



# 8<sup>th</sup> International Conference on the Tear Film & Ocular Surface: Basic Science and Clinical Relevance

## Conference Program & Abstract Book

Montpellier, France  
September 7-10, 2016

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**Thanks to those who helped in creating the TFOS Conference Scientific Program**

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## Preface

A significant, international research effort is being directed towards understanding the composition, function and regulation of the precocular tear film. This effort is motivated by the recognition that the tear film plays a critical role in maintaining corneal and conjunctival integrity, protecting against microbial challenge and preserving visual acuity. In addition, research is stimulated by the knowledge that tear film deficiency, which occurs in countless individuals throughout the world, may lead to ocular surface desiccation, corneal ulceration, an increased incidence of infectious disease, and potentially pronounced visual disability.

To promote further progress in this field of vision research, the 8th International Conference on the Tear Film & Ocular Surface: Basic Science and Clinical Relevance will be held at Le Corum in Montpellier, France, from September 7 to 10, 2016. This Conference, which is sponsored by TFOS ([www.TearFilm.org](http://www.TearFilm.org)), is designed to assess the current knowledge and 'state of the art' research on the structure and function of tear film-producing tissues, tears and the ocular surface in both health and disease. The goal of this Conference is to promote an international exchange of information that will be of value to basic scientists involved in eye research, to clinicians in the eye care community, and to pharmaceutical and diagnostic companies with an interest in tear film or ocular surface disorders.

To help achieve this objective, numerous scientists, clinicians and industry representatives from 41 countries, including Algeria, Argentina, Australia, Austria, Belgium, Brazil, Bulgaria, Canada, China, Czech Republic, Denmark, Finland, France, Germany, Ghana, Greece, Iceland, India, Italy, Japan, Mexico, New Zealand, Norway, Poland, Romania, Russia, Singapore, South Africa, South Korea, Spain, Sweden, Switzerland, Thailand, The Netherlands, United Kingdom, United States, Uruguay and Vietnam have registered as participants in this Conference.

This book contains the scientific program, as well as the abstracts of the oral and poster presentations, of this TFOS Conference.

*David A. Sullivan*

## Acknowledgments

TFOS expresses its appreciation to Sabrina Zappia and CITYNet ([www.citynetonline.it](http://www.citynetonline.it)), Julie Karimi and JAKA Congressi ([www.jaka.it](http://www.jaka.it)) and Haydée Marangoni and h.design ([www.hdesign.biz](http://www.hdesign.biz)) for their help with this Conference.

## Recognition

TFOS congratulates the following individuals, who were the recipients of the Conference Young Investigator Awards: Laura Downie (Australia), Masaki Fukui (Japan), Laura García-Posadas (USA), Ulrike Hampel (Germany), Takenori Inomata (USA), Yusuke Izuta (Japan), Arsia Jamali (USA), Kai Jin (Japan), Yu Jeong Kim (South Korea), Isobel Massie (Germany), Hamid-Reza Moein (USA), Céline Portal (France), Martin Schicht (Germany), Yuichi Uchino (Japan) and Stephanie Wan (USA).

Thursday, September 8, 2016

### Opening Remarks

8:00 Dimitri T. Azar, Department of Ophthalmology and Visual Sciences, University of Illinois at Chicago, Chicago, IL, USA

### 6th Claes H. Dohlman Conference Address

*Chairperson – Dimitri Azar (USA)*

8:05 Studying both sexes: a guiding principle for ophthalmology. Janine Clayton, Office of Research on Women's Health, National Institutes of Health, Bethesda, MD, USA

### SESSION I

#### All Eyes On Sex

*Chairpersons - Gerd Geerling (Germany), Laura Downie (Australia), Piera Versura (Italy)*

8:35 **Keynote Address:** Glucocorticoids, sex and inflammation. Mahita Kadmiel and John A. Cidlowski, Signal Transduction Laboratory, NIH/NIEHS, Research Triangle Park, North Carolina, USA

9:00 **Keynote Address:** Sex & the eye: A potentially blinding impact. Louis R. Pasquale, Massachusetts Eye & Ear, Channing Division of Network Medicine, Brigham & Women's Hospital and Harvard Medical School, Boston, MA, USA

9:25 **Keynote Address:** Ménage à trois: Sex, sex steroids and dry eye disease. David A. Sullivan, Yang Liu, Juan Ding and Wendy R. Kam, Schepens Eye Research Institute, Massachusetts Eye and Ear and Harvard Medical School, Boston, MA, USA

9:50 **Poster Session I (with Coffee & Tea)**

*Chairpersons - José M Benitez del Castillo Sanchez (Spain), Darlene A Dartt (USA)*

## Mechanobiological Stresses: Pathways To Ocular Surface Epitheliopathy

*Chairpersons - Christophe Baudouin (France), Ulrike Hampel (Germany), Shigeto Shimmura (Japan)*

- 10:40 **Keynote Address:** Friction, lubrication and wear: the impact of interacting ocular surfaces in relative motion. Tannin A. Schmidt, Faculty of Kinesiology and Schulich School of Engineering, University of Calgary, Calgary, AB, CANADA
- 11:05 **Keynote Address:** Blinking from a Tribological Viewpoint. Heiko Pult, Optometry and Vision Research, Weinheim, Germany; Cardiff University, School of Optometry and Vision Sciences, UK; and Ophthalmic Research Group, Life and Health Sciences, Aston University, Birmingham, UK
- 11:30 **Keynote Address:** Hyperosmolarity-induced glycodeficient corneal epitheliopathy. Benjamin D. Sullivan, TearLab, Inc., San Diego CA. and Lubris BioPharma, Boston MA
- 11:55 **Poster Viewing & Lunch**

### Prime Time TFOS Debates 1

*Chairpersons - Stefan Schrader (Germany), Choun-Ki Joo (South Korea),  
Yu Jeong Kim (South Korea)*

- 13:15 **Debate 1:** Is ex vivo expansion of limbal stem cells necessary for the treatment of limbal stem cell deficiency?

**Yes** – Paolo Rama,<sup>1</sup> Stanislav Matuška,<sup>1</sup> Giorgio Paganoni,<sup>2</sup> Graziella Pellegrini<sup>2</sup> Ophthalmology, San Raffaele Hospital, Milano, Italy;<sup>1</sup> Center for Regenerative Medicine, University of Modena and Reggio Emilia, Italy<sup>2</sup>

**No** – Virender S. Sangwan, L V Prasad Eye Institute, Hyderabad, India

- 13:45 **Debate 2:** Which is the bigger risk factor for dry eye disease: meibomian gland dysfunction (MGD) or contact lens discomfort (CLD)?

**MGD** – Kelly K. Nichols, University of Alabama at Birmingham School of Optometry, Birmingham, AL, USA

**CLD** – Jason J. Nichols, University of Alabama at Birmingham School of Optometry, Birmingham, AL, USA

## Neuropathic Pain

*Chairpersons - Yusuke Izuta (Japan), Deborah S Jacobs (USA), Mark I Rosenblatt (USA)*

- 14:15 **Keynote Address:** Definition and clinical endpoints for chronic neuropathic pain. Elizabeth Felix,<sup>1,2</sup> Constantine D. Sarantopoulos,<sup>1,3</sup> Roy C. Levitt,<sup>1,3,4</sup> and Anat Galor,<sup>1,5</sup> Miami Veterans Administration Medical Center, Miami, Florida;<sup>1</sup> Department of Physical Medicine and Rehabilitation, University of Miami Miller School of Medicine; <sup>2</sup> Department of Anesthesiology, Perioperative Medicine and Pain Management, University of Miami Miller School of Medicine; <sup>3</sup> John T. Macdonald Foundation Department of Human Genetics, and the John P. Hussman Institute of Human Genomics, University of Miami Miller School of Medicine; <sup>4</sup> Bascom Palmer Eye Institute, University of Miami Miller School of Medicine, Miami, FL, USA<sup>5</sup>
- 14:40 **Keynote Address:** Origin of corneal neuropathic pain. Carlos Belmonte, Instituto de Neurociencias, Universidad Miguel Hernandez-CSIC, San Juan de Alicante and Instituto Universitario Fernandez-Vega, Oviedo, Spain
- 15:05 **Keynote Address:** Diagnosis and management of corneal somatosensory dysfunction Anat Galor,<sup>1,2</sup> Constantine D. Sarantopoulos,<sup>1,3</sup> Roy C. Levitt,<sup>1,3,4</sup> Elizabeth R. Felix,<sup>1,5</sup> <sup>1</sup>Miami Veterans Administration Medical Center, Miami, Florida; <sup>2</sup>Bascom Palmer Eye Institute, University of Miami Miller School of Medicine; <sup>3</sup>Department of Anesthesiology, Perioperative Medicine and Pain Management, University of Miami Miller School of Medicine; <sup>4</sup>John T. Macdonald Foundation Department of Human Genetics, and the John P. Hussman Institute of Human Genomics, University of Miami Miller School of Medicine; <sup>5</sup>Department of Physical Medicine and Rehabilitation, University of Miami Miller School of Medicine
- 15:30 **Poster Session I (with Coffee & Tea)**  
*Chairpersons - José M Benitez del Castillo Sanchez (Spain), Darlene A Dartt (USA)*

## Unique Challenges And Unmet Needs For The Treatment Of Ocular Surface Disease In Various Regions Of The World

*Chairpersons – Stefano Barabino (Italy), Cecilia Marini (Argentina), Hamid-Reza Moein (USA)*

- 16:20 **Keynote Address:** India (South Asia). Geetha Iyer, Sankara Nethralaya, Chennai, India
- 16:40 **Keynote Address:** Africa. Kovin S. Naidoo, Brien Holden Vision Institute, Sydney, Australia.
- 17:00 **Keynote Address:** Latin America. Denise de Freitas, Department of Ophthalmology and Visual Sciences, Paulista School of Medicine, Federal University of São Paulo, São Paulo, Brazil
- 17:20 **Keynote Address:** Oceania. Jennifer P. Craig, Department of Ophthalmology, The University of Auckland, New Zealand
- 17:40 **Keynote Address:** United States. Dimitri T. Azar, Department of Ophthalmology and Visual Sciences, University of Illinois at Chicago, Chicago, IL, USA
- 18:00 **Keynote Address:** Europe. Stefano Bonini, Section of Ophthalmology, University of Rome Campus BioMedico, Rome, Italy

## TFOS 7 Innovation Showcase

- 18:30 **Introduction**, Amy Gallant Sullivan, TFOS Executive Director
- 18:34 **EyeFocus** (UK; [www.eyefocus.com](http://www.eyefocus.com)), Tobias Stone, Founder
- 18:40 **Avizorex Pharma** (Spain; [www.avizorex.com](http://www.avizorex.com)), Patrick Tresserras, Chief Executive Officer/Founder
- 18:46 **Cambium Medical Technologies** (USA; [www.cambiumbio.com](http://www.cambiumbio.com)), Terence A. Walts, President & Chief Executive Officer
- 18:52 **Mu-Drop** (The Netherlands; [www.mu-drop.nl](http://www.mu-drop.nl)), Frans Lichtenauer, Chief Executive Officer
- 18:58 **Opia Technologies** (France; [www.opiatech.com](http://www.opiatech.com)), Pierre Roy, Chief Executive Officer
- 19:04 **20/20 Optimeyes** (Canada), Heather Sheardown, Co-Founder
- 19:10 **Signal Ophthalmic Consulting** (USA), Whitney Hauser, Founder
- 19:16 **Suricog** (France; [www.suricog.fr](http://www.suricog.fr)), Benjamin Samuel, Business Developer
- 19:22 **TearSolutions** (USA; <http://www.tearsolutions.com>), Gordon Laurie, Co-Founder

## Poster Session I

*Chairpersons - José M Benitez del Castillo Sanchez (Spain), Darlene A Dartt (USA)*

- 1 HOW COMMON ARE EYELID DISORDERS ACROSS EUROPE? J.M. Benitez del Castillo<sup>(1)</sup>, Z. Zagórski<sup>(2)</sup>, J. Palmares<sup>(3)</sup>, M. Yağmur<sup>(4)</sup>, T. Kaercher<sup>(5)</sup>, B. Van Dooren<sup>(6)</sup>, Dr S. Doan<sup>(7)</sup>, P. Jonckheere<sup>(8)</sup>, P. K. Jensen<sup>(9)</sup>, 1) Hospital Clinico San Carlos, SPAIN 2) Zagorski Eye Surgery Centre, POLAND 3) Hospital Lusíadas, PORTUGAL 4) Cukurova University, TURKEY 5) Augenarztpraxis, GERMANY 6) Erasmus Medical Center, The NETHERLANDS 7) Hôpital Bichat, FRANCE 8) Oogkliniek Deurne, BELGIUM 9) Copenhagen University, DENMARK
- 2 MEIBOGRAPHY: INTER-RATER RELIABILITY. Johanna Boström<sup>1</sup>, Lovisa Pettersson<sup>2</sup>, Dr. Karthikeyan Baskaran<sup>1</sup>, Dr. Fredrik Källmark<sup>3</sup>, Prof. Peter Gierow<sup>1</sup>. <sup>1</sup>Department of Medicine and Optometry, Linnaeus University, Kalmar, Sweden <sup>2</sup>Unit of Optometry, Department of Clinical Neuroscience, Karolinska Institutet, Stockholm, Sweden <sup>3</sup>Källmarkskliniken, Stockholm, Sweden.
- 3 MEIBOMIAN GLAND AND TEAR FILM CHARACTERIZATION IN A HEALTHY UNIVERSITY POPULATION. Carme Serés, Genís Cardona, Cristina Álvarez. School of Optics and Optometry of Terrassa, Universitat Politècnica de Catalunya · BarcelonaTech, Terrassa, Spain.
- 4 AUTOMATED MEASUREMENT OF TEAR FILM DYNAMICS AND LIPID LAYER THICKNESS FOR ASSESSMENT OF NON-SJÖGREN DRY EYE SYNDROME WITH MEIBOMIAN GLAND DYSFUNCTION Tae-im Kim, MD, PhD<sup>1</sup>, Ka Young Lee, MD,<sup>1</sup> Yong Woo Ji, MD,<sup>1</sup> Hun Lee, MD,<sup>1,2</sup> Kyoung Yul Seo,

- MD, PhD,<sup>1</sup> <sup>1</sup>Corneal Dystrophy Research Institute & Institute of Vision Research, Department of Ophthalmology, Severance Hospital, Yonsei University College of Medicine, Seoul, Korea <sup>2</sup>Department of Ophthalmology, International St. Mary's Hospital, Catholic Kwandong University College of Medicine, Incheon, Korea
- 5 CAN MEIBOGRAPHY FAIL TO REVEAL FUNCTIONAL GLAND STRUCTURE? Donald R. Korb<sup>1</sup>, Caroline A Blackie.<sup>2</sup> Korb Research, Boston MA<sup>1</sup>; TearScience, Inc., Morrisville, NC<sup>2</sup>
- 6 IS DRY EYE THE WRONG DIAGNOSIS FOR MILLIONS? Donald R. Korb<sup>1</sup>, Caroline A. Blackie.<sup>2</sup> Korb Research, Boston MA<sup>1</sup>; TearScience, Inc., Morrisville, NC<sup>2</sup>
- 7 INCOMPLETE BLINKING AND MEIBOMIAN GLAND FUNCTION IN A GRADUATE STUDENT COHORT. Christen Kenrick,<sup>1</sup> Amy Nau,<sup>1</sup> Andrew McLeod.<sup>2</sup> Korb & Associates,<sup>1</sup> New England College of Optometry,<sup>2</sup> Boston, MA, USA
- 8 CHARACTERIZATION OF DRY EYE DISEASE AND MEIBOMIAN GLAND DYSFUNCTION AFTER ALLOGENEIC HEMATOPOIETIC STEM CELL TRANSPLANTATION. Marilia Menezes Trindade Ferrer<sup>1</sup>, Melina Veiga Rodrigues<sup>2</sup>, Julia Silvestre Castro<sup>1</sup>, Francisco Penteadó Aranha<sup>2</sup>, Afonso Vigorito<sup>2</sup>, Monica Alves<sup>1</sup>. University of Campinas – UNICAMP, <sup>1</sup>Discipline of Ophthalmology, Faculty of Medical Sciences and <sup>2</sup>Hematopoietic Stem Cell Transplantation Unit, Brazil.
- 9 OCULAR SURFACE AND MEIBOMIAN GLANDS CHANGES AFTER ALLOGENEIC HAEMATOPOIETIC STEM CELL TRANSPLANTATION Kyung-Sun Na.<sup>1</sup>, Young-Sik Yoo,<sup>2</sup> Hyun Seung Kim,<sup>1</sup> Choun-ki Joo, MD, PhD<sup>3</sup>, Department of Ophthalmology and Visual Science, Yeouido St. Mary's Hospital College of Medicine, The Catholic University of Korea, Seoul, Republic of Korea<sup>1</sup>, Laboratory of Visual Science, College of Medicine, The Catholic University of Korea, Seoul, South Korea<sup>2</sup>, Department of Ophthalmology and Visual Science, Seoul St. Mary's Hospital, College of Medicine, The Catholic University of Korea, Seoul, South Korea<sup>3</sup>
- 10 RELATIONSHIP BETWEEN CHEMOTHERAPY-INDUCED LACRIMAL DRAINAGE OBSTRUCTION AND OBSTRUCTIVE MEIBOMIAN GLAND DYSFUNCTION. Jong Suk Song, Youngsub Eom, Hyo Myung Kim. Department of Ophthalmology, Korea University College of Medicine, Seoul, South Korea
- 11 CORRELATION BETWEEN TEAR FILM LIPID LAYER BY INTERFEROMETRY AND SYMPTOMS IN PATIENTS DIABETICS WITH MEIBOMIAN GLAND DYSFUNCTION. Johanna Garzón P.<sup>1,2</sup> Antonio López-Aleman<sup>2</sup>.<sup>1</sup>Optometry-Faculty La Salle's University, Bogotá Colombia. <sup>2</sup>Ocular Surface, Cornea and Contact Lens Research Group "Miguel F. Refojo", University of Valencia, Valencia- Spain.
- 12 CLINICAL FEATURES OF MEIBOMIAN GLAND DYSFUNCTION IN PATIENTS WITH DIABETES TYPE 2. Johanna Garzón P.<sup>1,2</sup> Antonio López-Aleman<sup>2</sup>.<sup>1</sup> Optometry-Faculty La Salle's University, Bogotá Colombia. <sup>2</sup> Ocular Surface, Cornea and Contact Lens Research Group "Miguel F. Refojo", University of Valencia, Valencia- Spain.
- 13 Analysis of Factors Associated with Meibomian Gland Loss and Lipid Layer Thickness in Patients with Dry Eye Syndrome. Yong Woo Ji, MD,<sup>1,2</sup> Ka Young Lee, MD,<sup>1,2</sup> Seonghee Choi, MD,<sup>2</sup> Kyoung Yul Seo, MD, PhD,<sup>1,2</sup> Eung Kweon Kim, MD, PhD,<sup>1,2</sup> Tae-im Kim, MD, PhD<sup>1,2</sup> Corneal Dystrophy Research Institute, Department of Ophthalmology, Severance Hospital, Yonsei University College of Medicine, Seoul, Korea <sup>2</sup>Institute of Vision Research, Department of Ophthalmology, Severance Hospital, Yonsei University College of Medicine, Seoul, Korea



