

10. Cermak JM, Krenzer KL, Sullivan RM, et al. Is complete androgen insensitivity syndrome associated with alterations in the meibomian gland and ocular surface? *Cornea* 2003;22:516-21
11. Mainstone JC, Bruce AS, Golding TR. Tear meniscus measurement in the diagnosis of dry eye. *Curr Eye Res* 1996;15:653-61
12. Kallarackal GU, Ansari EA, Amos N, et al. A comparative study to assess the clinical use of fluorescein meniscus time (FMT) with tear break up time (TBUT) and Schirmer's tests (ST) in the diagnosis of dry eyes. *Eye* 2002;16:594-600
13. Savini G, Barboni P, Zanini M. Tear meniscus evaluation by optical coherence tomography. *Ophthalmic Surg Lasers Imaging* 2006;37:112-8
14. Craig JP, Tomlinson A. Importance of the lipid layer in human tear film stability and evaporation. *Optom Vis Sci* 1997;74:8-13
15. Craig JP, Singh I, Tomlinson A, et al. The role of tear physiology in ocular surface temperature. *Eye* 2000;14 (Pt 4):635-41
16. Tiffany JM, Winter N, Bliss G. Tear film stability and tear surface tension. *Curr Eye Res* 1989;8:507-15
17. Nagyova, B, Tiffany JM. Components responsible for the surface tension of human tears. *Curr Eye Res* 1999;19:4-11.
18. Glasson MJ, Stapleton F, Keay L, et al. Differences in clinical parameters and tear film of tolerant and intolerant contact lens wearers. *Invest Ophthalmol Vis Sci* 2003;44:5116-24
19. Begley CG, Chalmers RL, Abetz L, et al. The relationship between habitual patient-reported symptoms and clinical signs among patients with dry eye of varying severity. *Invest Ophthalmol Vis Sci* 2003;44:4753-61
20. Yamada M, Mochizuki H, Kawai M, et al. Decreased tear lipocalin concentration in patients with meibomian gland dysfunction. *Br J Ophthalmol* 2005;89:803-5
21. Dohmlan CH, Friend J, Kalevar V, et al. The glycoprotein (mucus) content of tears from normals and dry eye patients. *Exp Eye Res* 1976;22:359-65
22. Argueso P, Balaram M, Spurr-Michaud S, et al. Decreased levels of the goblet cell mucin MUC5AC in tears of patients with Sjogren's syndrome. *Invest Ophthalmol Vis Sci* 2002;43:1004-11
23. Zhao H, Jumblatt JE, Wood TO, Jumblatt MM. Quantification of MUC5AC protein in human tears. *Cornea* 2001;20:873-7
24. Goto E, Tseng SC. Differentiation of lipid tear deficiency dry eye by kinetic analysis of tear interference images. *Arch Ophthalmol* 2003;121:173-80
25. Danjo Y, Hamano T. Observation of precorneal tear film in patients with Sjogren's syndrome. *Acta Ophthalmol Scand* 1995;73:501-5
26. Shine WE, McCullery JP. Keratoconjunctivitis sicca associated with meibomian secretion polar lipid abnormality. *Arch Ophthalmol* 1998;116:849-52
27. Grus FH, Sabuncuo P, Herber S, Augustin AJ. Analysis of tear protein patterns for the diagnosis of dry eye. *Adv Exp Med Biol* 2002;506:1213-6
28. Ohashi Y, Ishida R, Kojima T, et al. Abnormal protein profiles in tears with dry eye syndrome. *Am J Ophthalmol* 2003;136:291-9
29. Virtanen T, Konttinen YT, Harkonen M, Tervo T. Tear fluid plasmin activity of dry eye patients with Sjogren's syndrome. *Acta Ophthalmol Scand* 1997;75:137-41
30. Afonso AA, Sobrin L, Monroy DC, et al. Tear fluid gelatinase B activity correlates with IL-1alpha concentration and fluorescein clearance in ocular rosacea. *Invest Ophthalmol Vis Sci* 1999;40:2506-12
31. Sobrin L, Liu A, Monroy DC, et al. Regulation of MMP-9 activity in human tear fluid and corneal epithelial culture supernatant. *Invest Ophthalmol Vis Sci* 2000;41:1703-9
