</i> 2016 Sep 15.</p> <p>32. Wilson PJ, Mathan JJ, Ismail S, McGhee JJ, Sherwin T, McGhee CNJ. Autologous Corneal Repair Using In-Vitro Adult Stem Cell Expansion. <i>J. Stem Cell & Regenerative Biology</i>. 2016 2: 1-7.</p> <p>33. Oliver VF, van Bysterveldt KA, Cadzow M, Steger B, Romano V, Markie D, Hewitt AW, Mackey DA, Willoughby CE, Sherwin T, Crosier PS, McGhee CN, Vincent AL. A COL17A1 Splice-Altering Mutation Is Prevalent in Inherited Recurrent Corneal Erosions. <i>Ophthalmology</i>. 2016 123: 709-722</p> <p>34. Seyfoddin A, Sherwin T, Patel DV, McGhee CN, Rupenthal ID, Taylor JA, & Al-Kassas R. Ex vivo and In vivo Evaluation of Chitosan Coated Nanostructured Lipid Carriers for Ocular Delivery of Acyclovir. <i>Current drug delivery</i>. 2016 13: 923-934</p> <p>35. Donaldson PJ, Grey AC, Heilman BM, Lim JC, Vaghefi, E. (2016) The physiological optics of the lens. <i>Progress in Retinal and Eye Research</i>.</p> <p>36. Wu, H. D., Donaldson, P. J., & Vaghefi, E. (2016). Review of the Experimental Background and Implementation of Computational Models of the Ocular Lens Microcirculation. <i>IEEE reviews in biomedical engineering</i>.</p> <p>37. Lim, J. C., Umapathy, A., Grey, A. C., Vaghefi, E., & Donaldson, P. J. (2016). Novel roles for the lens in preserving overall ocular health.. <i>Experimental eye research</i>.</p> <p>38. Sellitto, C., Li, L., Vaghefi, E., Donaldson, P. J., Lin, R. Z., & White, T. W. (2016). The Phosphoinositide 3-Kinase Catalytic Subunit p110α is Required for Normal Lens Growth.. <i>Investigative ophthalmology & visual science</i>, 57(7), 3145-3151.</p> <p>39. Lim, J. C., Vaghefi, E., Li, B., Nye-Wood, M. G., & Donaldson, P. J. (2016). Characterization of the Effects of Hyperbaric Oxygen on the Biochemical and Optical Properties of the Bovine Lens. <i>Investigative ophthalmology & visual science</i>, 57(4), 1961-1973.</p> <p>40. Vaghefi, E., & Pontr�e, B. (2016). Application of Arterial Spin Labelling in the Assessment of Ocular Tissues.. <i>BioMed research international</i>, 2016, 6240504.</p>
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