- 14 DEVELOPMENT OF AN MGD GRADING SCALE FOR USE IN CLINICAL PRACTICE. Emma Gibson<sup>1,2</sup>, James Wolffsohn<sup>2</sup>, Fiona Stapleton<sup>1</sup>, Blanka Golebiowski<sup>1</sup>. <sup>1</sup>UNSW, <sup>2</sup>Aston University
- 15 ASSESSMENT OF MEIBOMIAN GLANDS AND TEAR FILM IN POST-REFRACTIVE SURGERY PATIENTS. Ji Won Jung,<sup>1</sup> Da Ham Cho,<sup>2</sup> Jung Yong Kim,<sup>1</sup> Kang Won Lee,<sup>1</sup> Tae-im Kim,<sup>3</sup> Kyoung Yul Seo.<sup>3</sup> Inha University School of Medicine<sup>1</sup>, CHUNCHEON NATIONAL HOSPITAL<sup>2</sup>, Severance Hospital, Yonsei University College of Medicine<sup>3</sup>, South Korea.
- 16 DIFFERENTIAL GENE EXPRESSION OF *RNF182* AND *ITLN1* IN MEIBOMIAN GLAND DYSFUNCTION – A VALIDATION STUDY. Ling Lee,<sup>1,2</sup> Qian Garrett,<sup>2</sup> Subhabrata Chakrabarti,<sup>3</sup> Judith Flanagan,<sup>1,2</sup> Eric Papas.<sup>1,2</sup> Brien Holden Vision Institute,<sup>1</sup> University of New South Wales,<sup>2</sup> Australia, L V Prasad Eye Institute,<sup>3</sup> India
- 17 CORRELATION OF MEIBOMIAN GLAND DROPOUT WITH DRY EYE EVALUATION IN PRIMARY SJÖGREN'S SYNDROME. Karim Mohamed-Noriega, MD, Dr Med,<sup>1</sup> Fernando Morales-Wong, MD;<sup>1</sup> Yunuen Bages-Rousselon, MD,<sup>1</sup> Janett Riega, MD,<sup>2</sup> Dr Med; Mario Garza, MD, PhD,<sup>2</sup> Jesús Mohamed-Hamsho, MD, Dr. Med.<sup>1</sup> Department Of Ophthalmology, Autonomous University Of Nuevo Leon (UANL), Faculty Of Medicine, University Hospital, Monterrey, Mexico.<sup>1</sup> Department Of Rheumatology, Autonomous University Of Nuevo Leon (UANL), Faculty Of Medicine, University Hospital, Monterrey, Mexico.<sup>2</sup>
- 18 TEAR CYTOKINE PROFILES IN MEIBOMIAN GLAND DYSFUNCTION (MGD) TREATED WITH INTENSE PULSED LIGHT (IPL). Moonjung Choi, MD,<sup>1</sup> Soo Jung Han, MA, Ka Young Lee, MD,<sup>1</sup> Hun Lee,<sup>2</sup> Kyoung Yul Seo, MD, PhD.<sup>1</sup> <sup>1</sup>Department of Ophthalmology, Severance Hospital, Yonsei University College of Medicine, Seoul, South Korea <sup>2</sup>Department of Ophthalmology, International St. Mary's Hospital, Catholic Kwandong University College of Medicine, Incheon, South Korea
- 19 EFFECTS AND PROGNOSTIC FACTORS OF KCL 1100® AUTOMATED THERMODYNAMIC SYSTEM FOR MEIBOMIAN GLAND DYSFUNCTION. Tae-Young Chung, Department of Ophthalmology, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea (South)
- 20 ILUX SYSTEM FOR MEIBOMIAN GLAND TREATMENT – REPORT OF SAFETY ASSESSMENT ON HEALTHY VOLUNTEERS. Paul M. Karpecki, OD, FAAO, Kentucky Eye Institute, Lexington, KY; James P. Owen, OD, FAAO, Encinitas Optometry, Encinitas, CA
- 21 MEIBOMIAN GLAND DYSFUNCTION; ONLINE MANAGEMENT USING EYECALM - A COMMERCIAL CLINICAL DECISION SUPPORT SYSTEM COMPARED TO “USUAL CARE” USING PATIENT RELATED OUTCOME MEASURES. Clarkin L, Wood V, Ross H, Billing A, Taylor D, Pilling S, Jones M Eye Department, Arrowe Park Hospital, Upton, Wirral, CH49 5PE, UK
- 22 EFFICACY OF A SINGLE LIPIFLOW THERMAL PULSATION TREATMENT ON MEIBOMIAN GLAND DYSFUNCTION IN A DRY EYE COHORT FROM ASIA. Tushar Grover, Natasha Pahuja, Rohit Shetty, Harsha Nagaraj, Narayana Nethralaya Super Speciality Eye Hospital and Postgraduate Institute, Bengaluru, India
- 23 EVALUATION OF RADIO FREQUENCY THERMISTOR FOR USE IN MGD DRY EYE TREATMENT. David Meadows<sup>1</sup>, Ph.D., Mike Christensen<sup>2</sup>, OD, Ph.D., Rachel Grant<sup>2</sup>, OD, Whitney Hauser<sup>2</sup>, OD, Christina Newman<sup>2</sup>, OD, Al Kabat<sup>2</sup>, OD, Greg Almond<sup>1</sup>. <sup>1</sup> ThermiGen LLC, <sup>2</sup> Southern College of Optometry

- 24 INTENSE PULSED LIGHT THERAPY FOR MEIBOMIAN GLAND DYSFUNCTION. Tae Hyung Lim<sup>1</sup>, MD, PhD, Seok Joon Kong<sup>1</sup>, MD, Young Joo Cho<sup>1</sup>, MD, Sang Youp Han<sup>2</sup>, MD, Jae Lim Chung<sup>3</sup>, MD, Kyoung Yul Seo<sup>4</sup>, MD, PhD HanGil Eye Hospital, Incheon, Korea<sup>1</sup>, Sungmo Eye Hospital, Busan, Korea<sup>2</sup>, Myung-Gok Eye Research Institute, Department of Ophthalmology, Kim's Eye Hospital, Konyang University College of Medicine, Seoul, Korea<sup>3</sup>, The Institute of Vision Research, Department of Ophthalmology, Yonsei University College of Medicine, Seoul, Korea<sup>4</sup>
- 25 EVALUATION OF THE SAFETY AND EFFECTIVENESS OF INTENSE PULSED LIGHT IN THE TREATMENT OF MEIBOMIAN GLAND DYSFUNCTION. Lu Huibin<sup>1</sup>, Jiang Xiaodan<sup>1</sup>, Zhang Mingzhou<sup>1</sup>, Liu Yan<sup>1</sup>, Hu Xiaodan<sup>1</sup>, Li Xuemin<sup>1</sup>, Wang Wei<sup>1</sup> <sup>1</sup>Department of Ophthalmology, Peking University Third Hospital, Beijing, China
- 26 EFFICACY OF INTENSE REGULATED PULSED LIGHT THERAPY IN MEIBOMIAN GLAND DYSFUCTION RELATED DRY EYE. Serge DOAN, Iris VAN HOLLEBECKE, Damien GUINDOLET, Isabelle COCHEREAU, Eric GABISON, Fondation A de Rothschild and Bichat Hospital, Paris, France
- 27 CONJUNCTIVAL INFLAMMATION AFTER PUNCTAL PLUGGING FOR SEVERE DRY EYE. Serge DOAN<sup>1</sup>, Luisa RIANCHO<sup>2</sup>, Karima KESSAL<sup>2</sup>, Christophe BAUDOUIN<sup>2,3</sup>, Françoise BRIGNOLE-BAUDOUIN<sup>2,3</sup> <sup>1</sup> - Fondation A de Rothschild and Bichat Hospital, Paris, France; <sup>2</sup> - UPMC University, Paris 6, Vision Institute, INSERM UMRS968, CNRS UMR7210, Paris, France; <sup>3</sup> - Quinze-Vingts National Ophthalmology Hospital, Paris, France
- 28 EFFECTS OF MECHANICAL MEIBOMIAN GLAND SQUEEZING ON CLINICAL OUTCOMES AND TEAR FILM LIPID LAYER THICKNESS IN MODERATE AND SEVERE MEIBOMIAN GLAND DYSFUNCTION. Hun Lee<sup>1,2</sup>, Yong Woo Ji<sup>2</sup>, Ka Young Lee<sup>2</sup>, MoonJung Choi<sup>2</sup>, Si Yoon Park<sup>2</sup>, Eung Kweon Kim<sup>2</sup>, Kyoung Yul Seo<sup>2</sup>, Tae-im Kim<sup>2</sup> <sup>1</sup>Department of Ophthalmology, International St. Mary's Hospital, Catholic Kwandong University College of Medicine, Incheon, South Korea <sup>2</sup>The Institute of Vision Research, Department of Ophthalmology, Yonsei University College of Medicine, Seoul, South Korea
- 29 PRACTICAL APPROACH TO MEIBOMIAN GLAND PROBBING; María Noel Suárez, Clínica de Ojos Montevideo, Montevideo, Uruguay
- 30 SURFACE INTERACTION OF LACRITIN C-TERMINAL SYNTHETIC PEPTIDES WITH HUMAN MEIBUM FILMS. Yana Nencheva,<sup>1</sup> Craig Struble,<sup>2</sup> Gordon W. Laurie,<sup>3</sup> Georgi As. Georgiev<sup>1</sup> <sup>1</sup>Department of Optics and Spectroscopy, Faculty of Physics, St. Kliment Ohridski University of Sofia, Sofia, Bulgaria <sup>2</sup>Covance, Madison WI, USA <sup>3</sup>Department of Cell Biology, University of Virginia School of Medicine, Charlottesville, VA USA
- 31 SURFACE INTERACTIONS OF DIQUAFOSOL AND CHLOHEXIDINE GLUCONATE WITH HUMAN MEIBUM FILMS. Georgi As. Georgiev,<sup>1</sup> Norihiko Yokoi,<sup>2</sup> Yana Nencheva<sup>1</sup> <sup>1</sup>Department of Optics and Spectroscopy, Faculty of Physics, St. Kliment Ohridski University of Sofia, Sofia, Bulgaria <sup>2</sup>Department of Ophthalmology, Kyoto Prefectural University of Medicine, Kyoto, Japan
- 32 SURFACE INTERACTIONS OF CATIONIC NANOEMULSIONS WITH HUMAN MEIBUM FILMS. Philippe Daull<sup>1</sup>, Norihiko Yokoi<sup>2</sup>, Yana Nencheva<sup>3</sup>, Georgi As. Georgiev.<sup>3</sup> <sup>1</sup>Santen SAS, Evry, France, <sup>2</sup>Department of Ophthalmology, Kyoto Prefectural University of Medicine, Kyoto, Japan, <sup>3</sup>Faculty of Physics, University of Sofia "St. Kliment Ohridski", Bulgaria

- 33 TOWARD AN UNDERSTANDING OF THE ROLES OF MEIBUM LIPIDS AND DIETARY FAT IN DRY EYE DISEASES. Jillian Meadows,<sup>1</sup> Jianzhong Chen,<sup>1</sup> Kari Green,<sup>2</sup> Jason Nichols,<sup>1</sup> Kelly Nichols<sup>1</sup> <sup>1</sup>University of Alabama at Birmingham, School of Optometry <sup>2</sup>University of Florida, Department of Chemistry
- 34 LIPID ORDER, SATURATION AND SURFACE PROPERTIES OF HUMAN MEIBUM. Douglas Borchman,<sup>1</sup> Poonam Mudgil,<sup>2</sup> Rahul Bhola.<sup>1</sup> <sup>1</sup>Department of Ophthalmology and Visual Sciences, University of Louisville, Louisville, KY, USA, <sup>2</sup>School of Medicine, University of Western Sydney, Penrith NSW, Australia
- 35 COMPOSITIONAL ANALYSIS OF  $\omega$ -HYDROXY FATTY ACID-BASED DIESTERS IN HUMAN MEIBUM. Jianzhong Chen, Kelly Nichols. School of Optometry, University of Alabama at Birmingham, Birmingham, AL, USA
- 36 CHANGE OF TEAR LIPID LAYER THICKNESS AND MEIBOMIAN GLAND STRUCTURES AFTER CATARACT SURGERY. Si Yoon Park, M.D<sup>1</sup>, Yong Woo Ji, M.D<sup>1</sup>, Sang Ah Kim, M.D<sup>1</sup>, Tae-im Kim, M.D, Ph.D<sup>1,2</sup>, <sup>1</sup>The Institute of Vision Research, Department of Ophthalmology, Yonsei University College of Medicine, Seoul, South Korea, <sup>2</sup>Corneal Dystrophy Research Institute, Severance Biomedical Science Institute, and Brain Korea 21 Plus Project for Medical Science, Yonsei University College of Medicine, Seoul, South Korea.
- 37 DIETARY FACTORS ASSOCIATED WITH MEIBOMIAN GLAND AND TEAR FUNCTIONS IN AN ADULT POPULATION. Nisha Yeotikar,<sup>1</sup> Judith Flanagan,<sup>1</sup> Thomas Naduvilath,<sup>1</sup> Maria Markoulli,<sup>2</sup> Eric Papas.<sup>2</sup> Brien Holden Vision Institute,<sup>1</sup> School of Optometry & Vision Science,<sup>2</sup> University of New South Wales, Sydney, Australia
- 38 *IN VITRO* EFFECTS OF SEX HORMONES IN HUMAN MEIBOMIAN GLAND EPITHELIAL CELLS. Fabian Garreis<sup>1</sup>, Antje Schröder<sup>1</sup>, Daniel B. Abrar<sup>1</sup>, Ulrike Hampel<sup>1,2</sup>, Martin Schicht<sup>1</sup> and Friedrich Paulsen<sup>1</sup>.<sup>1</sup>Department of Anatomy II, Friedrich Alexander University Erlangen-Nürnberg (FAU), Erlangen, Germany; <sup>2</sup>Department of Ophthalmology, Gutenberg University Mainz, Germany
- 39 HUMAN MEIBOMIAN GLAND EPITHELIAL CELLS PROTECT CORNEAL EPITHELIAL CELLS FROM BAK INDUCED TOXICITY. Elham Ghahari E, Medi Eslani M, Gidfar Sanaz, Ali R. Djalilian. University of Illinois Eye and Ear Infirmary, University of Illinois at Chicago, Chicago, IL
- 40 CELL VIABILITY AND PROTEIN EXPRESSION OF HUMAN AMNIOTIC MEMBRANE IN DIFFERENT PRESERVATION METHODS. Jung Huh, Jea-Chan Kim,. Department of Ophthalmology, Chung-Ang University Hospital.
- 41 EXPRESSION OF P63 AND CHROMATIN FUNCTIONAL STATES FROM LIMBAL EPITHELIAL CELLS GROWN ON SYNTHETIC VERSUS DENUDED HUMAN AMNIOTIC MEMBRANE. Marcela Aldrovani,<sup>1</sup> Ivan R.M. Padua,<sup>1</sup> Livia P. Coelho,<sup>1</sup> Priscila C. Cristovam,<sup>2</sup> José L. Laus,<sup>1</sup> José A.P. Gomes.<sup>2</sup> Department of Small Animal Medicine and Surgery, Faculty of Agrarian and Veterinary Sciences, UNESP Jaboticabal, SP, Brazil,<sup>1</sup> Ocular Surface Advanced Center, Federal University of São Paulo, UNIFESP São Paulo, SP, Brazil.<sup>2</sup>
- 42 COLLAGEN FIBER ORIENTATION AND THICKNESS IN THE HUMAN AMNIOTIC STROMA BEFORE AND AFTER CELL CULTURE. Marcela Aldrovani,<sup>1</sup> Gisele P. Valdetaro,<sup>1</sup> Livia P. Coelho,<sup>1</sup> Priscila C. Cristovam,<sup>2</sup> José L. Laus,<sup>1</sup> José A.P. Gomes.<sup>2</sup> Department of Small Animal Medicine and Surgery, Faculty of Agrarian and Veterinary Sciences, UNESP Jaboticabal, SP, Brazil,<sup>1</sup> Ocular Surface Advanced Center, Federal University of São Paulo, UNIFESP São Paulo, SP, Brazil.<sup>2</sup>

- 43 CONCANAVALLIN A-POSITIVE GLYCOPROTEINS IN THE NUCLEI OF CORNEAL LIMBAL EPITHELIAL CELLS. Marcela Aldrovani,<sup>1</sup> Karina K. Kobashigawa,<sup>1</sup> Livia P. Coelho,<sup>1</sup> Priscila C. Cristovam,<sup>2</sup> José L. Laus,<sup>1</sup> José A.P. Gomes.<sup>2</sup> Department of Small Animal Medicine and Surgery, Faculty of Agrarian and Veterinary Sciences, UNESP Jaboticabal, SP, Brazil,<sup>1</sup> Ocular Surface Advanced Center, Federal University of São Paulo, UNIFESP São Paulo, SP, Brazil.<sup>2</sup>
- 44 RECONSTRUCTION OF OCULAR SURFACE BY THE TRANSPLANTATION OF LIMBAL EPITHELIAL CELLS CULTURED IN TRIDIMENSIONAL SYSTEM (SANDWICH METHOD). Karina K. Kobashigawa.<sup>1</sup> Marcela Aldrovani,<sup>1</sup> Alexandre A.F. Barros Sobrinho,<sup>1</sup> Livia P. Coelho,<sup>1</sup> Paloma E.S. Silva,<sup>1</sup> Paulo F. Marcusso,<sup>2</sup> Fausto A. Marinho Neto,<sup>2</sup> Priscila C. Cristovam,<sup>3</sup> José A.P. Gomes,<sup>3</sup> José L. Laus.<sup>1</sup> Department of Small Animal Medicine and Surgery, Faculty of Agrarian and Veterinary Sciences, UNESP Jaboticabal, SP, Brazil,<sup>1</sup> Department of Veterinary Clinical Medicine and Surgery, UNESP Jaboticabal, SP, Brazil,<sup>2</sup> Ocular Surface Advanced Center, Federal University of São Paulo, UNIFESP São Paulo, SP, Brazil.<sup>2</sup>
- 45 TRANSPLANTATION OF SUBSTRATE-FREE CULTURED ORAL MUCOSAL EPITHELIAL CELL SHEETS (COMECS) IN TREATMENT OF LIMBAL STEM CELL DEFICIENCY. Yu Jeong Kim,<sup>1,2</sup> Jaeyoung Kim,<sup>1,2</sup> Hyun Ju Lee,<sup>2</sup> Jin Suk Ryu,<sup>2</sup> Yun Hee Kim<sup>3</sup>, Saewha Jeon<sup>3</sup>, Mee Kum Kim,<sup>1,2</sup> Won Ryang Wee.<sup>1,2</sup> Department of Ophthalmology, Seoul National University College of Medicine, Seoul, Korea<sup>1</sup> Laboratory of Ocular Regenerative Medicine and Immunology, Seoul National University Hospital Biomedical Research Institute, Seoul. Korea<sup>2</sup> Cutigen Research Institute, Tego Science Inc., Seoul, Korea<sup>3</sup>
- 46 LONG-TERM HOMEOSTASIS IN AN *IN VITRO* EPITHELIAL STEM CELL NICHE MODEL. Shigeto Shimmura, Hideyuki Miyashita, Hiroko Niwano, Satoru Yoshida, Shin Hatou, Emi Inagaki, and Kazuo Tsubota, Department of Ophthalmology, Keio University School of Medicine
- 47 EFFECTS OF INTERMITTENT SHEAR STRESS ON CORNEAL EPITHELIAL CELLS USING AN *IN VITRO* FLOW CULTURE MODEL. Ulrike Hampel<sup>1,2</sup>, Fabian Burgemeister<sup>2</sup>, Nicole Eßel<sup>2</sup>, Friedrich Paulsen<sup>2</sup>. <sup>1</sup> Department of Ophthalmology, University Medical Center of the Johannes Gutenberg University Mainz, Mainz, Germany, <sup>2</sup> Department of Anatomy II, Friedrich-Alexander University, Erlangen, Germany
- 48 EXPRESSION OF K<sup>+</sup> CHANNELS BY HUMAN CORNEAL LIMBAL EPITHELIAL CELLS. John L. Ubels<sup>1</sup>, Mark P. Schotanus<sup>1</sup>, Peter M. Boersma<sup>1,2</sup>, Loren D. Haarsma<sup>2</sup>. Departments of Biology<sup>1</sup> and Physics<sup>2</sup>, Calvin College, Grand Rapids, MI, USA
- 49 COMPARISON OF CYTOTOXICITY AND WOUND HEALING OF DIQUAFOSOL TETRASODIUM AND HYALURONIC ADIS ON HUMAN CORNEAL EPITHELIAL CELLS. Jieun Lee,<sup>1,2</sup> Jonghun Lee,<sup>1,2</sup> Jongsoo Lee.<sup>1,2</sup> Department of Ophthalmology, School of Medicine, Pusan National University, Pusan, Korea,<sup>1</sup> Research Institute for Convergence of Biomedical Science and Technology, Pusan National University Yangsan Hospital, Yangsan, Korea<sup>2</sup>
- 50 IMPACT OF HYALURONIC ACID CONTAINING ARTIFICIAL TEAR PRODUCTS ON RE-EPITHELIALIZATION IN AN *IN VIVO* CORNEAL WOUND MODEL. Abayomi Ogundele<sup>1</sup>, Winston W.Y. Kao<sup>2</sup>, Eric Carlson<sup>1</sup> Alcon Research Ltd., Fort Worth, Texas, USA<sup>1</sup>; Department of Ophthalmology, College of Medicine at the University of Cincinnati, Ohio, USA<sup>2</sup>