32. Grus FH, Podust VN, Bruns K, et al. SELDI-TOF-MS ProteinChip array profiling of tears from patients with dry eye. *Invest Ophthalmol Vis Sci* 2005;46: 863-76
33. Danjo Y, Lee M, Horimoto K, Hamano T. Ocular surface damage and tear lactoferrin in dry eye syndrome. *Acta Ophthalmol (Copenh)* 1994;72:433-7
34. Koo BS, Lee DY, Ha HS, et al. Comparative analysis of the tear protein expression in blepharitis patients using two-dimensional electrophoresis. *J Proteome Res* 2005;4:719-24
35. Seal DV. The effect of aging and disease on tear constituents. *Trans Ophthalmol Soc UK* 1985;104 (Pt 4):355-62
36. Glasson, M, Stapleton F, Willcox M. Lipid, lipase and lipocalin differences between tolerant and intolerant contact lens wearers. *Curr Eye Res* 2002;25:227-35
37. Aho VV, Nevalainen TJ, Paavilainen V, Saari KM. Group II A phospholipase A2 content of tears in patients with keratoconjunctivitis sicca. *Graefes Arch Clin Exp Ophthalmol* 2002 Jul;240(7):521-3
38. Tishler M, Yaron I, Geyer O, et al. Elevated tear interleukin-6 levels in patients with Sjogren syndrome. *Ophthalmology* 1998;105:2327-9
39. Pflugfelder SC, Jones D, Ji Z, et al. Altered cytokine balance in the tear fluid and conjunctiva of patients with Sjogren's syndrome keratoconjunctivitis sicca. *Curr Eye Res* 1999;19:201-11.
40. Solomon A, Dursun D, Liu Z, et al. Pro- and anti-inflammatory forms of interleukin-1 in the tear fluid and conjunctiva of patients with dry-eye disease. *Invest Ophthalmol Vis Sci* 2001;42:2283-92.
41. Molloy MP, Bolis S, Herbert BR, et al. Establishment of the human reflex tear 2D-PAGE reference map: a first step towards the diagnosis of disease. *Electrophoresis* 1997;18: 2811-5
42. Tsai PS, Evans JE, Green KM, et al. Proteomic analysis of human meibomian gland secretions. *Br J Ophthalmol* 2006;90:372-7
43. Mulvenna I, Stapleton F, Hains PG, et al. Low molecular weight analysis of tears using matrix assisted laser desorption ionization-time of flight mass spectrometry. *Clin Experiment Ophthalmol* 2000;28:205-7
44. Fung K, Morris C, Duncan M. Mass spectrometric techniques applied to the analysis of human tears: a focus on the peptide and protein constituents. *Adv Exp Med Biol* 2002;506(PtA):601-5
45. Ham BM, Jacob JT, Keese MM, Cole RB. Identification, quantification and comparison of major non-polar lipids in normal and dry eye tear lipidomes by electrospray tandem mass spectrometry. *J Mass Spectrom* 2004;39:1321-36
46. Gipson IK, Spurr-Michaud SJ, Argueso P, et al. Mucin gene expression in immortalized human corneal-limbal and conjunctival epithelial cell lines. *Invest Ophthalmol Vis Sci* 2003;44:2496-2506
47. Robertson DM, Li L, Fisher S, et al. Characterization of growth and differentiation in a telomerase-immortalized human corneal epithelial cell line. *Invest Ophthalmol Vis Sci* 2005;46:470-8
48. Gilbard JP, Rossi SR, Heyda KG. Tear film and ocular surface changes after closure of the meibomian gland orifices in the rabbit. *Ophthalmology* 1989;96:1180-6
49. Stewart P, Chen Z, Farley W, et al. Effect of experimental dry eye on tear sodium concentration in the mouse. *Eye Contact Lens* 2005;31:175-8
50. Gilbard JP, Rossi SR, Gray KL, et al. Tear film osmolarity and ocular surface disease in two rabbit models for keratoconjunctivitis sicca. *Invest Ophthalmol Vis Sci* 1988;29:374-8
51. Nagelhout TJ, Gamache DA, Roberts L, et al. Preservation of tear film integrity and inhibition of corneal injury by dexamethasone in a rabbit model of lacrimal gland inflammation-induced dry eye. *J Ocul Pharmacol Ther* 2005;21:139-48.
52. Salvatore MF, Pedroza L, Beuerman RW. Denervation of rabbit lacrimal gland increases levels of transferrin and unidentified tear proteins of 44 and 36 kDa. *Curr Eye Res* 1999;18:455-66.
53. Song XJ, Li DQ, Farley W, et al. Neurturin-deficient mice develop dry eye and keratoconjunctivitis sicca. *Invest Ophthalmol Vis Sci* 2003;44:4223-9
54. Poon AC, Geerling G, Dart JK, et al. Autologous serum eyedrops for dry eyes and epithelial defects: clinical and in vitro toxicity studies. *Br J Ophthalmol* 2001;85:1188-97
55. Ralph RA. Conjunctival goblet cell density in normal subjects and in dry eye syndromes. *Invest Ophthalmol Vis Sci* 1975;14:299-302.
56. Nelson JD, Havener VR, Cameron JD. Cellulose acetate impressions of the ocular surface. Dry eye states. *Arch Ophthalmol* 1983;101:1869-72
57. Pflugfelder SC, Tseng SC, Yoshino K, et al. Correlation of goblet cell density and mucosal epithelial membrane mucin expression with rose bengal staining in patients with ocular irritation. *Ophthalmology* 1997;104:223-35
58. Blodi BA, Byrne KA, Tabbara KF. Goblet cell population among patients with inactive trachoma. *Int Ophthalmol* 1988;12:41-5
59. Sommer A. Treatment of corneal xerophthalmia with topical retinoic acid. *Am J Ophthalmol* 1983;95:349-52
60. Lievens CW, Connor CG, Murphy H. Comparing goblet cell densities in patients wearing disposable hydrogel contact lenses versus silicone hydrogel contact lenses in an extended-wear modality. *Eye Contact Lens* 2003;29:241-4.
61. Alibert JM, McLennan SG, Lenton LM. Ocular surface management of photorefractive keratectomy and laser in situ keratomileusis. *J Refract Surg* 2003;19:636-44
62. Versura P, Maltarello MC, Cellini M, et al. Detection of mucus glycoconjugates in human conjunctiva by using the lectin-colloidal gold technique in TEM. II. A quantitative study in dry-eye patients. *Acta Ophthalmol (Copenh)* 1986;64:451-5
63. Garcher C, Bron AJ, Baudouin C, et al. CA 19-9 ELISA test: a new method for studying mucus changes in tears. *Br J Ophthalmol* 1998;82:88-90.