- 51 CLINICAL OUTCOMES FOLLOWING USE OF THE DUAL POLYMER HYDROXYPROPYL GUAR/HYALURONIC ACID-BASED LUBRICANT EYE DROPS IN PATIENTS WITH DRY EYE. Christophe Baudouin,<sup>1</sup> Stefanie Schmickler,<sup>2</sup> David Galarreta,<sup>3</sup> Florence Malet,<sup>4</sup> Abayomi Ogundele,<sup>5</sup> Christine Rosko,<sup>5</sup> Guillon Michel,<sup>6</sup> Marc Labetoulle.<sup>7</sup> Quinze-Vingts National Ophthalmology Hospital, Paris, France, <sup>2</sup>Augen-Zentrum-Nordwest Augenpraxis Ahaus, Germany, <sup>3</sup>Hospital Clinico Universitario de Valladolid, Valladolid, Spain; <sup>4</sup>Centre PointVision Bordeaux, France, <sup>5</sup>Alcon Research Ltd., Fort Worth, Texas, US, <sup>6</sup>Ocular Technology Group, London, UK, <sup>7</sup>Ophthalmologie Hôpital Bicêtre, South Paris Université, Kremlin-Bicêtre, France
- 52 Enhanced Wound Healing in Human Corneal Epithelium in Response to Histatin-1 Application. Dhara Shah<sup>1</sup>; Marwan Ali<sup>1</sup>; Vinay K. Aakalu<sup>1</sup> Ophthalmology and Visual Sciences, University of Illinois at Chicago, Chicago, IL, USA
- 53 CONJUNCTIVAL EPITHELIAL CELLS CHANGES AFTER THE TREATMENT WITH 0.2% XANTHAN GUM EYE DROPS IN MODERATE DRY EYE. Pasquale Aragona,<sup>1</sup> Elisa Postorino,<sup>1</sup> Laura Rania,<sup>1</sup> Rosaria Spinella,<sup>1</sup> Emanuela Aragona,<sup>1</sup> Domenico Puzzolo,<sup>1</sup> Anna Maria Livia Mazza,<sup>2</sup> Vincenzo Papa.<sup>2</sup> Dept. of Biomedical Sciences,<sup>1</sup> University of Messina, Italy, Medical Affairs,<sup>2</sup> SIFI S.p.A., Catania, Italy.
- 54 AN INFLAMMATORY GENE PROFILE OF HUMAN CONJUNCTIVAL EPITHELIAL CELLS IN DRY EYE DISEASE Suzanne Hagan<sup>1</sup>, Boatemaa Omotayo<sup>1</sup>, Katherine Oliver<sup>1</sup>, Michael Doughty<sup>1</sup>, Claire Walshe<sup>2</sup>. <sup>1</sup>Vision Sciences, Glasgow Caledonian University, Glasgow; <sup>2</sup>Topivert Pharma Ltd, Imperial Biocubator, London, UK.
- 55 EUPHRASIA PROTECTS HUMAN CONJUNCTIVAL CELLS FROM ULTRAVIOLET LIGHT-INDUCED CELL DAMAGE. Andrea Heidinger, Otto Schmut, Dieter Rabensteiner, Marianne Nitsche-Resch, Ingrid Boldin, Jutta Horwath-Winter, Andreas Wedrich. Department of Ophthalmology, Medical University of Graz, Austria.
- 56 ROLE OF mTOR SIGNALING IN PTERYGIUM FIBROBLASTS Sunwoong Kim<sup>1</sup>, Hyein Kim<sup>2</sup>, Keunwook Lee<sup>2</sup> <sup>1</sup>Department of ophthalmology, Yonsei University Wonju Collge of Medicine, Wonju, Korea <sup>2</sup>Department of Biomedical Science, Hallym University, Chuncheon, Korea
- 57 THE EFFECT OF TOPICAL DIQUAFOSOL TETRASODIUM 3% ON TEAR FILM AND CONJUNCTIVAL GOBLET CELLS AFTER CATARACT SURGERY IN PATIENTS WITH DRY EYE DISEASE. Lian Cui<sup>1,2</sup>, Hyo Seok Lee<sup>1</sup>, Ying Li<sup>1,2</sup>, Kyung Chul Yoon<sup>1,2</sup> <sup>1</sup>Department of Ophthalmology, Chonnam National University Medical School and hospital, Gwangju, South Korea <sup>2</sup>Department of Biomedical Sciences and Center for Creative Biomedical Scientists at Chonnam National University, Gwangju, South Korea
- 58 STAPHYLOCOCCUS AUREUS-INDUCED MUCIN SECRETION BY CONJUNCTIVAL GOBLET CELLS: DEPENDENCY ON NLRP3 INFLAMMASOME ACTIVATION AND RELEASE OF MATURE IL-1 $\beta$  Darlene Dartt, Dayu Li, Marit Lippestad, Robin Hodges, Michael Gilmore, and Meredith Gregory-Ksander. Schepens Eye Research Institute/Massachusetts Eye and Ear, and Department of Ophthalmology, Harvard Medical School, Boston, MA, School of Dental Medicine and School of Medicine, University of Oslo, Oslo Norway

- 59 CONJUNCTIVAL GOBLET CELL REGULATION BY ALLERGIC MEDIATORS. Laura García-Posadas,<sup>1,2</sup> Yolanda Diebold,<sup>3</sup> Darlene A. Dartt,<sup>1,2</sup> Schepens Eye Research Institute/MEEI, Boston, MA, USA,<sup>1</sup> Department of Ophthalmology, Harvard Medical School, Boston, MA, USA,<sup>2</sup> IOBA-University of Valladolid, Valladolid, Spain.<sup>3</sup>
- 60 PRECLINICAL MOUSE MODEL TO MONITOR LIVE CONJUNCTIVAL GOBLET CELL DIFFERENTIATION UNDER PHARMACOLOGICAL TREATMENTS. Portal C<sup>1</sup>, Gouyer V<sup>1</sup>, Gottrand F<sup>1</sup>, Desseyn JL<sup>1</sup>. <sup>1</sup>LIRIC UMR995; Inserm/Université de Lille; CHU de Lille, Lille, France
- 61 UPPER AND LOWER CONJUNCTIVAL FORNIX DEPTH IN HEALTHY WHITE CAUCASIAN EYES: A METHOD OF OBJECTIVE ASSESSMENT. Valerie Saw,<sup>1,2</sup> David Carpenter,<sup>1</sup> Scott Hau,<sup>1</sup> Debbie Booth,<sup>1</sup> Haneen Jasim,<sup>1</sup> Gurjeet Jutley.<sup>1</sup> Moorfields Eye Hospital,<sup>1</sup> UCL Institute of Ophthalmology,<sup>2</sup> London, UK
- 62 EYE DISEASE FROM DIAGNOSIS TO TREATMENT: A SURVEY OF PATIENTS WITH AND WITHOUT SJÖGREN'S SYNDROME IN EUROPE. Francisco C. Figueiredo,<sup>1</sup> Marc Labetoulle,<sup>2</sup> Maurizio Rolando,<sup>3</sup> Gysbert van Setten,<sup>4</sup> Elisabeth M. Messmer.<sup>5</sup> Dept. of Ophthalmology, Royal Victoria Infirmery and Newcastle University, Newcastle upon Tyne, UK,<sup>1</sup> Ophthalmology Dept. Bicêtre Hospital, APHP, South Paris University, France,<sup>2</sup> University of Genoa, Genoa, Italy,<sup>3</sup> St Eriks Eye Hospital, Stockholm, Sweden,<sup>4</sup> Dept. of Ophthalmology, Ludwig-Maximilians University, Munich, Germany<sup>5</sup>
- 63 COMPARISON OF LONG TERM CLINICAL RESULTS OF LIMBAL CONJUNCTIVAL AUTOGRAFT VERSUS AMNIOTIC MEMBRANE TRANSPLANTATION IN PRIMARY PTERYGIUM SURGERY. Hyung Joon Kim<sup>1</sup>, Suk Jin Hwang.<sup>1</sup> Department of Ophthalmology<sup>1</sup>, Daegu Catholic University Hospital, Daegu, Korea
- 64 OCULAR SURFACE AND TEAR FILM FUNCTION FOLLOWING MODIFIED HUGHES TARSOCONJUNCTIVAL FLAP PROCEDURE. Rabensteiner DF<sup>1</sup>, Boldin I<sup>1</sup>, Klein-Theyer A<sup>1</sup>, Heidinger A<sup>1</sup>, Riedl R<sup>2</sup>, Horwath-Winter J<sup>1</sup>. Department of Ophthalmology<sup>1</sup>, Institute for Medical Informatics, Statistics and Documentation<sup>2</sup>, Medical University of Graz, Austria
- 65 INTERPLAY BETWEEN EYE MICROBIOME AND DRY EYE DISEASE IN INDIAN PATIENTS. Noopur Gupta,<sup>1</sup> Amit Sharma,<sup>2</sup> Vanathi M, <sup>1</sup> Jyoti Chibber,<sup>2</sup> Radhika Tandon, <sup>1</sup> <sup>1</sup>Dr. Rajendra Prasad Centre for Ophthalmic Sciences, AIIMS, New Delhi, India, <sup>2</sup> International Centre for Genetic Engineering and Biotechnology, New Delhi, India
- 66 CHANGING PATTERNS OF MICROBIAL KERATITIS. Sanjay Marasini<sup>1</sup>, Simon Swift<sup>2</sup>, Simon J. Dean<sup>1</sup>, Sue Ormonde<sup>1</sup>, Jennifer P. Craig.<sup>1</sup> <sup>1</sup>Department of Ophthalmology, and <sup>2</sup>Department of Molecular Medicine and Pathology, University of Auckland, New Zealand
- 67 LOW POWER NARROWBAND UVC EFFECTIVELY INHIBITS BACTERIAL PROLIFERATION IN A GEL-LIKE MEDIUM. Sanjay Marasini<sup>1</sup>, Simon Swift<sup>2</sup>, Simon J. Dean<sup>1</sup>, Jennifer P. Craig.<sup>1</sup> <sup>1</sup>Department of Ophthalmology, <sup>2</sup>Department of Molecular Medicine and Pathology, University of Auckland, New Zealand
- 68 OCULAR SURFACE MICROBIOME IN PATIENTS WITH DRY EYE CAUSED BY CHRONIC GRAFT-VERSUS-HOST DISEASE (CGVHD). Eisuke Shimizu, Yoko Ogawa, Yumiko Saijo, Mio Yamane, Shin Mukai, Miki Uchino, Mizuka Kamoi, Masaki Fukui, Kazuo Tsubota Department of Ophthalmology Keio University School of Medicine

- 69 IL-1R CONTRIBUTES TO THE ABSENCE OF A MICROBIOME AT THE MOUSE CORNEAL SURFACE. Stephanie Wan<sup>1</sup>, Aaron Sullivan<sup>1</sup>, Peyton Shieh<sup>2</sup>, Carolyn Bertozzi<sup>3</sup>, David Evans<sup>1,4</sup>, Suzanne Fleiszig<sup>1</sup> 1. Optometry, UC Berkeley, 2. Chemistry, UC Berkeley 3. Chemistry, Stanford University, 4. College of Pharmacy, Touro University
- 70 THE BACTERIAL PROFILES AMONG MGD, ADDE AND HEALTHY CONTROLS. Jiang Xiaodan, Lu Huibin, Zhou Peng, Wen Yiting, Li Xuemin. Department of Ophthalmology, Peking University Third Hospital, Beijing, China
- 71 COMMENSAL OCULAR MICROFLORA AND TEAR PARAMETERS IN A NORMAL POPULATION. Judith Flanagan<sup>1,2</sup>, Nisha Yeotikar<sup>1</sup>, Hua Zhu<sup>1,2</sup> 1. Brien Holden Vision Institute, Sydney, Australia 2. School of Optometry and Vision Sciences, UNSW, Sydney, Australia.
- 72 COMPARISON OF CLINICAL FEATURES, ANTIBIOTICS SUSCEPTIBILITY, AND TREATMENT OUTCOME ACCORDING TO METHICILLIN SENSITIVITY IN *STAPHYLOCOCCUS AUREUS* KERATITIS. Sang-Bumm Lee, Janghwan Ahn. Department of Ophthalmology, Yeungnam University College of Medicine, Daegu, Korea
- 73 MUTATIONS IN THE QUORUM SENSING GENE *LASR* ARE ASSOCIATED WITH WORSE CLINICAL OUTCOMES IN *PSEUDOMONAS AERUGINOSA* KERATITIS. Zegans M, Hammond J, Hebert W, Ray K, Naimie A1, Lalitha P, Srinivasan M, Acharya NR, Toutain-Kidd C, Lietman TM, DiGiandomenico A, Hogan D. Dartmouth Geisel School of Medicine, Lebanon, NH, USA
- 74 UNRAVELING LACRIMAL GLAND STEM CELL DYNAMICS BY LINEAGE TRACING. Natalie Tanke<sup>1</sup>, Geraint Parfitt<sup>2</sup>, Takeshi Umazume<sup>1</sup>, Pamela Segura<sup>1</sup>, Ivo Kalajzic<sup>3</sup> James V. Jester<sup>2</sup>, Darlene A. Dartt<sup>4</sup> and Helen P. Makarenkova<sup>1</sup> <sup>1</sup>The Scripps research institute, Department of Cell and Molecular Biology, La Jolla, CA, USA; <sup>2</sup>University of California, Gavin Herbert Eye Institute, Irvine, CA, USA, <sup>3</sup>Center for Regenerative Medicine and Skeletal Development, School of Dental Medicine Department of Reconstructive Sciences University of Connecticut Health Center, Farmington, USA <sup>4</sup>Schepens Eye Research Institute/Massachusetts Eye and Ear, Department of Ophthalmology, Harvard Medical School, Boston, MA, USA.
- 75 LACRIMAL GLAND EPITHELIAL CELL METABOLIC ACTIVITY AND FUNCTION ON A DECELLULARISED SCAFFOLD IS INCREASED USING A DYNAMIC CULTURE FORMAT. Isobel Massie<sup>1</sup>, Kristina Spaniol<sup>2</sup>, Gerd Geerling<sup>2</sup>, Marco Metzger<sup>3</sup>, Stefan Schrader<sup>1,2</sup>. Laboratory of Experimental Ophthalmology,<sup>1</sup> Eye Clinic,<sup>2</sup> UKD, Düsseldorf, Dept of Tissue Engineering and Regenerative Medicine, UKW, Würzburg,<sup>3</sup> Germany
- 76 IN VIVO VISUALIZATION OF Ca<sup>2+</sup> DYNAMICS OF MYOEPIHELIAL CELLS IN LACRIMAL GLAND. Kai Jin<sup>1</sup>, Toshihiro Imada<sup>1</sup>, Yusuke Izuta<sup>1</sup>, Shigeru Nakamura<sup>1</sup>, Takahiro Adachi<sup>2</sup>, Kazuo Tsubota<sup>1</sup> Department of Ophthalmology, Keio University, Tokyo, Japan<sup>1</sup> Department of Immunology, Tokyo Medical and Dental University, Tokyo, Japan<sup>2</sup>
- 77 RNASEQ PROFILING OF REGENERATING LACRIMAL GLAND IDENTIFIES MYOEPIHELIAL CELLS AS POTENTIAL PLAYERS IN TISSUE REPAIR. Dillon Hawley<sup>1</sup>, Claire Kublin<sup>1</sup>, Audrey Michel<sup>1</sup>, Lisa Clapissou<sup>1</sup>, Jian Ding<sup>2</sup>, Michael Mingueneau<sup>2</sup>, Driss Zoukhri<sup>1</sup> <sup>1</sup>Tufts University School of Dental Medicine, Boston, MA 02111 <sup>2</sup>Biogen, 225 Binney Street, Cambridge, MA 02142

- 78 MECHANISMS AND MOLECULAR REGULATION OF LACRIMAL GLAND MORPHOGENESIS AND MAINTENANCE Alison Kuony and Frederic Michon, University of Helsinki, Helsinki, Finland.
- 79 CENTRAL CONNECTIONS OF THE LACRIMAL FUNCTIONAL UNIT. Catherine Willshire<sup>1</sup>, Roger Buckley<sup>1</sup> and Anthony Bron<sup>1,2</sup>. <sup>1</sup>Vision and Eye Research Unit, Anglia Ruskin University, Cambridge, UK, <sup>2</sup>Nuffield Department of Clinical Neurosciences and Nuffield Laboratory of Ophthalmology, University of Oxford, UK.
- 80 SAFETY AND EFFICACY OF EXCISION OF THE HORIZONTAL CANALICULUS IN SEVERE AQUEOUS DEFICIENT DRY EYE. Seika Den,<sup>1</sup> Daisuke Tomida,<sup>1</sup> Hirohiko Kakizaki,<sup>2</sup> Jun Shimazaki.<sup>1</sup> Department of Ophthalmology, Tokyo Dental College Ichikawa General Hospital, Chiba, Japan.<sup>1</sup> Department of Oculoplastic, Orbital & Lacrimal Surgery, Aichi Medical University Hospital, Aichi, Japan.<sup>2</sup>
- 81 THE EFFECTS OF INTRANASAL NEUROSTIMULATION ON TEAR PRODUCTION AND CLEARANCE AND CONJUNCTIVAL GOBLET CELL SECRETION. Koray Gumus, M.D., FEBOphth,<sup>1,2</sup> Karri L. Schuetzle, AAS, COA, CCRP,<sup>1</sup> Stephen C. Pflugfelder, M.D.<sup>1</sup> Michael Ackerman, Ph.D.<sup>3</sup> Cullen Eye Institute, Baylor College of Medicine, Houston, Texas, USA,<sup>1</sup> Erciyes University School of Medicine, Department of Ophthalmology, Kayseri, Turkey,<sup>2</sup> and Allergan (Oculeve), South San Francisco, CA, United States<sup>3</sup>
- 82 OCULAR SURFACE CHANGES IN PROFESSIONAL MOTORSPORT ATHLETES. Stefano Barabino. Clinica Oculistica, University of Genoa, Italy



Friday, September 9, 2016

SESSION II

Surface Barriers To Inflammation

*Chairpersons - Penny Asbell (USA), Ali Djalilian (USA), Arsia Jamali (USA)*

- 8:00 **Keynote Address:** Endothelial barrier (Vascular endothelium: It's more than just a monolayer). Francis W. Lusinskas, Center for Excellence in Vascular Biology, Department of Pathology, Brigham and Women's Hospital, and Harvard Medical School, Boston, MA, USA
- 8:20 **Keynote Address:** Epithelial barrier (Endocrine regulation of mucosal barrier protection in the human female reproductive tract). Charles R. Wira, Marta Rodriguez-Garcia and Mickey V. Patel, Department of Microbiology and Immunology, Geisel School of Medicine at Dartmouth, Lebanon, NH, USA
- 8:40 **Keynote Address:** Tear film barrier. Alison M. McDermott The Ocular Surface Institute, University of Houston College of Optometry, Houston, TX, USA
- 9:00 **Keynote Address:** Ocular surface glycoalyx barrier. Pablo Argüeso, Schepens Eye Research Institute and Massachusetts Eye and Ear, Department of Ophthalmology, Harvard Medical School, Boston, Massachusetts, USA
- 9:20 **Keynote Address:** Corneal barrier. Victor L. Perez, Bascom Palmer Eye Institute, University of Miami Miller School of Medicine, USA
- 9:40 **Poster Session II (with Coffee & Tea)**  
*Chairpersons - Eduardo Rocha (Brazil), Kyung-Sun Na (South Korea)*

Ocular Inflammatory Insults: Advances In Understanding Their Mechanism(s) And Treatment

*Chairpersons - Esen K Akpek (USA), Takenori Inomata (USA), Bhaskar Srinivasan (India)*

- 10:30 **Keynote Address:** Dynamic instability – a pathway for nuclear transport of adenovirus. Jaya Rajaiya, Department of Ophthalmology, Howe Laboratory, Massachusetts Eye and Ear Infirmary, Harvard Medical School, Boston, MA, USA
- 10:50 **Keynote Address:** Vernal keratoconjunctivitis – Therapeutic advances of an enigmatic disease. Avi Solomon, Department of Ophthalmology, Hadassah Medical Center, Jerusalem, Israel
- 11:10 **Keynote Address:** Graft-versus-host disease. Yoko Ogawa, Department of Ophthalmology, Keio University School of Medicine, Tokyo, Japan