64. Versura P, Maltarello MC, Cellini M, et al. Detection of mucus glycoconjugates in human conjunctiva by using the lectin-colloidal gold technique in TEM. III. A quantitative study in asymptomatic contact lens wearers. *Acta Ophthalmol (Copenh)* 1987;65:661-7
65. Hayashi Y, Kao WW, Kohno N, et al. Expression patterns of sialylated epitope recognized by KL-6 monoclonal antibody in ocular surface epithelium of normals and dry eye patients. *Invest Ophthalmol Vis Sci*

- 2004;45:2212-7
66. Argueso P, Tisdale A, Mandel U, et al. The cell-layer- and cell-type-specific distribution of GalNAc-transferases in the ocular surface epithelia is altered during keratinization. *Invest Ophthalmol Vis Sci* 2003;44:86-92
 67. Danjo Y, Watanabe H, Tisdale AS, et al. Alteration of mucin in human conjunctival epithelia in dry eye. *Invest Ophthalmol Vis Sci* 1998;39:2602-9
 68. Koufakis DI, Karabatsas CH, Sakkas LI, et al. Conjunctival surface changes in patients with Sjogren's syndrome: a transmission electron microscopy study. *Invest Ophthalmol Vis Sci* 2006;47:541-4
 69. Alibert J, Sanfilippo P, Troutbeck R, Lenton LM. Management of filamentary keratitis associated with aqueous-deficient dry eye. *Optom Vis Sci* 2003;80:420-30
 70. Murube J, Rivas L. Biopsy of the conjunctiva in dry eye patients establishes a correlation between squamous metaplasia and dry eye clinical severity. *Eur J Ophthalmol* 2003;13:246-56
 71. Kunert KS, Tisdale AS, Gipson IK. Goblet cell numbers and epithelial proliferation in the conjunctiva of patients with dry eye syndrome treated with cyclosporine. *Arch Ophthalmol* 2002;120:330-7
 72. Meller D. The fine structure of chromatin alterations in conjunctival epithelial cells in keratoconjunctivitis sicca. *Cornea* 1999;18:225-32
 73. Alibert JM, Bruce AS. The conjunctival epithelium in dry eye subtypes: effect of preserved and non-preserved topical treatments. *Curr Eye Res* 2001;22:8-18
 74. Bjerrum KB. Snake-like chromatin in conjunctival cells of normal elderly persons and of patients with primary Sjögren's syndrome and other connective tissue diseases. *Acta Ophthalmol Scand* 1995;73:33-6
 75. Brignole F, Pisella PJ, De Saint Jean M, et al. Flow cytometric analysis of inflammatory markers in conjunctival epithelial cells of patients with dry eyes. *Invest Ophthalmol Vis Sci* 2000;41:1356-63
 76. Benitez del Castillo JM, Wasfy MA, Fernandez C, Garcia-Sanchez J. An in vivo confocal masked study on corneal epithelium and subbasal nerves in patients with dry eye. *Invest Ophthalmol Vis Sci* 2004;45:3030-5
 77. Xu KP, Yagi Y, Tsubota K. Decrease in corneal sensitivity and change in tear function in dry eye. *Cornea* 1996;15:235-9
 78. Horwath-Winter J, Vidic B, Schantzer G, Schmutz O. Early changes in corneal sensation, ocular surface integrity, and tear-film function after laser-assisted subepithelial keratotomy. *J Cataract Refract Surg* 2004;30:2316-21
 79. Hovanesian JA, Shah SS, Maloney RK. Symptoms of dry eye and recurrent erosion syndrome after refractive surgery. *J Cataract Refract Surg* 2001;27:577-84
 80. Wilson SE. Laser *in situ* keratomileusis-induced (presumed) neurotrophic epitheliopathy. *Ophthalmology* 2001;108:1082-7
 81. Scott IU, Flynn HW Jr, Feuer W, et al. Endophthalmitis associated with microbial keratitis. *Ophthalmology* 1996;103:1864-70
 82. Kawasaki S, Kawamoto S, Yokoi N, et al. Up-regulated gene expression in the conjunctival epithelium of patients with Sjögren's syndrome. *Exp Eye Res* 2003;77:17-26
 83. Nakamura T, Nishida K, Dotta A, et al. Elevated expression of transglutaminase 1 and keratinization-related proteins in conjunctiva in severe ocular surface disease. *Invest Ophthalmol Vis Sci* 2001;42:549-56