- 11:30 **Keynote Address:** Building an evidence basis for management of ocular Stevens-Johnson syndrome/toxic epidermal necrolysis. James Chodosh, Department of Ophthalmology, Howe Laboratory, Massachusetts Eye and Ear Infirmary, Harvard Medical School, Boston, MA, USA
- 11:50 **Keynote Address:** Sjögren syndrome and commensal microbiota. Zaheer, M<sup>1</sup>; Bian<sup>1</sup>, F; Swennes, AG<sup>2</sup>, Britton, RA<sup>3</sup>, Pflugfelder, SC<sup>1</sup>, De Paiva, CS<sup>1</sup> <sup>1</sup>Ocular Surface Center, Dept. of Ophthalmology, Baylor College of Medicine; <sup>2</sup>Center for Comparative Medicine, Dept. of Molecular Virology and Microbiology, Baylor College of Medicine; <sup>3</sup>Center for Metagenomics and Microbiome Research, Dept. of Molecular Virology and Microbiology, Baylor College of Medicine, Houston, TX, USA
- 12:10 **Poster Viewing & Lunch**

### Did You Know?

*Chairpersons - Serge Doan (France), Sihem Lazreg (Algeria), Martin Schicht (Germany)*

- 13:30 **Keynote Address:** Metabolomic fingerprints exist in dry eye disease. Jelle Vehof<sup>1,2</sup> Department of Twin Research & Genetic Epidemiology, King's College London, St Thomas' Hospital, London, United Kingdom<sup>1</sup>; Department of Ophthalmology, University of Groningen, University Medical Center Groningen, Groningen, Netherlands<sup>2</sup>
- 13:45 **Keynote Address:** Blood, sweat and tears: human social chemosignaling in health and disease. Noam Sobel, Weizmann Institute of Science, Rehovot, Israel
- 14:00 **Keynote Address:** Impact of microbiota on resistance to ocular *Pseudomonas aeruginosa*-induced keratitis. Mihaela Gadjeva, Department of Medicine, Division of Infectious Diseases, Brigham and Women's Hospital, Harvard Medical School, Boston, MA
- 14:15 **Keynote Address:** The pediatric ocular surface is a peculiar system, with peculiar diseases and peculiar management challenges. Edoardo Villani, Department of Clinical Science and Community Health, University of Milan. Eye Clinic San Giuseppe Hospital, Milan, Italy
- 14:30 **Keynote Address:** Happiness and dry eye. Motoko Kawashima, Keio University School of Medicine, Tokyo, Japan

### Ocular Surface Microbiome

*Chairpersons - David Evans (USA), Stephanie Wan (USA), Michael Zegans (USA)*

- 14:45 **Keynote Address:** Ocular surface microbiome in the post-genomics era. Val Shestopalov. Bascom Palmer Eye Institute, University of Miami Miller School of Medicine, Miami, FL, USA
- 15:10 **Keynote Address:** Impact of microbiota on adaptive immune effectors on the ocular surface. Gerald B. Pier, Tanweer Zaidi, Abirami Kugadas, Mihaela Gadjeva. Department of Medicine, Brigham & Women's Hospital, Harvard Medical School, Boston, MA, USA

15:35 **Keynote Address:** Is anybody there? Suzanne M.J. Fleiszig,<sup>1</sup> Stephanie J. Wan,<sup>1</sup> Aaron B. Sullivan,<sup>1</sup> Matteo M.E. Metruccio,<sup>1</sup> David J. Evans.<sup>1,2</sup> UC Berkeley,<sup>1</sup>Touro University College of Pharmacy,<sup>2</sup> CA, USA

16:00 **Poster Session II (with Coffee & Tea)**

*Chairpersons - Eduardo Rocha (Brazil), Kyung-Sun Na (South Korea)*

### Ocular Surface Repair And Regeneration

*Chairpersons - Kung Chul Yoon (Korea), Kazuo Tsubota (Japan), Yuichi Uchino (Japan)*

16:50 **Keynote Address:** Limbal stem cells. Sophie X. Deng, Jules Stein Eye Institute, University of California, Los Angeles, CA, USA

17:10 **Keynote Address:** Restoration of corneal transparency by mesenchymal stem cells. Sunil Chauhan, Schepens Eye Research Institute, Massachusetts Eye and Ear, Harvard Medical School, Boston, MA, USA

17:30 **Keynote Address:** Human induced pluripotent stem cells. Heli Skottman, BioMediTech, University of Tampere, Finland

17:50 **Keynote Address:** Bioengineered cornea. May Griffith, Department of Clinical and Experimental Medicine, Linköping University, Sweden; Maisonneuve-Rosemont Hospital Research Center and Université de Montréal, Montreal, Canada; Tej Kholi Cornea Institute/LV Prasad Eye Institute, Hyderabad, India

18:10 **Keynote Address:** Recent Innovations in ocular surface surgery. Jod S Mehta, Singapore National Eye Centre, Singapore Eye Research Institute, Duke-NUS Graduate Medical School, School of Material Science & Engineering and School of Mechanical and Aerospace Engineering, Nanyang Technological University, Singapore

### Poster Session II

*Chairpersons - Eduardo Rocha (Brazil), Kyung-Sun Na (South Korea)*

1 THE UTILITY OF A NORMAL TEAR OSMOLARITY TEST IN SYMPTOMATIC PATIENTS. Ashley R. Brissette<sup>1</sup>; Kelley J. Bohm<sup>1</sup>; Christopher E. Starr<sup>1</sup>. <sup>1</sup>Weill Cornell Medical College

2 VARIATION OF TEAR OSMOLARITY AND ASSOCIATION WITH OCULAR SURFACE MEASUREMENTS IN PATIENTS WITH DRY EYE SYNDROME. Priya M. Mathews MD,MPH<sup>1,2</sup>, Sezen Karakus MD<sup>1</sup>, Pradeep Y. Ramulu MD,PhD<sup>1</sup>, Esen K. Akpek MD<sup>1</sup> <sup>1</sup>The Wilmer Eye Institute, Johns Hopkins University School of Medicine <sup>2</sup>Harkness Eye Institute, Columbia University, College of Physicians and Surgeons

3 THE NORWEGIAN OSMOLARITY PROJECT. Olauq Skroppa for the Interoptik Project Team, Interoptik AS, Oslo, Norway

- 4 DOES HYPEROSMOLARITY CAUSE AN IRREVERSIBLE PROCESS LEADING TO HUMAN CORNEAL EPITHELIAL CELL DEATH? Wendy R. Kam,<sup>1</sup> David A. Sullivan,<sup>1</sup> Manoj Venkiteshwar<sup>2</sup> and Benjamin D. Sullivan.<sup>2</sup> <sup>1</sup>Schepens Eye Research Institute, Massachusetts Eye and Ear, Harvard Medical School, Boston, MA; <sup>2</sup>TearLab Corp., San Diego, CA, USA
- 5 THE BLOCKADE OF IL-6 COUNTERPARTS THE OSMOLAR STRESS-INDUCED APOPTOTIC CHANGE AND JUNCTIONAL INSTABILITY IN HUMAN CONJUNCTIVAL EPITHELIAL CELLS. Hee-Jung Ju<sup>1</sup>, Yong-Soo Byun<sup>1,2</sup>, Jee-Won Mok<sup>1</sup>, Choun-Ki Joo<sup>1,2</sup> Catholic Institute of Visual Science,<sup>1</sup> Department of Ophthalmology and Visual Science, Catholic University of Korea,<sup>2</sup> Seoul, South Korea
- 6 TEAR CYTOKINE ANALYSIS AND IN VIVO CONFOCAL MICROSCOPY IN POST-LASIK ECTASIA. Shrutu Kochar,<sup>1</sup> Natasha Pahuja,<sup>1</sup> Rohit Shetty,<sup>1</sup> Rashmi Deshmukh,<sup>1</sup> Anupam Sharma,<sup>2</sup> Swaminathan Sethu,<sup>2</sup> Arkasubhra Ghosh.<sup>2</sup> Refractive Services, Narayana Nethralaya, Bangalore, India,<sup>1</sup> GROW Research Laboratory, Narayana Nethralaya Foundation, Bangalore, India.<sup>2</sup>
- 7 ANALYSIS OF TH17-ASSOCIATED CYTOKINES AND CLINICAL CORRELATIONS IN PATIENTS WITH DRY EYE DISEASE. Hong Qi<sup>1</sup>, Rong-jun Liu<sup>1</sup>, Cai-feng Gao<sup>1,2</sup>, Hui-jin Chen<sup>1</sup>, Ying Jin<sup>1</sup>, Ya-xin Li<sup>1</sup> <sup>1</sup>Department of Ophthalmology, Peking University Third Hospital, Beijing, 100191 China; Key laboratory of vision loss and restoration, Ministry of Education <sup>2</sup>Guangdong Women and Children Hospital, Guangzhou, 511442 China
- 8 ANALYSIS OF TEAR CYTOKINE LEVEL ALTERATIONS AND CLINICAL CORNEAL FINDINGS FOLLOWING PENETRATING KERATOPLASTY. Daisuke Tomida<sup>1</sup>, Takefumi Yamaguchi<sup>1</sup>, Hiroyuki Yazu<sup>1,2</sup>, Mamoru Ogawa<sup>1,2</sup>, Murat Dogru<sup>1,2</sup>, Seika Shimazaki-Den<sup>1</sup>, Yoshiyuki Satake<sup>1</sup>, Jun Shimazaki<sup>1</sup> Department of Ophthalmology, Ichikawa General Hospital, Tokyo Dental College, Chiba, Japan<sup>1</sup> Department of Ophthalmology, Keio University School of Medicine, Tokyo, Japan<sup>2</sup>
- 9 TEAR CYTOKINES OF STEVENS-JOHNSON SYNDROME IN THE CHRONIC STAGE Mayumi Ueta<sup>1</sup>, Hiromi Nishigaki<sup>1</sup>, Chie Sotozono<sup>2</sup>, Shigeru Kinoshita<sup>1</sup> <sup>1</sup> Department of Frontier Medical Science and Technology for Ophthalmology, Kyoto Prefectural University of Medicine, Kyoto, Japan <sup>2</sup> Department of Ophthalmology, Kyoto Prefectural University of Medicine, Kyoto, Japan
- 10 DIAGNOSTIC PERFORMANCE OF TEAR PROTEINS FOR primary Sjögren's syndrome <sup>1</sup>P. Versura,<sup>2</sup>G. Vukatana, <sup>1</sup>G. Giannaccare, <sup>2</sup>M. Fresina, <sup>1</sup>N. Malavolta, <sup>1</sup>E. Campos. <sup>1</sup>Ophthalmology Unit, DIMES, UNIBO and <sup>2</sup>Rheumatology Unit S.Orsola-Malpighi Teaching Hospital, Bologna, Italy.
- 11 TEAR PROTEINS IN YOUNG HEALTHY ADULTS. DIFFERENCES BETWEEN MALES AND FEMALES IN TWO MENSTRUAL CYCLE PHASE <sup>1</sup>P. Versura,<sup>2</sup>M. Piazzzi, <sup>1</sup>G. Giannaccare, <sup>1</sup>M. Fresina, <sup>2</sup>L. Cocco, <sup>1</sup>E Campos <sup>1</sup>Ophthalmology Unit, DIMEC UNIBO and S.Orsola-Malpighi Teaching Hospital, <sup>2</sup>Cell Signaling Lab, DIBINEM UNIBO, Bologna, Italy
- 12 ANALYSING THE PROCESS OF LYSOZYME TRANSFER INTO TEAR FILM LIPID LAYER. Alicja Wizert<sup>1</sup>, D. Robert Iskander<sup>1</sup>, Lukasz Cwiklik.<sup>2</sup> Wroclaw University of Science and Technology, Wroclaw, Poland<sup>1</sup>, Academy of Sciences of the Czech Republic, Prague, Czech Republic.<sup>2</sup>
- 13 ASSOCIATIONS BETWEEN CLINICAL MEASURES OF OCULAR SURFACE DISEASE AND TEAR FILM DERIVED NEUROPEPTIDE CONCENTRATIONS. Stephanie M. Cox<sup>1</sup> and Jason J. Nichols.<sup>1</sup> University of Alabama at Birmingham, School of Optometry<sup>1</sup>

- 14 PHARMACOGENETIC MANIPULATION OF NEURONAL ACTIVITY REVEAL A ROLE OF BRAIN SPINAL TRIGEMINAL NUCLEUS IN REFLEX TEARING. Yusuke Izuta<sup>1</sup>, Michiko Shibuya<sup>1</sup>, Erina Onishi<sup>1</sup>, Toshihiro Imada<sup>1</sup>, Shigeru Nakamura<sup>1</sup>, Ayano Katagiri<sup>3</sup>, Akihiro Yamanaka<sup>2</sup>, Kazuo Tsubota<sup>1</sup> Keio University School of Medicine Department of Ophthalmology, Tokyo, Japan<sup>1</sup> Nagoya University Research Institute of Environmental Medicine, Department of Neuroscience II, Nagoya, Japan<sup>2</sup> Nihon University School of Dentistry, Department of Physiology, Tokyo, Japan<sup>3</sup>
- 15 OCULAR SURFACE, TEAR FILM AND NEURO-MARKERS IN SUBJECTS WITH OCULAR ITCHINESS. Sailesh Kolanu<sup>1</sup>, Blanka Golebiowski<sup>1</sup>, Mark Willcox<sup>1</sup>, Arthur Ho<sup>1,2</sup>, Isabelle Jalbert<sup>1</sup>, <sup>1</sup>School of Optometry and Vision Science, UNSW Australia, <sup>2</sup>Brien Holden Vision Institute, Australia
- 16 TEAR FILM MMP-9 AND TIMP-1 IN TOPICAL FLUOROQUINOLONE USE. Maria Markoulli<sup>1</sup> Amy Moreland,<sup>1</sup> Joanna Liang,<sup>1</sup> Benjamin Ashby, <sup>1,2</sup> School of Optometry and Vision Science, University of New South Wales,<sup>1</sup> Specsavers Ltd.<sup>2</sup>
- 17 TEAR BIOMARKER ANALYSIS AS A DIAGNOSTIC TOOL FOR DRY EYE DISEASE. Eilidh Martin<sup>1</sup>, Katherine M. Oliver<sup>1</sup>, E. Ian Pearce<sup>1</sup>, Suzanne Hagan<sup>1</sup>. <sup>1</sup>Vision Sciences, Glasgow Caledonian University, Glasgow, UK.
- 18 OPTIMIZATION OF TEAR BIOMARKERS QUANTITATION BY CUSTOMIZED MULTIPLEXED MICROARRAYS. Javier Soria<sup>1</sup>, Arantxa Acera<sup>1</sup>, Tatiana Suarez<sup>1</sup>. Bioftalmik, <sup>1</sup> Derio, Spain.
- 19 ANALYSIS OF OXIDATIVE STRESS MARKERS IN TEARS OF THYROID-ASSOCIATED OPHTHALMOPATHY ACCORDING TO DISEASE ACTIVITY. Kyung Chul Yoon<sup>1</sup>, In Cheon You,<sup>2</sup> Hyo Seok Lee,<sup>1</sup> Yeon Soo Kang,<sup>1</sup> Won Choi.<sup>1</sup> Department of Ophthalmology, Chonnam National University Medical School and Hospital, Gwangju, Korea,<sup>1</sup> Department of Ophthalmology, Chonbuk National University Medical School and Hospital, Jeonju, Korea<sup>2</sup>
- 20 PLASMA GELSOLIN IS PART OF THE HUMAN TEAR FILM AND PROMOTES RE-EPITHELIALIZATION OF CORNEAL WOUNDS. Schicht M,<sup>1</sup> Wittmann J,<sup>1</sup> Dieckow J,<sup>2</sup> Schroeder H,<sup>1</sup> Jacobi C,<sup>3</sup> Hsieh LC,<sup>4</sup> Pulli B,<sup>4</sup> Chen JW,<sup>4</sup> Braeuer L,<sup>1</sup> Schob S,<sup>5</sup> Paulsen F,<sup>1</sup> Department of Anatomy II<sup>1</sup> and Clinic of Ophthalmology<sup>3</sup> at Friedrich-Alexander-University Erlangen-Nürnberg, Germany; Department of Ophthalmology<sup>2</sup> and Department of Neuroradiology<sup>5</sup> at University of Leipzig, Germany; Center for Systems Biology,<sup>4</sup> Boston, MA, USA
- 21 NANOSCALE ORGANIZATION OF TEAR FILM WAX ESTERS: A VIEW FROM MOLECULAR DYNAMICS SIMULATIONS. Riku O. Paananen<sup>1</sup>, Matti Javanainen,<sup>2</sup> Ilpo Vattulainen,<sup>2</sup> Juha M. Holopainen.<sup>1</sup> Helsinki Eye Lab, Ophthalmology, University of Helsinki and Helsinki University Hospital,<sup>1</sup> Department of Physics, University of Helsinki,<sup>2</sup> FINLAND
- 22 A LIQUID CHROMATOGRAPHY MASS SPECTROMETRY METHOD FOR DETECTION OF LIPID MEDIATORS OF INFLAMMATION IN THE HUMAN TEAR FILM. Shyam Panthi<sup>1</sup>, Alireza Arabshahi,<sup>2</sup> Stephen Barnes,<sup>2</sup> Jason J. Nichols.<sup>1</sup> School of Optometry, University of Alabama at Birmingham, Birmingham, Alabama,<sup>1</sup> Targeted Metabolomics and Proteomics Laboratory, School of Medicine, University of Alabama at Birmingham, Birmingham, Alabama<sup>2</sup>
- 23 SHORT-TERM REPRODUCIBILITY OF TEAR FLUID COLLECTION USING A MUC5AC MUCIN ASSAY Woodward AM,<sup>1</sup> Senchyna M,<sup>2</sup> Franke M,<sup>2</sup> Baba S,<sup>2</sup> Argüeso P<sup>1</sup> <sup>1</sup>Schepens Eye Research Institute, Boston, MA; <sup>2</sup> Allergan, Irvine, CA.

- 24 CONCENTRATION OF MUC16 AND MUC5AC USING THREE TEAR COLLECTION METHODS. Anna F. Ablamowicz<sup>1</sup> and Jason J. Nichols.<sup>1</sup> University of Alabama at Birmingham, School of Optometry<sup>1</sup>
- 25 ASSESSMENT OF THE IMPACT OF SACCADIC ON MUCOAQUEOUS SUBPHASE. Zhenghao Yang<sup>1,2</sup>, Norihiko Yokoi<sup>1</sup>, Hiroaki Kato<sup>1</sup>, Aoi Komuro<sup>1</sup>, Yukiko Sonomura<sup>1</sup>, Chie Sotozono<sup>1</sup>, Noriko Koizumi<sup>1,2</sup>.<sup>1</sup>Department of Ophthalmology, Kyoto Prefectural University of Medicine, Kyoto, Japan. <sup>2</sup>Department of Biomedical Engineering, Faculty of Life and Medical Sciences, Doshisha University, Kyotanabe, Japan.
- 26 CORRELATION BETWEEN TEAR PROSTAGLANDIN E2 LEVELS AND SEVERITY OF DRY EYE. Kaewalin Lekhanont,<sup>1</sup> Kanchalika Sathianvichitr,<sup>1</sup> Kitipong Soontrapa,<sup>2</sup> Umaporn Udomsubpayakul<sup>3</sup>. Department of Ophthalmology, Ramathibodi Hospital<sup>1</sup>, Department of Pharmacology, Siriraj Hospital<sup>2</sup>, Clinical Epidemiology and Biostatistics Unit, Ramathibodi Hospital<sup>3</sup>, Mahidol University, Bangkok, Thailand
- 27 DROP VOLUME OF ARTIFICIAL TEAR SOLUTIONS: PHARMACOECONOMIC STUDY. Alexandre Xavier da Costa<sup>1</sup>, Robson Miranda da Gama<sup>2</sup>, Silvia Prado Smit Kitadai<sup>3</sup>, Eric Pinheiro de Andrade<sup>3</sup>, Gabriela Boia Rocha Ferro<sup>1</sup>, José Álvaro Pereira Gomes<sup>1</sup>. 1. Department of Ophthalmology, Paulista School of Medicine, Federal University of São Paulo, São Paulo, SP, Brazil. 2. Department of Pharmacy, University of Santo Amaro, São Paulo, SP, Brazil. 3. Department of Ophthalmology, University of Santo Amaro, São Paulo, SP, Brazil.
- 28 GOBLET CELLS DENSITY AFTER USE OF TOPICAL IMMUNOMODULATOR IN THE TREATMENT OF PATIENTS WITH DRY EYE DISEASE. Rossen M. Hazarbassanov<sup>1</sup>, Jose Arthur P. Milhomens<sup>1</sup>, Nicolle Queiroz-Hazarbassanov<sup>2</sup>, Jose Alvaro P. Gomes<sup>1</sup>.<sup>1</sup>Department of Ophthalmology & Visual Sciences, Federal University of Sao Paulo; <sup>2</sup>Department of Pathology, School of Veterinary Medicine, University of Sao Paulo; Sao Paulo, SP, Brazil.
- 29 SUPRATARSAL INJECTION OF TRIAMCINOLONE FOR SEVERE VERNAL KERATOCONJUNCTIVITIS. Alexandre Xavier da Costa<sup>1</sup>, Leonardo Guedes Candido Marculino<sup>1</sup>, Vera Lucia Liendo<sup>1</sup>, Telma Pereira Barreiro<sup>1</sup>, José Álvaro Pereira Gomes<sup>2</sup>, Myrna Serapião dos Santos<sup>1</sup>. 1. Assistant Physician, Corneal and External Diseases, Department of Ophthalmology, Federal University of São Paulo (UNIFESP). 2. Associated Professor and Director of Advanced Ocular Surface Center, Department of Ophthalmology, Federal University of São Paulo (UNIFESP).
- 30 COMPARISON OF THREE GEL BASED TOPICAL LUBRICANTS ON TEAR FILM THICKNESS IN MODERATE AND SEVERE DRY EYE. Doreen Schmidl<sup>1,2</sup>, Katarzyna Witkowska<sup>1,2</sup>, Rene Werkmeister<sup>2</sup>, Piotr Wozniak<sup>1</sup>, Ahmed Bata<sup>1</sup>, Klemens Fondi<sup>1</sup>, Carina Baar<sup>1</sup>, Gerhard Garhöfer<sup>1</sup>, Leopold Schmetterer<sup>1,2</sup>. <sup>1</sup>Department of Clinical Pharmacology, <sup>2</sup>Center for Medical Physics and Biomedical Engineering, Medical University of Vienna, Vienna, Austria
- 31 TEAR VOLUME CHANGES OVER THE INTERBLINK PERIOD. Michel Guillon,<sup>1,2</sup> Kathy Dumbleton,<sup>1</sup> Kishan Patel,<sup>1</sup> Ruchi Gupta,<sup>1</sup> Paris Pariza.<sup>1</sup> OCULAR TECHNOLOGY GROUP International,<sup>1</sup> School of Life and Health Sciences,<sup>2</sup> Aston University, Aston, UK
- 32 THE ANALYSIS OF POST-BLINK TEAR FILM SURFACE QUALITY TOWARDS UNDERSTANDING THE ETIOLOGIES OF OCULAR SURFACE DISEASE. Dorota H. Szczesna-Iskander,<sup>1</sup> D. Robert Iskander.<sup>2</sup> Department of Optics and Photonics,<sup>1</sup> Department of Biomedical Engineering,<sup>2</sup> Wroclaw University of Science and Technology, Wroclaw, Poland

- 33 RELATIONSHIP BETWEEN OCULAR SURFACE EPITHELIAL DAMAGE, TEAR ABNORMALITIES, AND BLINK IN DRY-EYE PATIENTS. Hiroaki Kato<sup>1</sup>, Norihiko Yokoi<sup>1</sup>, Aoi Komuro<sup>1</sup>, Yukiko Sonomura<sup>1</sup>, Akihide Watanabe<sup>1</sup>, Chie Sotozono<sup>1</sup> and Shigeru Kinoshita<sup>2</sup>, Department of Ophthalmology<sup>1</sup> and Department of Frontier Medical Science and Technology for Ophthalmology<sup>2</sup>, Kyoto Prefectural University of Medicine, Kyoto, Japan
- 34 A FRACTAL DIMENSION APPROACH TO TEAR FILM DYNAMICS CHARACTERIZATION IN HIGH SPEED VIDEOKERATOSCOPY. Clara Llorens-Quintana<sup>1</sup>, D. Robert Iskander<sup>1</sup>. Wroclaw University of Science and Technology, Wroclaw, Poland<sup>1</sup>.
- 35 Factors Impacting the Post-Lens Tear Film Mixing. Pult Heiko<sup>1,2,3</sup>& Riede-Pult Britta Helen<sup>1</sup> <sup>1</sup>Optometry and Vision Research, Weinheim, Germany <sup>2</sup>Cardiff University, School of Optometry and Vision Sciences, UK <sup>3</sup>Ophthalmic Research Group, Life and Health Sciences, Aston University, Birmingham, UK
- 36 COMPARISON OF KERATOGRAPH 5M® TEAR MENISCUS HEIGHT WITH DRY EYE EVALUATION IN PRIMARY SJÖGREN'S SYNDROME. Karim Mohamed-Noriega, MD, Dr Med,<sup>1</sup> Fernando Morales-Wong, MD;<sup>1</sup> Yunuen Bages-Rousselon, MD,<sup>1</sup> Janett Riega, MD,<sup>2</sup> Dr Med; Mario Garza, MD, PhD,<sup>2</sup> Jesús Mohamed-Hamsho, MD, Dr. Med.<sup>1</sup> Department Of Ophthalmology, Autonomous University Of Nuevo Leon (UANL), Faculty Of Medicine, University Hospital, Monterrey, Mexico.<sup>1</sup> Department Of Rheumatology, Autonomous University Of Nuevo Leon (UANL), Faculty Of Medicine, University Hospital, Monterrey, Mexico.<sup>2</sup>
- 37 TEAR DYNAMICS EVALUATION WITH FLUORESCHEIN PROFILOMETER AND OPTICAL COHERENCE TOMOGRAPHY Izabela K. Garaszczuk<sup>1</sup>, D. Robert Iskander<sup>2</sup>. <sup>1</sup>University of Valencia, Valencia, Spain <sup>2</sup>, Wroclaw University of Science and Technology, Wroclaw, Poland
- 38 NEWER CLASSIFICATION OF TEAR FILM BREAK PATTERN; CLINICAL AND PATHOPHYSIOLOGICAL ANALYSIS. Hong Kyun Kim<sup>1,2</sup>, Myung Jun Kim<sup>1,2</sup> Jong-Sup Bae<sup>3</sup>, Man-Il Huh<sup>2</sup> 1. Department of Ophthalmology, Kyungpook National University School of Medicine 2. . Biomedical Research Institute, Kyungpook National University Hospital. 3. College of Pharmacy, CMRI, Research Institute of Pharmaceutical Sciences, BK21 Plus KNU Multi-Omics based Creative Drug Research Team, Kyungpook National University.
- 39 RELIABILITY OF A NEW NON-INVASIVE TEAR FILM BREAK-UP TIME MEASUREMENT USING A KERATOGRAPH. Sang-Bumm Lee, Seongyong Jeong. Department of Ophthalmology, Yeungnam University College of Medicine, Daegu, Korea
- 40 DEVELOPMENT OF AN AUTOMATIZED METHOD FOR ANALYZING TEAR FILM LIPID LAYER THICKNESS AND CORRELATION ANALYSIS AMONG CLINICAL FINDINGS OF DRY EYE DISEASE. Sang-Mok Lee,<sup>1</sup> Eun Chul Kim,<sup>2</sup> Man Soo Kim,<sup>3</sup> Tae Hyung Lim,<sup>4</sup> Ho Sik Hwang,<sup>1</sup> Department of Ophthalmology, Hallym University College of Medicine, Chuncheon,<sup>1</sup> Department of Ophthalmology, Bucheon St Mary's Hospital, The Catholic University of Korea, Bucheon,<sup>2</sup> Department of Ophthalmology, Seoul St Mary's Hospital, Seoul,<sup>3</sup> HanGil Eye Hospital, Incheon,<sup>4</sup> Korea
- 41 THE EVALUATION OF ANATOMIC STRUCTURE AND TEAR MENISCUS CHANGING AFTER CONJUNCTIVOCHALASIS CAUTERIZATION BY VISANTE OPTICAL COHERENCE TOMOGRAPHY. Lu Huibin, Jiang Xiaodan, Zhang Mingzhou, Xu Ting, Huang Chen, Li Xuemin, Department of Ophthalmology, Peking University Third Hospital, Beijing, China

- 42 EVALUATION OF THE EFFECT OF CONJUNCTIVOCHALASIS CAUTERIZATION ON TEAR STABILITY AND CONTRAST SENSITIVITY. Lu Huibin, Jiang Xiaodan, Weiqiang Qiu, Zhang Mingzhou, Li Xuemin, Wang Wei, Department of Ophthalmology, Peking University Third Hospital, Beijing, China
- 43 TEAR MENISCUS VOLUME AFTER CONJUNCTIVOCHALASIS SURGERY USING FOURIER-DOMAIN AS-OCT Woo Chan Park 1, Young Ook Kim<sup>1</sup>, Jeong Bum Bae<sup>2</sup> Dong-A University, College of Medicine, Busan, Korea<sup>1</sup>, Lee Eye Clinic, Busan, Republic of Korea<sup>2</sup>
- 44 CORNEAL SENSITIVITY AND TEAR COMPONENTS IN KERATOCONUS. Preeji Mandathara,<sup>1</sup> Fiona Stapleton,<sup>1</sup> Jim Kokkinakis,<sup>1,2</sup> Mark Willcox<sup>1</sup> School of Optometry and Vision Science, University of New South Wales, Australia; The Eye Practice, Australia.<sup>2</sup>
- 45 THE EFFECTS OF 3% DIQUAFOSOL SODIUM EYE DROPS ON TEAR FUNCTIONS AND OCULAR SURFACE IN SOD-1 KNOCK OUT MICE TREATED WITH ANTI-GLAUCOMA EYE MEDICATIONS. Yukari Yaguchi, Murat Dogru, Kazunari Higa, Terumasa Suzuki, Junko Higuchi, Ayako Igarashi, Takefumi Yamaguchi, Takahiko Shimizu, Jun Shimazaki, Kazuo Tsubota, Keio University School of Medicine, Tokyo, Japan
- 46 THE EFFECT OF TOPICAL DIQUAFOSOL TETRASODIUM 3% ON DRY EYE AFTER CATARACT SURGERY. Sung Kun Chung<sup>1</sup>, Jiwon Baek<sup>2</sup> and Sang Hee Doh<sup>1</sup> Department of Ophthalmology and Visual Science, St. Paul's Hospital, College of Medicine, The Catholic University of Korea 2 Department of Ophthalmology and Visual Science, Seoul St. Mary's Hospital, College of Medicine, The Catholic University of Korea
- 47 ANTI-INFLAMMATORY EFFECTS OF REBAMIPIDE EYE DROPS ON SUPERIOR LIMBIC KERATOCONJUNCTIVITIS Marini, Cecilia<sup>1</sup>, Tosi, Jorge<sup>2</sup>, Corvino, Viviana<sup>3</sup>, Brunzini Ricardo<sup>3</sup>. <sup>1</sup>Hospital El Cruce, Buenos Aires, Argentina. <sup>2</sup> Cosultorio Dr Jorge Tosi, Buenos Aires, Argentina; <sup>3</sup>Consultorio Dr Ricardo Brunzini, Buenos Aires, Argentina.
- 48 EFFECT OF REBAMIPIDE ON TRANSMEMBRANE MUCIN BIOSYNTHESIS IN STRATIFIED OCULAR SURFACE EPITHELIAL CELLS. Yuichi Uchino, Ashley Woodward and Pablo Argüeso, Schepens Eye Research Institute and Massachusetts Eye and Ear, Department of Ophthalmology, Harvard Medical School, Boston, MA, USA
- 49 CYCLOSPORINE A LOADED LIPOSOMES FOR DRY EYE DISEASE TREATMENT. M. Caballo-González<sup>1</sup>, M. Vicario-de-la-Torre<sup>1</sup>, M. Gómez-Ballesteros<sup>1,5</sup>, D. Acar<sup>1</sup>, E. Rodríguez-Álvaro<sup>2</sup>, E. González-Alonso<sup>2</sup>, M. Guzmán<sup>3</sup>, J.M. Benítez-del-Castillo<sup>4,5</sup>, R. Herrero-Vanrell<sup>1,5</sup>, I.T. Molina-Martínez<sup>1,5</sup>. <sup>1</sup> Department of Pharmacy and Pharmaceutical Technology, Complutense University of Madrid, Spain, <sup>2</sup> Department of Medicine and Animal Surgery, Complutense University of Madrid, Spain, <sup>3</sup> Department of Pharmacy and Pharmaceutical Technology, University of Alcalá de Henares, Spain, <sup>4</sup> Surface Unit and Ocular Inflammation (USIO), San Carlos Clinical Hospital, Complutense University of Madrid, Spain, <sup>5</sup> Pharmaceutical Innovation in Ophthalmology Research Group, Sanitary Research Institute of the San Carlos Clinical Hospital (IdISSC) and the Ocular Pathology National Net (OFTARED) of the Institute of Health Carlos III. Madrid, Spain
- 50 CYCLOSPORINE A APPLICATIONS BEYOND DRY EYE DISEASE. Alex Hui, OD, PhD, FAAO. School of Optometry and Vision Science, UNSW Australia, Sydney, New South Wales, Australia



- 51 EFFECTS OF TOPICAL CYCLOSPORINE 0.05% AFTER CATARACT SURGERY IN PATIENTS WITH DRY EYE. Young Min Park,<sup>1</sup> Jong Soo Lee,<sup>2</sup> Department of Ophthalmology, Gyeongsang National University Changwon Hospital, 11, Samjeongja-ro, Seongsan-gu, Changwon-si, Gyeongsangnam-do, 51472, South Korea,<sup>1</sup> Department of Ophthalmology, School of Medicine, Pusan National University and Medical Research Institute, Pusan National University Hospital, Pusan, South Korea,<sup>2</sup>
- 52 SAFETY AND EFFICACY OF 0.1% (1 MG/ML) CYCLOSPORINE CATIONIC EMULSION (CsA CE) IN PATIENTS WITH DRY EYE DISEASE AND SJÖGREN'S SYNDROME: EXPERIENCE FROM THE FRENCH EARLY ACCESS PROGRAM. Serge Doan<sup>1</sup>, Béatrice Cochener<sup>2</sup>, Mourad Amrane<sup>3</sup>, Jean-Sébastien Garrigue<sup>3</sup>, Dahlia Ismail<sup>3</sup>, Pierre-Jean Pisella<sup>4,5</sup>, Dominique Bremond-Gignac<sup>6</sup> <sup>1</sup>Bichat Hospital and Fondation A. de Rothschild, Paris, France <sup>2</sup>Brest University Medical School, Morvan Hospital, Brest, France <sup>3</sup>Santen SAS, Evry, France <sup>4</sup>University François Rabelais, Tours, France <sup>5</sup>Bretonneau Hospital, Tours, France <sup>6</sup>University Hospital Necker-Enfants Malades, APHP, Paris V Descartes University, Paris, France
- 53 OVERVIEW OF CLINICAL EFFICACY AND SAFETY OF LIFITEGRAST OPHTHALMIC SOLUTION 5.0% FOR TREATMENT OF DRY EYE DISEASE. Amir Shojaei,<sup>1</sup> Joseph Tauber,<sup>2</sup> Kelly K. Nichols,<sup>3</sup> Aparna Raychaudhuri,<sup>1</sup> Monica Roy,<sup>1</sup> Shire,<sup>1</sup> Tauber Eye Center,<sup>2</sup> University of Alabama at Birmingham,<sup>3</sup> USA
- 54 TREATMENT FAILURES WITH PROSTHETIC REPLACEMENT OF THE OCULAR SURFACE ECOSYSTEM [PROSE] DEVICE USE. Matthew Schear,<sup>1</sup> Kirolos Ibrahim,<sup>2</sup> Jules Winokur,<sup>1</sup> Corina Busiuc,<sup>1</sup> Ira Udell,<sup>1</sup> Anne Steiner.<sup>1</sup> Northwell Health Department of Ophthalmology,<sup>1</sup> Great Neck, NY, USA. Stony Brook School of Medicine,<sup>2</sup> Stony Brook, NY, USA.
- 55 TOPICAL LOW-DOSE PRESERVATIVE FREE DEXAMETHASONE (PFD) FOR CHRONIC OCULAR SURFACE DISEASE REFRACTORY TO CONVENTIONAL THERAPY. Adnan Mallick<sup>1</sup>, Bennett Hong<sup>1</sup>, Carolyn Shih<sup>1</sup>, Ira Udell<sup>1</sup>, Annie Steiner.<sup>1</sup> <sup>1</sup>Hofstra-Northwell School of Medicine, Department of Ophthalmology, Great Neck, NY.
- 56 THE EFFICIENCY OF 0.01% DEXAMETHAZONE SOLUTION IN COMPLEX THERAPY FOR PATIENTS WITH DRY EYE DISEASE OF DIFFERENT ETIOLOGY. Brzheskiy V.V.<sup>1</sup>, Popov V. Yu.<sup>1</sup>, Kalinina I.V.<sup>2</sup> <sup>1</sup>Saint Petersburg State Medical Pediatric University, Russia <sup>2</sup>Mariinsky Hospital, Russia
- 57 CLINICAL SAFETY AND TOLERABILITY OF A MANUKA HONEY-BASED PRODUCT DESIGNED TO PROMOTE EYELID HEALTH. Jennifer P. Craig,<sup>1</sup> Isabella Cheung,<sup>1</sup> Chee S. Loh,<sup>1</sup> Leah Te Weehi,<sup>1</sup> Ilva D. Rupenthal,<sup>1</sup> Simon Swift,<sup>2</sup> Grant Watters.<sup>1</sup> Department of Ophthalmology,<sup>1</sup> Department of Molecular Medicine,<sup>2</sup> The University of Auckland, New Zealand
- 58 HA-SULFADIAZINE CONJUGATE FOR THE TREATMENT OF DRY EYE DISEASE. Frances Lasowski<sup>1</sup>, Ben Muirhead<sup>1</sup>, Jafar Mazumder<sup>2</sup>, Heather Sheardown<sup>1</sup>. <sup>1</sup>McMaster University, Hamilton, Ontario, Canada; <sup>2</sup>King Fahd University of Petroleum and Minerals, Saudi Arabia.
- 59 TITLE: NOVEL MICRORNA THERAPEUTICS IN SJÖGREN'S SYNDROME DRY EYE DISEASE. Connolly, Sinéad<sup>1,2</sup>; Pilson, Qistina<sup>1,2</sup>; Cryan, Sally-Ann<sup>4</sup>; Ní Gabhann, Joan<sup>1,2</sup> and Murphy, Conor C.<sup>1</sup> <sup>3</sup> <sup>1</sup>Department of Ophthalmology, Royal College of Surgeons in Ireland, Dublin, Ireland, <sup>2</sup>Molecular and Cellular Therapeutics, RCSI, Dublin, Ireland, <sup>3</sup>Department of Ophthalmology, Royal Victoria Eye and Ear Hospital, Dublin, Ireland, <sup>4</sup> RCSI School of Pharmacy, RCSI, Dublin, Ireland.