 84. Nakamura T, Nishida K, Dotta A, Kinoshita S. Changes in conjunctival clusterin expression in severe ocular surface disease. *Invest Ophthalmol Vis Sci* 2002;43:1702-7
 85. Narayanan S, Miller WL, McDermott AM. Conjunctival cytokine expression in symptomatic moderate dry eye subjects. *Invest Ophthalmol Vis Sci* 2006;47:2445-50
 86. Argueso P, Tisdale A, Spurr-Michaud S, et al. Mucin characteristics of human corneal-limbal epithelial cells that exclude the rose bengal anionic dye. *Invest Ophthalmol Vis Sci* 2006;47:113-9
 87. Hatchell DL, Sommer A. Detection of ocular surface abnormalities in experimental vitamin A deficiency. *Arch Ophthalmol* 1984;102:1389-93
 88. Gilbard JP, Rossi SR. Tear film and ocular surface changes in a rabbit model of neurotrophic keratitis. *Ophthalmology* 1990;97:308-12
 89. Tei M, Spurr-Michaud SJ, Tisdale AS, Gipson IK. Vitamin A deficiency alters the expression of mucin genes by the rat ocular surface epithelium. *Invest Ophthalmol Vis Sci* 2000;41:82-8
 90. Dursun D, Wang M, Monroy D, et al. A mouse model of keratoconjunctivitis sicca. *Invest Ophthalmol Vis Sci* 2002;43:632-8
 91. Ueta M, Hamuro A, Yamamoto M, et al. Spontaneous ocular surface inflammation and goblet cell disappearance in $\text{I}\kappa\text{B}$ zeta gene-disrupted mice. *Invest Ophthalmol Vis Sci* 2005;46:579-88
 92. Corfield AP, Donaparty SR, Carrington SD, et al. Identification of 9-O-acetyl-N-acetyleneurameric acid in normal canine pre-ocular tear film secreted mucins and its depletion in keratoconjunctivitis sicca. *Glycoconj J* 2005;22:409-16
 93. Tsubota K, Goto E, Fujita H, et al. Treatment of dry eye by autologous serum application in Sjögren's syndrome. *Br J Ophthalmol* 1999;83:390-5
 94. Hori Y, Spurr-Michaud S, Russo CL, et al. Differential regulation of membrane-associated mucins in the human ocular surface epithelium. *Invest Ophthalmol Vis Sci* 2004;45:114-22
 95. Tseng SC, Hatchell D, Tierney N, et al. Expression of specific keratin markers by rabbit corneal, conjunctival, and esophageal epithelia during vitamin A deficiency. *J Cell Biol* 1984;99:2279-86
 96. Gao J, Schwab TA, Addeo JV, et al. The role of apoptosis in the pathogenesis of canine keratoconjunctivitis sicca: the effect of topical Cyclosporin A therapy. *Cornea* 1998;17:654-63
 97. Toshino A, Shiraishi A, Zhang W, et al. Expression of keratinocyte transglutaminase in cornea of vitamin A-deficient rats. *Curr Eye Res* 2005;30:731-9
 98. Yeh S, Song XJ, Farley W, et al. Apoptosis of ocular surface cells in experimentally induced dry eye. *Invest Ophthalmol Vis Sci* 2003;44:124-9
 99. Luo L, Li DQ, Doshi A, et al. Experimental dry eye stimulates production of inflammatory cytokines and MMP-9 and activates MAPK signaling pathways on the ocular surface. *Invest Ophthalmol Vis Sci* 2004;45:4293-301
 100. Li DQ, Chen Z, Song XJ, et al. Stimulation of matrix metalloproteinases by hyperosmolarity via a JNK pathway in human corneal epithelial cells. *Invest Ophthalmol Vis Sci* 2004;45:4302-11
 101. Li DQ, Luo L, Chen Z, et al. JNK and ERK MAP kinases mediate induction of IL-1 β , TNF-alpha and IL-8 following hyperosmolar stress in human limbal epithelial cells. *Exp Eye Res* 2006;82:588-96
 102. Cui CY, Smith JA, Schlessinger D, Chan CC. X-linked anhidrotic ectodermal dysplasia disruption yields a mouse model for ocular surface disease and resultant blindness. *Am J Pathol* 2005;167:89-95