- 60 NOVATEARS® AS NEW THERAPY IN DRY EYE – RESULTS FROM THREE PROSPECTIVE, MULTICENTER, NON-INTERVENTIONAL STUDIES IN DIFFERENT PATIENT POPULATIONS. Thomas Kaercher<sup>1</sup>, Philipp Steven<sup>2</sup>, Elisabeth M. Messmer<sup>3</sup>, Michael Beckert<sup>4</sup>, Sonja Krösser<sup>5</sup>. Ophthalmology Clinics Heidelberg<sup>1</sup>, Dept. of Ophthalmology, University of Cologne<sup>2</sup>, Dept. of Ophthalmology, LMU Munich<sup>3</sup>, CaRACS, Berlin<sup>4</sup>, Novaliq GmbH, Heidelberg<sup>5</sup>, Germany
- 61 TOPICAL, NON-INVASIVE TREATMENT FOR DRY EYE IN CONTROLLED HUMAN AND ANIMAL STUDIES. Wei-wei Chang,<sup>1</sup> Kenneth I. Sawyer.<sup>1</sup> GLIA LLC,<sup>1</sup> Boston, MA, USA
- 62 PRECLINICAL CANDIDATE WITH A NEW MECHANISM OF ACTION AGAINST OCULAR SURFACE DISEASES. Jurgen Joossens<sup>1,2</sup>, Cedric Joossen<sup>1,3</sup>, Adrienn Baan<sup>1,4</sup>, Hannah Ceuleers<sup>5</sup>, Anne-Marie Lambeir<sup>1,6</sup>, Benedicte De Winter<sup>5</sup>, Carina Koppen<sup>7</sup>, Filip Kiekens<sup>1,4</sup>, Paul Cos<sup>1,3</sup>, Koen Augustyns<sup>1,2</sup>. Antwerp Drug Discovery Network<sup>1</sup>, Laboratory of Medicinal Chemistry<sup>2</sup>, Laboratory of Microbiology, Parasitology, and Hygiene<sup>3</sup>, Laboratory of Pharmaceutical Technology and Biopharmacy<sup>4</sup>, Laboratory of Experimental Medicine and Pediatrics<sup>5</sup>, Laboratory of Medical Biochemistry<sup>6</sup>, University of Antwerp, Antwerp, Belgium and Department of Ophthalmology<sup>7</sup>, Antwerp University Hospital, Antwerp, Belgium
- 63 A RANDOMISED, DOUBLE-MASKED, PLACEBO-CONTROLLED CLINICAL TRIAL OF TWO FORMS OF OMEGA-3 SUPPLEMENTS FOR TREATING DRY EYE DISEASE. Laura E Downie, Laura A Deinema, Holly R Chinnery, Algis J Vingrys. Department of Optometry & Vision Sciences, University of Melbourne, Victoria, Australia.
- 64 EFFECTS OF HYALURONIC ACID WITH DIFFERENT MOLECULAR WEIGHT ON REPAIR OF MECHANICAL DAMAGE OR UV - INDUCED INJURY FOR HUMAN CORNEAL EPITHELIAL CELLS. Xueping Guo, Xiaou Zhang, Dejie Li, Bloomage Freda Biopharm Co., Ltd. Jinan, Shandong, China.
- 65 PHYSIOCHEMICAL PROPERTIES OF HYALURONIC ACID-BASED EYE DROPS. Peter A Simmons<sup>1</sup>, Pasquale Aragona<sup>2</sup>, Hongpeng Wang<sup>1</sup>, Tao Wang<sup>1</sup> <sup>1</sup>Allergan plc, Irvine, California, USA; <sup>2</sup>University of Messina, Messina, Italy
- 66 ABOUT THE INFLUENCE OF THE VEGETATIVE ACTIVITY ON DRY EYE SYNDROMES. Johannes Nepp<sup>(1,4)</sup>, Nikolaus Hocke<sup>(2)</sup>, Magdalena Wirth<sup>(3)</sup>, H.Nissel<sup>(4)</sup>, K.Stockert<sup>(4)</sup>, Manfred Bijak<sup>(2)</sup>. Department of Ophthalmology<sup>(1)</sup> Center for Medical Physics and Biomedical Engineering<sup>(2)</sup> Medical University Vienna, Austria, Ophthalmological department, Triemli Clinic Zurich<sup>(3)</sup>, J Bischko Institute of Acupuncture, Vienna<sup>(4)</sup>
- 67 EFFECTS OF SUBCONJUNCTIVAL ADMINISTRATION OF ANTI-HIGH MOBILITY GROUP BOX 1(HMGB1) ON DRY EYES IN A MOUSE MODEL OF SJÖGREN SYNDROME. Jaeyoung Kim,<sup>1,2</sup> Yu Jeong Kim,<sup>1,2</sup> Kyeong Hwan Kim,<sup>2,3</sup> Dong Hyun Kim,<sup>2,4</sup> Hyun Jeong Jeong,<sup>2</sup> Jin Suk Ryu,<sup>2</sup> Joo Youn Oh,<sup>1,2</sup> Mee Kum Kim,<sup>1,2</sup> Won Ryang Wee.<sup>1,2</sup> Department of Ophthalmology, Seoul National University College of Medicine, Seoul,<sup>1</sup> Laboratory of Corneal Regenerative Medicine and Ocular Immunology, Seoul National University Hospital Biomedical Research Institute, Seoul,<sup>2</sup> Ophthalmology, Haeundae Paik Hospital; Ophthalmology, Inje University College of Medicine, Busan,<sup>3</sup> Ophthalmology, Gachon University, Incheon,<sup>4</sup> Korea
- 68 LACRITIN C-TERMINAL PROMOTION OF OCULAR SURFACE HEALTH, CORNEAL NERVE ACTIVATION AND TEARING. Jeffrey Romano,<sup>1</sup> Harumitsu Hirata,<sup>2</sup> Nancy McNamara,<sup>3</sup> Sarah M. Knox,<sup>4</sup> Robert L. McKown,<sup>5</sup> Gordon W. Laurie,<sup>1</sup> <sup>1</sup>Department of Cell Biology, University of Virginia School of Medicine, Charlottesville, VA USA <sup>2</sup>Department of Ophthalmology, Weill Cornell Medical College, New York, NY <sup>3</sup>Department of Anatomy, UCSF School of Medicine, San Francisco, CA <sup>4</sup>Department of Cell and Tissue Biology, UCSF School of Dentistry, San Francisco, CA <sup>5</sup>Department of Integrated Science and Technology, James Madison University, Harrisonburg VA

- 69 EFFICIENCY AND SAFETY OF SUBCONJUNCTIVAL INJECTION OF ANTI-VEGF AGENT – BEVACIZUMAB – IN TREATING DRY EYE. Jiang Xiaodan, Lu Huibin, Qiu Weiqiang, Liu Ziyuan, Li Xuemin, Wang Wei 1Department of Ophthalmology, Peking University Third Hospital, Beijing, China
- 70 EFFECTIVENESS OF DIFFERENT THERAPIES FOR DRY EYE DISEASE MANAGEMENT. James S Wolffsohn<sup>1</sup>, Mike S Berg<sup>2</sup>, Venkiteshwar S Manoj<sup>2</sup>. School of Life and Health Sciences, Aston University, Birmingham, UK<sup>1</sup>, TearLab Corporation, San Diego<sup>2</sup>
- 71 THE EFFECT OF ORAL ZANTHOXYLUM SCHINIFOLIUM SEED OIL IN INDIVIDUALS WITH DRY EYE DISEASE. In-Cheon You,<sup>1,2</sup> Jin-Woo Park,<sup>1,2</sup> Mun-Yhung Jung,<sup>3</sup> Wan-Suk Kang,<sup>1,2</sup> Soo-Wan Chae,<sup>1,2</sup> Eun-Ock Park,<sup>1</sup> Nam-Chun Cho,<sup>1,2</sup> Chonbuk National University Hospital,<sup>1</sup> Chonbuk National University Medical School,<sup>2</sup> College of Food Science, Woosuk University,<sup>3</sup> Jeonju, Jeonbuk, South Korea
- 72 EFFECTS OF AUTOLOGOUS SERUM EYE DROPS FOR THE TREATMENT OF DRY EYE SYNDROME AND ASSOCIATED OCULAR SURFACE DISEASES. Quiñones X<sup>1</sup>, Valenzuela F<sup>1</sup>, Cintron H<sup>1</sup>, Davis K<sup>1</sup>, Donaldson K<sup>1</sup>, Perez VL.<sup>1</sup> Ocular Surface Center, Bascom Palmer Eye Institute, University of Miami Miller School of Medicine<sup>1</sup>
- 73 USE OF AUTOLOGOUS SERUM IN ADVANCED SURFACE ABLATION CORNEAL REFRACTIVE SURGERY. María J. González-García,<sup>1,2</sup> Giovanna Murillo,<sup>1</sup> José Pinto-Fraga,<sup>1,2</sup> Noelia García-Sánchez,<sup>1</sup> Margarita Calonge,<sup>1,2</sup> Miguel J. Maldonado.<sup>3</sup> Ocular Surface Group, IOBA, University of Valladolid, Valladolid,<sup>1</sup> CIBER-BBN,<sup>2</sup> Refractive Surgery and Visual Rehabilitation Group, IOBA, University of Valladolid, Valladolid,<sup>3</sup> Spain.
- 74 THE EFFECT OF A NEW OCULAR SURFACE MODULATOR IN CONTROLLING INFLAMMATION IN AN IN VITRO MODEL OF DRY EYE. Stefano Barabino,<sup>1</sup> Barbara De Servi,<sup>2</sup> Marisa Meloni<sup>2,1</sup> Clinica Oculistica, DiNOGMI, Azienda Ospedaliera Universitaria San Marino-IST, Genoa, Italy; <sup>2</sup> in Vitro Research Laboratories, VitroScreen, Milan, Italy; <sup>2</sup> in Vitro Research Laboratories, VitroScreen, Milan, Italy
- 75 THE INFLUENCE OF EYE CLOSURE ON DRY EYE SYNDROME SYMPTOMS. Charles McMonnies DSc and Nicholas Young BOptom PhD, Adjunct Professor School of Optometry and Vision Science UNSW and Dry Eye Centre, Heathmont Victoria.
- 76 EXPERIENCE OF THE FIRST OCULAR SURFACE-DRY EYE SERVICE IN ATHENS. George Dalianis, Chryssa Terzidou, Alexandra Trivli, Ophthalmological Clinic, Konstantopouleio-Patission Gen Hptl, N.Ionia, Athens Greece.
- 77 PHENYLBORONIC ACID BASED POLYMERIC MICELLES FOR MUCOADHESIVE OCULAR DRUG DELIVERY. Ben Muirhead, Heather Sheardown. Department of Biomedical Engineering, McMaster University, Hamilton, ON, Canada
- 78 INFLUENCE OF A NATURAL EYE DROP EMULSION ON NON-IMMUNE MEDIATED ALLERGIC REACTION. F. Giuliano, T. Tornetta, G. De Pasquale, M. G. Mazzone. S.I.F.I. S.p.A., Aci S. Antonio (CT), Italy.
- 79 A NOVEL METHOD USED TO MEASURE THE CONTACT ANGLE OF DRY EYE DROP SOLUTIONS. Rebecca Wilcox,<sup>1</sup> Christine Purslow,<sup>2</sup> Falko Drijfhout.<sup>1</sup> School of Physical & Geographical Sciences,<sup>1</sup> School of Optometry & Vision Sciences, Cardiff University,<sup>2</sup> Keele University, UK

- 80 EASE OF USE OF TWO PRESERVATIVE FREE BOTTLE SYSTEMS FOR DRY EYE DROPS. Rebecca Wilcox,<sup>1</sup>Falko Drijfhout,<sup>1</sup> Christine Purslow.<sup>2</sup> School of Physical & Geographical Sciences,<sup>1</sup>School of Optometry & Vision Sciences, Cardiff University,<sup>2</sup>Keele University, UK
- 81 EFFECT OF MATRIX REGENERATION THERAPY ON CORNEAL EPITHELIAL HEALING FOLLOWING EPI-OFF CROSS-LINKING IN PATIENTS WITH KERATOCONUS. Ahmed Bata<sup>1</sup>, Katarzyna J. Witkowska<sup>1,2</sup>, Piotr A. Wozniak<sup>1</sup>, Klemens Fondi<sup>1</sup>, Gerald Schmidinger<sup>3</sup>, Niklas Pircher<sup>3</sup>, Stephan Szegedi<sup>1</sup>, René M. Werkmeister<sup>2</sup>, Gerhard Garhofer<sup>1</sup>, Leopold Schmetterer<sup>1,2</sup>, Doreen Schmidl<sup>1,2</sup>. <sup>1</sup>Department of Clinical Pharmacology, <sup>2</sup>Center for Medical Physics and Biomedical Engineering, <sup>3</sup>Department of Ophthalmology and Optometry, Medical University of Vienna, Austria
- 82 LAST OPTION!!ROLE OF KERATOPROSTHESIS IN CHEMICAL INJURY. Bhaskar Srinivasan, Agarwal Shweta, Iyer Geetha, G Sitalakshmi clinic for ocular surface disorders ,CJ Shah cornea services, Sankara Nethralaya, Chennai, India
- 83 ROLE OF ALLOSLET IN ACUTE CHEMICAL INJURY. Dr Bhaskar Srinivasan, Dr Shweta Agarwal,Dr Geetha Iyer, G Sitalakshmi clinic for ocular surface disorders ,CJ Shah cornea services, Sankara Nethralaya , Chennai , India
- 84 MUCOUS MEMBRANE GRAFTS IN OCULAR CICATRICIAL PEMPHIGOID: SCHIRMER'S TEST AND LONG TERM FORNIX DEPTH OUTCOMES. Arturo Arturo Grau,<sup>1</sup> Gurjeet Jutley,<sup>1</sup> John Dart, <sup>1,2</sup> Richard Collin, <sup>1,2</sup> David Verity, <sup>1</sup> Valerie Saw.<sup>1,2</sup> Moorfields Eye Hospital,<sup>1</sup> UCL Institute of Ophthalmology,<sup>2</sup> London, UK
- 85 PROFILE, TREATMENT AND OUTCOMES OF OCULAR SURFACE SQUAMOUS NEOPLASIA (OSSN) IN A RURAL POPULATION OF CENTRAL INDIA. Charudutt Kalamkar<sup>1</sup>, Nishant Radke<sup>1</sup>, Geeta Behera <sup>2</sup>,Amrita Mukherjee<sup>1</sup>, Snehal Radke<sup>1</sup> , Shri ganesh Vinayak Eye Hospital,Raipur,India,<sup>1</sup> IGGGH, Puducherry, India<sup>2</sup>
- 86 MMC INJECTION-ASSISTED PTERYGIUM EXCISION- A NOVEL TECHNIQUE. Chryssa Terzidou, Alexandra Trivli, Ophthalmological Clinic Konstantopouleio-Patission Gen Hptl, Nea Ionia, Athens, Greece.
- 87 PREVALENCE OF DRY EYE SYNDROME IN SÃO PAULO – BRAZIL Leonardo Guedes C. Marculino<sup>1</sup>, Flávio Hirai<sup>2</sup>, Rossen Hazarbassanov<sup>3</sup>, Tais Wakamatsu<sup>4</sup>, Ruth Santo<sup>6</sup>, José Alvaro P. Gomes<sup>5</sup>
- 88 OCULAR SURFACE CYTOKINE RESPONSE TO MUCUS MEMBRANE GRAFTING FOR LID MARGIN KERATINIZATION IN STEVENS JOHNSON SYNDROME. \*Geetha Iyer<sup>2</sup>, Srividya Gurumurthy<sup>1</sup>, Bhaskar Srinivasan<sup>2</sup>, Shweta Agarwal<sup>2</sup>, N Angayarkanni<sup>1</sup> <sup>1</sup> Vision Research Foundation,<sup>2</sup> Medical Research Foundation, Sankara Nethralaya, Chennai

Saturday, September 10, 2016

SESSION III

Innovative Technology

*Chairpersons - Gordon Laurie (USA), Kaevalin Lekhanont (Thailand), Isobel Massie (Germany)*

- 8:00 **Keynote Address:** CRISPR/Cas9: Editing the mammalian genome *in vivo*. Fei Ann Ran, The Broad Institute, Cambridge, MA, USA
- 8:20 **Keynote Address:** Smart glasses: Future uses & limitations for healthcare. Peter Evans, Pristine Inc., Austin, TX, USA
- 8:40 **Keynote Address:** Translating an idea into a therapy: Escaping the ocular stress trap. Sandeep Jain, Corneal Neurobiology Laboratory, Department of Ophthalmology and Visual Sciences, University of Illinois at Chicago, Chicago, IL, USA
- 9:00 **Keynote Address:** New developments in ocular surface imaging. Rudolf F. Guthoff, University Eye Department Rostock, Germany
- 9:20 **Keynote Address:** Organ regeneration of lacrimal gland as a next-generation of regenerative medicine. Masatoshi Hirayama<sup>1</sup>, Kazuo Tsubota<sup>1</sup>, Takashi Tsuji<sup>2</sup> Department of Ophthalmology, School of Medicine, Keio University, Tokyo;<sup>1</sup>Laboratory for Organ Regeneration, Center for Developmental Biology, RIKEN, Kobe, Japan<sup>2</sup>
- 9:40 **Poster Session III (with Coffee & Tea)**  
*Chairpersons - Murat Dogru (Japan), Driss Zoukhri (USA)*

Contact Lens Discomfort: Update

*Chairpersons - Laura García-Posadas (USA), Kathryn Richdale (USA), Ulrike Stahl (Canada)*

- 10:30 **Keynote Address:** New advances in the understanding of the definition, classification and epidemiology of contact lens discomfort. Rachel Redfern, The University of Houston, College of Optometry, The Ocular Surface Institute, Houston, TX, USA
- 10:47 **Keynote Address:** New advances in the understanding of the role of contact lens materials and care systems in contact lens discomfort. Lakshman N. Subbaraman, Centre for Contact Lens Research, School of Optometry and Vision Science, University of Waterloo, Waterloo, Canada
- 11:04 **Keynote Address:** New advances in the understanding of the neurobiology of contact lens discomfort. Blanka Golebiowski, School of Optometry and Vision Science, University of New South Wales, Sydney, NSW, Australia

- 11:21 **Keynote Address:** New advances in the understanding of the role of the ocular surface and tear film in contact lens discomfort. Maria Markoulli, School of Optometry and Vision Science, University of New South Wales, Sydney, NSW, Australia
- 11:38 **Keynote Address:** New advances in the management, treatment, and clinical trial design for contact lens discomfort. Joseph B. Ciolino, Massachusetts Eye and Ear Infirmary, Schepens Eye Research Institute, and Harvard Medical School, Boston, MA, USA
- 11:55 **Poster Viewing & Lunch**

### Prime Time TFOS Debates 2

*Chairpersons - Donald Korb (USA), Paul Karpecki (USA), Céline Portal (France)*

- 13:15 **Debate 1:** Are there good animal models for human dry eye disease?  
**It depends on the definition of “good”** – Seunghee Cha, Oral and Maxillofacial Diagnostic Sciences/Oral Biology, University of Florida College of Dentistry, Gainesville, FL, USA  
**No** – Austin K. Mircheff, Keck School of Medicine, University of Southern California, Los Angeles, CA, USA
- 13:45 **Debate 2:** Do contact lenses cause clinically relevant meibomian gland dysfunction?  
**Yes** – Reiko Arita, Itoh Clinic, Saitama, and University of Tokyo, Tokyo, Japan  
**No** – Eric B. Papas, School of Optometry & Vision Science, University of New South Wales, Sydney, Australia.

### TFOS Dry Eye WorkShop II: Updates, Part 1

*Chairpersons - Jennifer P Craig (New Zealand), Masaki Fukui (Japan), J Daniel Nelson (USA)*

- 14:15 **Introduction.** J. Daniel Nelson, HealthPartners Medical Group and Clinics, St Paul, MN, USA
- 14:20 **Keynote Address:** Definition & classification. Kelly K. Nichols, University of Alabama at Birmingham School of Optometry, Birmingham, AL, USA
- 14:35 **Keynote Address:** Sex, hormones & gender. Sruthi Srinivasan, Centre for Contact Lens Research, School of Optometry and Vision Science, University of Waterloo, Waterloo, Canada
- 14:50 **Keynote Address:** Epidemiology. Fiona Stapleton, School of Optometry and Vision Science, University of New South Wales, Sydney, NSW, Australia
- 15:05 **Keynote Address:** Pathophysiology. Anthony J. Bron, University of Oxford, Oxford, UK
- 15:20 **Keynote Address:** Clinical Trials. Gary D. Novack, Pharma•Logic Development, San Rafael, CA, USA
- 15:35 **Poster Session III (with Coffee & Tea)**  
*Chairpersons - Murat Dogru (Japan), Driss Zoukhri (USA)*

## TFOS Dry Eye WorkShop II: Updates, Part 2

*Chairpersons - Kai Jin (Japan), Charles McMonnies (Australia), Louis Tong (Singapore)*

- 16:25 **Keynote Address:** Tear film. Mark DP Willcox, School of Optometry and Vision Science, University of New South Wales, Sydney, NSW, Australia
- 16:40 **Keynote Address:** Iatrogenic dry eye disease. José Gomes, Department of Ophthalmology, Paulista School of Medicine, São Paulo, Brazil
- 16:55 **Keynote Address:** Pain & sensation. Carlos Belmonte, Medical School, University Miguel Hernandez and Neurosciences Institute of Alicante, Alicante, Spain
- 17:10 **Keynote Address:** Diagnosis. James Wolffsohn, Aston University, School of Life and Health Sciences, Aston, UK
- 17:25 **Keynote Address:** Management & Therapy. Lyndon Jones, Centre for Contact Lens Research, School of Optometry and Vision Science, University of Waterloo, Waterloo, Canada
- 17:40 **Keynote Address:** Public awareness & education. Katherine Hammitt, Sjögrens Syndrome Foundation, Bethesda, MD, USA

### Closing Remarks

- 17:55 David A. Sullivan, Schepens Eye Research Institute, Massachusetts Eye and Ear and Harvard Medical School, Boston, MA, USA

### Closing Reception

18:00 – 19:00

### Poster Session III

*Chairpersons - Murat Dogru (Japan), Driss Zoukhri (USA)*

- 1 IMPAIRED FUNCTION OF PERIPHERALLY INDUCED REGULATORY T CELLS IN HOSTS OF HIGH RISK OF GRAFT REJECTION. Takenori Inomata,<sup>1,2,3</sup> Jing Hua,<sup>1,2</sup> Antonio Di Zazzo,<sup>1,2</sup> and Reza Dana.<sup>1,2</sup> Schepens Eye Research Institute,<sup>1</sup> Massachusetts Eye & Ear Infirmary,<sup>2</sup> Department of Ophthalmology, Harvard Medical School, Boston, MA, USA, Juntendo University Faculty of Medicine,<sup>3</sup> Department of Ophthalmology, Tokyo, Japan.
- 2 PRO-INFLAMMATORY CYTOKINES ASSOCIATED WITH CLINICAL SEVERITY OF DRY EYE DISEASE OF PATIENTS WITH DEPRESSION. Mrugacz Małgorzata<sup>1</sup>, Ostrowska Lucyna<sup>2</sup>, Bryl Anna<sup>1</sup>, Szulc Agata<sup>3</sup>, Beata Zelazowska-Rutkowska<sup>4</sup>, Mrugacz Grzegorz<sup>5</sup> <sup>1</sup> Department of Ophthalmology and Eye Rehabilitation, Medical University of Białystok, Poland, <sup>2</sup> Department of Clinical Nutrition, Medical University

of Białystok, Poland, <sup>3</sup> Department of Psychiatry, Medical University of Warsaw, Poland, <sup>4</sup> Department of Paediatric Laboratory Diagnostics, Medical University of Białystok, Poland, <sup>5</sup> Centre for Reproductive Medicine, Białystok, Poland; 15-267 Białystok, Poland

- 3 DRY EYE DISEASE EXPERIMENTAL MODELLING. Brzheskiy V.V.,<sup>1</sup> Popov V. Yu.,<sup>1</sup> Kalinina N.M.<sup>2</sup>  
<sup>1</sup>Saint Petersburg State Medical Pediatric University, Russia <sup>2</sup>The Nikiforov Russian Centre of Emergency and Radiation Medicine, Russia
- 4 THE EFFECT OF AMBIENT TITANIUM DIOXIDE MICROPARTICLE EXPOSURE TO THE OCULAR SURFACE ON THE EXPRESSION OF INFLAMMATORY CYTOKINES IN THE EYE AND CERVICAL LYMPH NODES. Youngsub Eom,<sup>1</sup> Jong Suk Song,<sup>1</sup> Hyun Kyu Lee,<sup>1</sup> Boram Kang,<sup>1</sup> Hyeon Chang Kim,<sup>2</sup> Hyung Keun Lee,<sup>3</sup> Hyo Myung Kim.<sup>1</sup> Korea University College of Medicine,<sup>1</sup> Department of Preventive Medicine, Yonsei University College of Medicine,<sup>2</sup> Department of Ophthalmology, Yonsei University College of Medicine,<sup>3</sup> Seoul, South Korea
- 5 EXACERBATION OF CLOSED EYE LEUKOCYTE INFLAMMATION IN DRY EYE DISEASE. Cameron K. Postnikoff<sup>1</sup>, Kelly K. Nichols.<sup>1</sup> <sup>1</sup>School of Optometry, University of Alabama at Birmingham, Birmingham, AL, USA
- 6 IMMUNE-NERVE CROSS-TALK IN THE CORNEA: THE ROLE OF PLASMACYTOID DENDRITIC CELLS ON CORNEAL NERVE SURVIVAL. Pedram Hamrah,<sup>1,2</sup> Arsia Jamali,<sup>1,2</sup> Maria Lopez,<sup>1,2</sup> Victor Sendra,<sup>1,2</sup> Deshea L. Harris,<sup>1,2</sup> Department of Ophthalmology, Tufts Medical Center, Tufts University School of Medicine,<sup>1</sup> Schepens Eye Research Institute/Massachusetts Eye and Ear, Department of Ophthalmology, Harvard Medical School,<sup>2</sup> Boston, MA
- 7 LANGERIN+ CELLS PREVENT OCULAR SURFACE INFLAMMATION AND FACILITATE SUBBASAL NERVE REGENERATION IN DRY EYE DISEASE. Hyung K. Lee, Eun Y. Choi, Chul H. Lee, Hyungoo Kang, Areum Yeo, Hyemi Noh, Eung K. Kim, Institute of Vision Research, Department of Ophthalmology, Yonsei University College of Medicine, Seoul, Republic of Korea
- 8 PLASMACYTOID DENDRITIC CELLS ARE CRITICAL FOR THE MAINTENANCE OF CORNEAL ANGIOGENIC PRIVILEGE. Arsia Jamali,<sup>1,2</sup> Maria Lopez,<sup>1,2</sup> Victor Sendra,<sup>1,2</sup> Deshea L. Harris,<sup>1,2</sup> Pedram Hamrah,<sup>1,2</sup> Department of Ophthalmology, Tufts Medical Center, Tufts University School of Medicine,<sup>1</sup> Schepens Eye Research Institute/Massachusetts Eye and Ear, Department of Ophthalmology, Harvard Medical School,<sup>2</sup> Boston, MA
- 9 EXPRESSION OF VAMP8 IN CHRONIC OCULAR GRAFT VS HOST DISEASE. Masaki Fukui,<sup>1,2</sup> Yoko Ogawa,<sup>1</sup> Shin Mukai,<sup>1</sup> Teru Azato,<sup>1</sup> Mizuka Kamoi,<sup>1</sup> Kazuo Tsubota.<sup>1</sup> Department of Ophthalmology, Keio University School of Medicine,<sup>1</sup> National Hospital Organization Tokyo Medical Center,<sup>2</sup> Tokyo, Japan
- 10 MADCAM-1 AND ITS RECEPTORS AS NOVEL BIOLOGICAL TARGETS TO ENHANCE CORNEAL GRAFT SURVIVAL. Hamid-Reza Moein<sup>1,2</sup>, Maria Lopez <sup>1,2</sup>, Deshea Harris<sup>1,2</sup>, Pedram Hamrah<sup>1,2</sup> <sup>1</sup>Schepens Eye Research Institute, Harvard Medical School, Boston, MA, USA. <sup>2</sup>Tufts Medical Center, Center for Translational Ocular Immunology, Tufts University School of Medicine, Boston, MA, USA.
- 11 CLINICAL OBSERVATION OF LEPTIN'S ROLE IN DRY EYE DEVELOPMENT. Jiang Xiaodan, Lu Huibin, Li Xuemin, Peking University Third Hospital



- 12 TOXICITY OF POVIDONE IODINE TO THE OCULAR SURFACE OF RABBITS. Hyun Seung Kim, Sun Young Kim. Department of Ophthalmology and Visual Science, Yeouido St. Mary's Hospital, College of Medicine, The Catholic University of KOREA, Seoul, KOREA
- 13 ASSOCIATION BETWEEN AIR POLLUTION AND DRY EYE DISEASE IN SOUTH KOREA: THE POTENTIAL IMPORTANCE OF OZONE. Dong Hyun Kim<sup>1</sup>, MD, Yoon-Hyeong Choi<sup>2</sup>, PhD, Hae Jung Paik, MD, PhD<sup>1</sup> <sup>1</sup>Department of Ophthalmology, Gachon University Gil Medical Center, Incheon, Korea <sup>2</sup>Department of Preventive Medicine, Gachon University College of Medicine, Incheon, Korea
- 14 TOWARDS A HOLISTIC UP-TO-DATE MODEL OF THE PATHOPHYSIOLOGY IN DRY EYE DISEASE. Erich Knop and Nadja Knop, Ocular Surface Center Berlin (OSCB), Dept. for Cell and Neurobiology, Center for Anatomy, Charite – Universitätsmedizin Berlin
- 15 HEAD WORN AUGMENTED REALITY DISPLAYS IN WORKFORCE AND THEIR INFLUENCE ON OCULAR COMFORT AND OCULAR SURFACE PARAMETERS. Boldin Ingrid<sup>1</sup>, Rabensteiner Dieter Franz<sup>1</sup>, Schwantzer Gerold<sup>2</sup>, Wultsch Georg<sup>3</sup>, Haleh Aminfar<sup>1</sup>, Heidinger Andrea<sup>1</sup>, Klein-Theyer Angelika<sup>1</sup> and Horwath-Winter Jutta<sup>1</sup> Department of Ophthalmology, Medical University<sup>1</sup>, Institute for Medical Informatics, Statistics and Documentation, Medical University<sup>2</sup>, AMEZ Graz occupational health centre<sup>3</sup> Graz, Austria
- 16 ESTABLISHMENT OF RAT DRY EYE MODEL WITH OCULAR DISCOMFORT BEHAVIOR. Shigeru Nakamura<sup>1</sup>, Yusuke Izuta<sup>1</sup>, Michiko Shibuya<sup>1</sup>, Erina Onishi<sup>1</sup>, Hisayo Sakaguchi<sup>1</sup>, Kai Jin<sup>1</sup>, Toshihiro Imada<sup>1</sup>, Kazuo Tsubota<sup>1</sup> Keio University School of Medicine Department of Ophthalmology, Tokyo, Japan<sup>1</sup>
- 17 INFLUENCES OF INDOOR ENVIRONMENT QUALITY AND DRY EYE IN A MODERN DESIGN OFFICE Mirjam van Tilborg,<sup>1,2</sup> Katharine Evans<sup>2</sup> <sup>1</sup>University of Applied Sciences Utrecht, Utrecht, The Netherlands <sup>2</sup>School of Optometry and Vision Sciences, Cardiff University, Cardiff, UK
- 18 CHARACTERISTICS OF ON-ROAD DRIVING PERFORMANCE OF PERSONS WITH DRY EYE DISEASE IN CHINA. Huibin Lu, Ying Wang, Yan Liu, Xiaodan Jiang, Mingzhou Zhang, Xuemin Li, Wei Wang, Department of Ophthalmology, Peking University Third Hospital, Beijing, China
- 19 HYPERALGESIA IN DRY EYE DISEASE IS ASSOCIATED WITH LOW VITAMIN D. Natasha Pahuja<sup>1</sup>, Rohit Shetty<sup>1</sup>, Arkasubhra Ghosh<sup>2</sup>, Swaminathan Sethu<sup>2,1</sup> <sup>1</sup>Cornea Refractive services, Narayana Nethralaya. <sup>2</sup> GROW laboratories, Narayana Nethralaya foundation.
- 20 OCULAR CICATRICIAL PEMPHIGOID: INDUCED BY BIOLOGICS. Manfred Zierhut<sup>1</sup>, Deshka Doycheva<sup>1</sup>, Christoph Deuter<sup>1</sup>, Bianka Sobolewska<sup>1</sup>, Martin Schaller<sup>2</sup>. Center of Ophthalmology<sup>1</sup> and Dermatology<sup>2</sup>, University of Tuebingen, Germany.
- 21 BARRIERS TO GLAUCOMA MEDICATION COMPLIANCE AMONG VETERANS: DRY EYE SYMPTOMS AND ANXIETY DISORDERS. Sarah R Wellik<sup>1,2</sup>, Jack Stringham<sup>2</sup>, Noy Ashkenazy<sup>3</sup>, Anat Galor,<sup>1,2</sup> Miami Veterans Administration Medical Center, Miami, FL<sup>1</sup> Bascom Palmer Eye Institute, Miami, FL,<sup>2</sup> University of Miami Miller School of Medicine, Miami, FL<sup>3</sup>
- 22 REDUCING THE OCULAR AND SYSTEMIC SIDE EFFECTS OF TROPICAMIDE 0,5% EYEDROPS BY REDUCING THE DROP VOLUME. H. van der Heiden<sup>a</sup>, N.A.M. Troelstra<sup>b</sup>, J. van Lith<sup>b</sup>, J.M. Verzijl<sup>ba</sup> Mu-Drop BV. Apeldoorn, The Netherlands. <sup>b</sup> Elisabeth-TweeSteden Ziekenhuis, 5042 AD Tilburg, The Netherlands.

- 23 A CASE OF SEVERE OCULAR SURFACE DISORDER RELATED AND SEVERE CONJUNCTIVOCHALASIS. Miki Hata<sup>1,2</sup>, Masaki Fukui<sup>1,2</sup>, Yoshinobu Mizuno<sup>1</sup>, Toru Noda<sup>1</sup> National Hospital Organization Tokyo Medical Center, Department,<sup>1</sup>Department of Ophthalmology, Keio University School of Medicine,<sup>2</sup> Tokyo, Japan
- 24 PREVALENCE OF DEMODEX FOLLICULORUM IN PATIENTS WITH KERATOCONJUNCTIVITIS SICCA. Christina Jacobi<sup>1,2</sup>, Julia K. Kurz<sup>2</sup>, Friedrich Paulsen<sup>3</sup>, Anselm G.M. Jünemann<sup>2,4</sup>. Ophthalmological practice, Nuremberg, Germany<sup>1</sup>; Department of Ophthalmology, University of Erlangen-Nuremberg, Germany<sup>2</sup>; Institute of Anatomy II, University of Erlangen-Nuremberg, Germany<sup>3</sup>; Department of Ophthalmology, University of Rostock, Germany<sup>4</sup>.
- 25 DIFFERENCE IN THE FREQUENCY OF USE OF LACHRYMAL SUBSTITUTES IN PATIENTS WITH MODERATE TO SEVERE DRY EYE DISEASE. Doreen Schmidl<sup>1,2</sup>, Katarzyna Witkowska<sup>1,2</sup>, Piotr Wozniak<sup>1</sup>, Ahmed Bata<sup>1</sup>, Klemens Fondi<sup>1</sup>, Carina Baar<sup>1</sup>, Gerhard Garhöfer<sup>1</sup>, Leopold Schmetterer<sup>1,2</sup>. <sup>1</sup>Department of Clinical Pharmacology, <sup>2</sup>Center for Medical Physics and Biomedical Engineering. Medical University of Vienna, Vienna, Austria
- 26 CORRELATION OF OCULAR SYMPTOMS QUESTIONNAIRES WITH DRY EYE EVALUATION IN PRIMARY SJÖGREN'S SYNDROME. Karim Mohamed-Noriega, MD, Dr Med,<sup>1</sup> Fernando Morales-Wong, MD;<sup>1</sup> Yunuen Bages-Rousselon, MD,<sup>1</sup> Janett Riega, MD,<sup>2</sup> Dr Med; Mario Garza, MD, PhD,<sup>2</sup> Jesús Mohamed-Hamsho, MD, Dr. Med.<sup>1</sup> Department Of Ophthalmology, Autonomous University Of Nuevo Leon (UANL), Faculty Of Medicine, University Hospital, Monterrey, Mexico.<sup>1</sup> Department Of Rheumatology, Autonomous University Of Nuevo Leon (UANL), Faculty Of Medicine, University Hospital, Monterrey, Mexico.<sup>2</sup>
- 27 NEUROPATHIC PAIN AS A DISTINGUISHING FACTOR AMONG SJÖGREN AND NON-SJÖGREN SYNDROME PATIENTS WITH DRY EYE DISEASE. Jacqueline Faustino<sup>1</sup>, Carolina Maria Modulo<sup>1</sup>, Adriana Batista Murashima<sup>1</sup>, Eduardo Melani Rocha<sup>1</sup>. <sup>1</sup>FMRP, University of São Paulo, USP, Ribeirão Preto – SP. Department of Ophthalmology, Otorhinolaryngology, and Head and Neck Surgery.Brasil.
- 28 OCULAR SURFACE PAIN AND AS A DISCRIMINANT SYMPTOM IN DRY EYE DISEASE. Jacqueline Faustino<sup>1</sup>, Carolina Maria Modulo<sup>1</sup>, Adriana Batista Murashima<sup>1</sup>, Luis Fernando Nominato<sup>1</sup>, Ana Carolina Dias<sup>1</sup>, Eduardo Melani Rocha<sup>1</sup>. <sup>1</sup>FMRP, University of São Paulo, USP, Ribeirão Preto-SP Department of Ophthalmology, Otorhinolaryngology and Head and Neck Surgery.Brasil
- 29 CHANGES IN CORNEAL ENDOTHELIAL MORPHOLOGY AND CORNEAL THICKNESS IN PATIENTS WITH DRY EYE DISEASE AND SJÖGREN'S SYNDROME. Mizu Ono,<sup>1</sup> Takenori Inomata,<sup>1</sup> Yoshimune Hiratsuka,<sup>1</sup> Tina Shiang,<sup>2</sup> Akira Murakami.<sup>1</sup> Juntendo University Faculty of Medicine,<sup>1</sup> Tokyo, Japan, Boston University School of Medicine,<sup>2</sup> Boston, MA USA.
- 30 RECOMMENDATIONS OF THE P.I.C.A.S.S.O. (ITALIAN PARTNERS FOR THE CORRECTION OF OCULAR SURFACE ALTERATIONS) BOARD FOR THE DIAGNOSIS AND THERAPEUTIC MANAGEMENT OF PATIENTS WITH TEAR DYSFUNCTIONS. Pasquale Aragona<sup>1</sup>, Emilia Cantera<sup>2</sup>, Rita Mencucci<sup>3</sup>, Maurizio Rolando<sup>4</sup>, Pierangela Rubino<sup>5,1</sup> Professor of Ophthalmology, Biomedical Sciences Department - University of Messina, Italy, <sup>2</sup>Israelitico Hospital, Roma, Italy, <sup>3</sup>Clinica Oculistica di Firenze, Italy, <sup>4</sup>IsPre Oftalmica, Ocular Surface Center, Genoa, Italy, <sup>5</sup>Dirigente Medico, AOU di Parma, Italy

- 31 BASELINE CHARACTERISTICS OF PARTICIPANTS IN THE DRY EYE ASSESSMENT AND MANAGEMENT (DREAM) STUDY. Penny Asbell,<sup>1</sup> Maureen Maguire,<sup>2</sup> Maxwell Pistilli,<sup>2</sup> Ellen Peskin<sup>2</sup>, Kathy McWilliams<sup>2</sup>, Eric Kulinski<sup>1</sup> for the DREAM Research Group. <sup>1</sup>Icahn School of Medicine at Mt. Sinai, New York, NY, <sup>2</sup>School of Medicine, University of Pennsylvania, Philadelphia PA.
- 32 Clinical and neurophysiological commonalities among chronic corneal pain patients enrolled in a clinical trial. Doruk D\*<sup>1</sup>, Chanes L\*<sup>1,2</sup>, Jacobs DS<sup>3</sup>, Merabet L<sup>4</sup>, Valero-Cabr  A<sup>2</sup> & Fregni F<sup>1</sup> \*Equally contributing. <sup>1</sup>Spaulding Neuromodulation Center, Spaulding Rehabilitation Hospital, Harvard Medical School, Charlestown, MA, USA <sup>2</sup>Universit  Pierre et Marie Curie, CNRS 7225-INSERM S975, Institut du Cerveau et la Moelle  pini re, Paris, France <sup>3</sup>Boston Foundation for Sight, Needham, MA, USA <sup>4</sup>Laboratory for Visual Neuroplasticity, Massachusetts Eye and Ear Infirmary, Harvard Medical School, Boston, MA, USA
- 33 HARNESSING NON-TRADITIONAL, 10-YEAR, REAL WORLD DATA TO GENERATE PATIENT INSIGHTS INTO DRY EYE DISEASE. Debra A Schaumberg,<sup>1</sup> Stephen Doogan,<sup>2</sup> Timothy Kaan,<sup>3</sup> Matthew McLoughlin,<sup>3</sup> Cindhuja Pandian,<sup>3</sup> Steven Zhang,<sup>1</sup> Shire,<sup>1</sup> Real Life Sciences,<sup>2</sup> Kinapse,<sup>3</sup> USA
- 34 TOWARDS A NOVEL IN-VITRO ANTERIOR EYE MODEL FOR OCULAR SURFACE EVALUATION. Francesco Menduni, James S. Wolffsohn, Antonio Fratini, Leon N. Davies. Ophthalmic Research Group, Aston University, Birmingham, UK.
- 35 EPIDEMIOLOGY OF DRY EYE DISEASE SYMPTOMS IN BRAZIL. Julia Silvestre de Castro, Iara Borin Selegatto, Marilia Menezes Trindade Ferrer, Lucas Yunes Cominatto Barbosa, Monique Possari Minari, Rosane Silvestre de Castro, Jos  Paulo Cabral de Vasconcelos, Carlos Eduardo Leite Arieta, M nica Alves. University of Campinas – UNICAMP, Discipline of Ophthalmology, Faculty of Medical Sciences, Brazil.
- 36 PREVALENCE OF DRY EYE DISEASE IN THE ADULT INDIAN POPULATION. Noopur Gupta,<sup>1</sup> Praveen Vashist,<sup>1</sup> Vivek Gupta,<sup>1</sup> Meenakshi Wadhvani,<sup>1</sup> Radhika Tandon,<sup>1</sup> Dr. Rajendra Prasad Centre for Ophthalmic Sciences, AIIMS, New Delhi, India.
- 37 A RELATIONSHIP BETWEEN NUTRITION, BODY COMPOSITION AND SIGNS BUT NOT SYMPTOMS OF DRY EYE. Isabelle Jalbert, Kam Chun (Terry) Ho, Pei Schier Tan, Fiona Stapleton, School of Optometry and Vision Science, UNSW Australia
- 38 SELF-REPORTED COMPLIANCE IN SYMPTOMATIC VERSUS ASYMPTOMATIC PATIENTS WITH EVAPORATIVE DRY EYE. Christen Kenrick,<sup>1</sup> Caroline Blackie,<sup>2</sup> Donald Korb.<sup>1,2</sup> Korb & Associates,<sup>1</sup> TearScience,<sup>2</sup> Boston, MA, USA
- 39 THE RELATIONSHIP BETWEEN CORNEAL NERVE MORPHOLOGY AND SUBJECTIVE SYMPTOM IN DRY EYE DISEASE. Hidenaga Kobashi, MD, PhD<sup>1,2</sup>; Kazutaka Kamiya, MD, PhD<sup>1</sup> <sup>1</sup>Department of Ophthalmology, University of Kitasato School of Medicine, Kanagawa, Japan. <sup>2</sup>Schepens Eye Research Institute, Massachusetts Eye and Ear Infirmary, Department of Ophthalmology, Harvard Medical School, Boston, Massachusetts.
- 40 21ST CENTURY DIGITAL DEVICE USE AND OSDI. Justin T. Kwan,<sup>1</sup> Jennifer Harthan,<sup>2</sup> Leslie O'Dell,<sup>3</sup> Scott G. Hauswirth,<sup>4</sup> Clare Halleran,<sup>5</sup> Katherine Mastrota,<sup>6</sup> Milton M. Hom,<sup>7</sup> Marshall B. Ketchum University,<sup>1</sup> Fullerton, CA; Illinois College of Optometry,<sup>2</sup> Chicago, IL; Private practice,<sup>3</sup> York, PA; Minnesota Eye Consultants,<sup>4</sup> Minneapolis, MN; Private practice,<sup>5</sup> Clarendville, NL, Canada; Omni Eye Services,<sup>6</sup> New York, NY; Private practice,<sup>7</sup> Azusa, CA.

- 41 THE ASSOCIATION BETWEEN SYMPTOMS OF DRY EYE SYNDROME AND METABOLIC OUTCOME IN A GENERAL POPULATION IN KOREA. Jong Woon Park .National Health Insurance Service Ilsan Hoapital
- 42 TEST EFFICACY OF THE MODIFIED SCHEIN QUESTIONNAIRE. Jerry R. Paugh, O.D.,Ph.D.<sup>1</sup>, Andrew Loc Nguyen, Ph.D.<sup>2</sup> <sup>1</sup>Southern California College of Optometry, Fullerton, CA, <sup>2</sup>California State University at Fullerton
- 43 ASSESSMENT OF DRY EYE PATIENTS USING QUESTIONNAIRES – A REVIEW. Alberto Recchioni<sup>1,2,3</sup>, Tugce Ipek<sup>1,2,4</sup>, Andreas Hartwig<sup>1,2</sup>, Clare O'Donnell<sup>1,2</sup> <sup>1</sup>Optegra Eye Sciences, Berlin, Germany <sup>2</sup>Aston University, Birmingham, UK <sup>3</sup>University of Valencia, Valencia, Spain <sup>4</sup>Universidad Complutense de Madrid, Madrid, Spain
- 44 A NOVEL IMAGING METHOD TO EVALUATE DRY EYE SYNDROME. Raanan Gefen<sup>3</sup>, Fanny Segev<sup>1</sup>, Noa Gefen<sup>1</sup>, Leejee H. Suh<sup>2</sup>, Danielle Trief<sup>2</sup>, Yoel Cohen<sup>3</sup>, Yoel Arieli<sup>3</sup>, Avner Belkin<sup>1</sup>, Alon Harris<sup>3,4</sup>, Meir Medical Center, Israel<sup>1</sup>, Columbia University Medical Center<sup>2</sup>, AdOM advance optical technologies Ltd.<sup>3</sup>, Eugene and Marilyn Glick Eye Institute and Indiana University School of Medicine<sup>4</sup>
- 45 BILATERALITY IN DRY EYE DISEASE: IMPLICATIONS FOR CLINICAL TRIALS. Michael A. Lemp.<sup>1,2,3</sup>, Benjamin D. Sullivan<sup>3</sup>, Georgetown University<sup>1</sup>, George Washington University<sup>2</sup>, TearLab Corp.<sup>3</sup>
- 46 ANGIOGENIN AS BIOMARKER OF DRY EYE. JeaChan Kim, Jung Huh. Department of Ophthalmology, Chung-Ang University Hospital.
- 47 CASE-CONTROL STUDY OF CORNEAL FINDINGS IN DIABETIC AND NONDIABETIC PATIENTS. Machiko Shimmura-Tomita, Hiroko Takano, Nozomi Kinoshita, Fumihiko Toyoda, Yoshiaki Tanaka, Rina Takagi, Mina Kobayashi, Akihiro Kakehashi. Department of Ophthalmology, Saitama Medical Center, Jichi Medical University, Saitama, Japan
- 48 RELATIONSHIP BETWEEN FLUORESCEIN BREAKUP PATTERNS AND CLINICAL MANIFESTATIONS IN DRY EYE. Norihiko Yokoi<sup>1</sup>, Georgi As. Georgiev<sup>2</sup>, Hiroaki Kato<sup>1</sup>, Aoi Komuro<sup>1</sup>, Yukiko Sonomura<sup>1</sup>, Chie Sotozono<sup>1</sup>, Kazuo Tsubota<sup>3</sup>, and Shigeru Kinoshita<sup>4</sup>. Department of Ophthalmology<sup>1</sup> and Department of Frontier Medical Science and Technology for Ophthalmology<sup>4</sup>, Kyoto Prefectural University of Medicine, Kyoto, Japan, Department of Optics and Spectroscopy, Faculty of Physics, St. Kliment Ohridski University of Sofia, Sofia, Bulgaria<sup>2</sup>, Department of Ophthalmology, Keio University School of Medicine, Tokyo, Japan<sup>3</sup>
- 49 EVALUATING THE EFFECT OF DRY EYE DISEASE ON CORNEAL SUB-BASAL NERVE DENSITY AND MORPHOLOGY Kendrick C Shih<sup>1</sup>, Veerappan Anuradha<sup>2</sup>, Louis Tong<sup>2</sup>, Department of Ophthalmology, LKS Faculty of Medicine, University of Hong Kong, Hong Kong SAR<sup>1</sup>, Singapore Eye Research Institute, Singapore National Eye Centre, Third Hospital Avenue, Singapore 168751<sup>2</sup>
- 50 AGE-RELATED DIFFERENCES IN CORNEAL EPITHELIAL THICKNESS MEASUREMENTS WITH ANTERIOR SEGMENT OPTICAL COHERENCE TOMOGRAPHY. Sun Woong Kim<sup>1</sup>, IK-Hee Ryu<sup>2</sup> Jong-Hyuck Lee<sup>1</sup> <sup>1</sup>Department of Ophthalmology, Yonsei University Wonju College of Medicine, Wongju, Korea <sup>2</sup>B & Viit Eye center, Seoul, Korea

- 51 ENDOGENOUS OPIOIDS AND CHEMOKINES EXPRESSION IN PATIENTS SUFFERING FROM OCULAR PAIN ASSOCIATED WITH DRY EYE DISEASE. P. Nicolle, Md,<sup>1</sup> H. Liang, MD, PhD,<sup>1,3</sup> S. Melik-Parsadaniantz, PhD,<sup>3</sup> C. Baudouin, MD, PhD,<sup>1,4</sup> A. Reaux-Le-Goazigo\*, PhD,<sup>3</sup> A. Labbe, MD, PhD\*,<sup>1,4</sup> Department of Ophthalmology III, Quinze-Vingts National Ophthalmology Hospital,<sup>1</sup> DHU Sight Restore, INSERM-DHOS CIC1423,<sup>2</sup> INSERM, U968 UPMC Paris 6, Institut de la Vision,CNRS,UMR7210,<sup>3</sup> Department of Ophthalmology, Ambroise Paré Hospital, APHP, Univeristy of Versailles St-Quentin en Yvveline.\*These authors jointly supervised this work.
- 52 EVALUATION OF INTERFACE REFLECTIVITY AND CORNEAL ABERRATIONS FOLLOWING DESCEMT'S STRIPPING AUTOMATED ENDOTHELIAL KERATOPLASTY (DSAEK). Hamid Khakshour <sup>1,2</sup>, Maliheh Nikandish <sup>1,2</sup>, Maryam Salehi <sup>3</sup>, Haleh Ghooshkhanehei <sup>2</sup> Eye Research Center <sup>1</sup>, Mashhad University of Medical Sciences <sup>2</sup>, Department of community medicine<sup>3</sup>, Mashhad, Iran
- 53 OCULAR SURFACE INVOLVEMENT ON GVHD PATIENTS, Sihem Lazreg. Specialist in Ophthalmology, Blida, Algeria.
- 54 INVESTIGATION OF THE CLINICAL FEATURES OF "PATCHY SPK". Aoi Komuro<sup>1</sup>, Norihiko Yokoi<sup>1</sup>, Seitaro Komai<sup>1</sup>, Hiroaki Kato, Yukiko Sonomura<sup>1</sup>, Chie Sotozono<sup>1</sup>, and Shigeru Kinoshita<sup>2</sup> Department of Ophthalmology<sup>1</sup> and Department of Frontier Medical Science and Technology for Ophthalmology<sup>2</sup>, Kyoto Prefectural University of Medicine, Kyoto, Japan.
- 55 COMFORT AND WETTABILITY OF DAILY DISPOSABLE CONTACT LENSES. Kathy Dumbleton,<sup>1</sup> Michel Guillon,<sup>1,2</sup> Trisha Patel,<sup>1</sup> Kishan Patel,<sup>1</sup> Cecile Maissa.<sup>3</sup> OCULAR TECHNOLOGY GROUP International,<sup>1</sup> School of Life and Health Sciences,<sup>2</sup> Aston University, Aston UK, Alcon Inc.<sup>3</sup> Fort Worth, TX, USA
- 56 CONTACT LENS LIPID UPTAKE AND CORRELATION TO COMFORT. Cristina Schnider, Kristy Canavan, Kingsley Ebare, Mark Lada, Zohra Fadli. Johnson & Johnson Vision Care, Inc. Jacksonville, FL.
- 57 SCLERAL LENS SURFACE COATING IMPROVES VISION AND OCULAR COMFORT. Maria Walker<sup>1</sup>, Rachel Redfern. The Ocular Surface Institute, College of Optometry, University of Houston<sup>1</sup>
- 58 EFFECT OF MONOCULAR LENS WEAR ON OCULAR COMFORT. U Stahl,<sup>1</sup> N Keir,<sup>2</sup> S Guthrie,<sup>1</sup> L Jones<sup>1</sup> Centre for Contact Lens Research, University of Waterloo, Canada,<sup>1</sup> CooperVision, USA<sup>2</sup>.
- 59 DO CHANGES IN MEIBOMIAN AND TEAR LIPIDS CORRELATE WITH COMFORT IN CONTACT LENS WEARERS. Jaya Sowjanya Siddireddy, Ajay Kumar Vijay, Jacqueline Tan, Mark Willcox, School of Optometry and Vision Science, University of New South Wales.
- 60 ASSESSMENT OF COMFORT AND PRE-LENS TEAR FILM SURFACE QUALITY Maryam Mousavi, Dorota Szczesna-Iskander, D. Robert Iskander, Wroclaw University of Science and Technology, Wyspianskiego 27, 50-370 Wroclaw, Poland
- 61 TEAR FILM CHARACTERISTICS DURING WEAR OF DAILY DISPOSABLE CONTACT LENSES. James\_Wolffsohn,<sup>1</sup> Maria\_Vidal\_Rohr,<sup>1</sup> Andrea\_Le,<sup>2</sup> Frank\_Yi,<sup>2</sup> Carol\_Lakkis.<sup>2</sup> Aston\_University,Birmingham,UK,<sup>1</sup> Johnson&Johnson Vision Care. Jacksonville,FL,USA<sup>2</sup>

- 62 EFFECTS OF THREE DIFFERENT DAILY DISPOSABLE CONTACT LENSES ON TEAR FILM. Giancarlo Montani,<sup>1</sup> Sebastiano Giuffrida,<sup>2</sup> Fabio Carta.<sup>2</sup> Università del Salento, Italy<sup>1</sup> Baush+Lomb, Italy<sup>2</sup>
- 63 EFFECTS OF CONTACT LENS WEARING ON TEAR FILM AND OCULAR SURFACE OF PRESBYOPES POPULATION. Rico-del-Viejo<sup>1</sup> L, MSc, Tavberidze <sup>1</sup>N, OD, Lorente-Velázquez<sup>1</sup> A, PhD, Hernández-Verdejo<sup>1</sup> JL, PhD, Madrid-Costa<sup>1</sup> D, PhD 1. Department of Optometry II, Faculty of Optics and Optometry, Complutense University of Madrid, Madrid, Spain
- 64 STEADY-STATE CORNEAL OXYGEN CONSUMPTION PROFILES DURING CONTACT LENS WEAR. Noel Brennan<sup>1</sup>, Dalton Harvie<sup>2</sup>. 1. Johnson & Johnson Vision Care (JJVC) 2. Chemical and Biomolecular Engineering, University of Melbourne
- 65 PHYSIOLOGICALLY-RELEVANT MEASUREMENT OF CONTACT LENS FRICTIONAL ENERGY AFTER A SIMULATED 1-DAY WEAR CYCLE. Samuele Tosatti<sup>1</sup>, Olof Sterner<sup>1</sup>, Charles Scales<sup>2</sup>, Tawnya Wilson<sup>2</sup>, Kathrine Osborn Lorenz<sup>2</sup> 1SuSoS AG, 2Johnson&JohnsonVisionCare
- 66 THE EFFECT OF CONTACT LENS WEAR ON THE LID MARGIN EPITHELIUM. Waleed Alghamdi<sup>1,2,3</sup>, Maria Markoulli<sup>2</sup>, Eric Papas<sup>2</sup>, 1Brien Holden Vision Institute, Sydney, Australia. 2School of Optometry & Vision Science, University of New South Wales, Sydney, Australia. 3Vision Cooperative Research Centre, Sydney, Australia
- 67 THE ASSOCIATION BETWEEN MEIBOMIAN GLAND WIDTH, CLINICAL TESTS, AND PATIENT-REPORTED OUTCOMES IN CONTACT LENS AND NON-CONTACT LENS WEARERS. Carolina Kunnen,<sup>1</sup> Lisa Jones-Jordan,<sup>2</sup> Justin Kwan,<sup>3</sup> Sruthi Srinivasan,<sup>4</sup> Andrew Pucker.<sup>2</sup> University of Houston, USA,<sup>1</sup> The Ohio State University, USA,<sup>2</sup> Marshall B Ketchum, USA,<sup>3</sup> University of Waterloo, CA<sup>4</sup>
- 68 AN *IN-VITRO* LIPID UPTAKE MODEL TO PREDICT *EX-VIVO* LIPID DEPOSITION ON WORN SILICONE HYDROGEL CONTACT LENSES. Lakshman Subbaraman,<sup>1</sup> Negar Omali,<sup>1</sup> Mark Lada,<sup>2</sup> Kristy Canavan,<sup>2</sup> Zohra Fadli,<sup>2</sup> Lyndon Jones.<sup>1</sup> Centre for Contact Lens Research, School of Optometry and Vision Science, University of Waterloo, Canada;<sup>1</sup> Johnson and Johnson Vision Care, Inc. Jacksonville, USA.<sup>2</sup>
- 69 DAYTIME TEAR FILM AND CORNEAL THICKNESS VARIATION WITH SEVERAL SCLERAL CONTACT LENS DIAMETERS. Edouard Lafosse<sup>1</sup>, Santiago García-Lázaro<sup>1</sup>, Alejandro Cerviño Expósito<sup>1</sup>, Teresa Ferrer-Blasco<sup>1</sup>, Robert Montés-Micó<sup>1</sup>. <sup>1</sup>Grupo de Investigación en Optometría/GIO, Universidad de Valencia, Valencia, Spain.
- 70 HYDROGEL SURFACE COATING OF RGP LENSES IMPROVES WETTABILITY AND LUBRICITY Kelly Mabry, Karen Havenstrite, Katharine Gifford, Margaret Walter, Brandon Felkins, Victor McCray, Tangible Science, Menlo Park, CA, USA
- 71 MAKING CONTACT LENSES MORE COMPATIBLE WITH THE OCULAR SURFACE THROUGH COATING TECHNOLOGY. María Vidal Rohr, Leon N Davies, James S. Wolffsohn. Ophthalmic Research Group, Aston University, Birmingham, UK.
- 72 SEX, TEARS AND CONTACT LENSES. Kathryn Richdale,<sup>1</sup> Cecilia Chao,<sup>1,2</sup> Moneisha Gokhale,<sup>2,3</sup> Kim Duong,<sup>1</sup> Michele Madigan,<sup>2</sup> Isabelle Jalbert,<sup>2</sup> Blanka Golebiowski,<sup>2</sup> Mark Willcox<sup>2</sup> State University of New York Optometry (SUNY),<sup>1</sup> School of Optometry and Vision Science, University of New South Wales (UNSW),<sup>2</sup> Deakin Optometry, Deakin University, Australia<sup>3</sup>

- 73 IMPACT ON THE OCULAR SURFACE OF A NEW DAILY HYDROGEL CONTACT LENS WITH HIGH WATER CONTENT. Rico-del-Viejo<sup>1</sup> L, MSc, Ruiz-Alcocer<sup>2</sup>J,PhD, Tavberidze<sup>1</sup> N, OD, Lorente-Velázquez<sup>1</sup>A, PhD, Hernández-Verdejo<sup>1</sup> JL, PhD, Madrid-Costa<sup>1</sup> D, PhD 1. Department of Optometry II, Faculty of Optics and Optometry, Complutense University of Madrid, Madrid, Spain 2. European University of Madrid, Madrid, Spain
- 74 PERMEATION AND PERVAPORATION OF WATER THROUGH CONTACT LENS MATERIALS. Zohra Fadli, Ph.D., Charles Scales, Ph.D., Bernardo Santa Maria, M.S., and Donald Riederer, Ph.D.
- 75 EFFECT OF 3% DIQUAFOSOL SODIUM OPHTHALMIC SOLUTION ON SOFT CONTACT LENS WEARERS. Yukiko Sonomura,<sup>1,2</sup> Norihiko Yokoi,<sup>2</sup> Rieko Sakai,<sup>2</sup> Aoi Komuro,<sup>2</sup> Hiroaki Kato,<sup>2</sup> Chie Sotozono,<sup>2</sup> and Shigeru Kinoshita<sup>3</sup> <sup>1</sup>Department of Ophthalmology, Kyoto Yamashiro General Medical Center, Kyoto, Japan, and <sup>2</sup>Department of Ophthalmology and <sup>3</sup>Department of Frontier Medical Science and Technology for Ophthalmology, Kyoto Prefectural University of Medicine, Kyoto, Japan