 103. Rojas B, Cunha R, Zafarakis P, et al. Cell populations and adhesion molecules expression in conjunctiva before and after bone marrow transplantation. *Exp Eye Res* 2005;81:313-25
 104. Raphael M, Belleghis S, Piette JC, et al. Conjunctival biopsy in Sjögren's syndrome: Correlations between histological and immunohistochemical features. *Histopathology* 1988;13:191-202
 105. Stern ME, Gao J, Schwab TA, et al. Conjunctival T-cell subpopulations in Sjögren's and non-Sjögren's patients with dry eye. *Invest Ophthalmol Vis Sci* 2002;43:2609-14
 106. Pflugfelder SC, Huang AJ, Feuer W, et al. Conjunctival cytologic features of primary Sjögren's syndrome. *Ophthalmology* 1990;97:985-91
 107. Ogawa Y, Kuwana M, Yamazaki K, et al. Periductal area as the primary site for T-cell activation in lacrimal gland chronic graft-versus-host disease. *Invest Ophthalmol Vis Sci* 2003;44:1888-96
 108. Ogawa Y, Yamazaki K, Kuwana M, et al. A significant role of stromal fibroblasts in rapidly progressive dry eye in patients with chronic GVHD. *Invest Ophthalmol Vis Sci* 2001;42:111-9
 109. Gulati A, Sacchetti M, Bonini A, Dana MR. Chemokine receptor CCR5 expression in conjunctival epithelium of patients with dry eye syndrome. *Arch Ophthalmol* 2006;124:710-6
 110. Baudouin C, Liang H, Bremond-Gignac D, et al. CCR 4 and CCR 5 expression in conjunctival specimens as differential markers of T(H)1/T(H)2 in ocular surface disorders. *J Allergy Clin Immunol* 2005;116:614-9
 111. Aronni S, Cortes M, Sacchetti M, et al. Upregulation of ICAM-1 expression in the conjunctiva of patients with chronic graft-versus-host disease. *Eur J Ophthalmol* 2006;16:17-23
 112. Tsubota K, Fujihara T, Saito K, Takeuchi T. Conjunctival epithelium expression of HLA-DR in dry eye patients. *Ophthalmologica* 1999;213:16-9
 113. Jones DT, Monroy D, Ji Z, et al. Sjögren's syndrome: cytokine and Epstein-Barr viral gene expression within the conjunctival epithelium. *Invest Ophthalmol Vis Sci* 1994;35:3493-3504
 114. Ogawa Y, Kodama H, Kameyama K, et al. Donor fibroblast chimerism in the pathogenic fibrotic lesion of human chronic graft-versus-host disease. *Invest Ophthalmol Vis Sci* 2005;46:4519-27
 115. Matsumoto I, Tsubota K, Satake Y, et al. Common T cell receptor clone type in lacrimal glands and labial salivary glands from patients with Sjögren's syndrome. *J Clin Invest* 1996;97:1969-77
 116. Pepose JS, Akata RF, Pflugfelder SC, Voight W. Mononuclear cell phenotypes and immunoglobulin gene rearrangements in lacrimal gland biopsies from patients with Sjögren's syndrome. *Ophthalmology* 1990;97:1599-605
 117. Williamson J, Gibson AA, Wilson T, et al. Histology of the lacrimal gland in keratoconjunctivitis sicca. *Br J Ophthalmol* 1973;57:852-8
 118. Gao J, Morgan G, Tieu D, et al. ICAM-1 expression predisposes ocular tissues to immune-based inflammation in dry eye patients and Sjögren's syndrome-like MRL/lpr mice. *Exp Eye Res* 2004;78:823-35
 119. Sullivan D, et al. Aqueous tear deficiency in Sjögren's syndrome: Possible causes and potential treatment, in Pleyer U, et al (eds). *Oculodermal diseases—immunology of bullous oculo-muco-cutaneous disorders*. Buren,

- The Netherlands, Aeolus Press, 1997, pp 95-152
120. Zoukhri D. Effect of inflammation on lacrimal gland function. *Exp Eye Res* 2006;82:885-98
 121. Tsubota K, Fujita H, Tsuzaka K, Takeuchi T. Quantitative analysis of lacrimal gland function, apoptotic figures, Fas and Fas ligand expression of lacrimal glands in dry eye patients. *Exp Eye Res* 2003;76:233-40
 122. Saito I, Terauchi K, Shimuta M, et al. Expression of cell adhesion molecules in the salivary and lacrimal glands of Sjogren's syndrome. *J Clin Lab Anal* 1993;7:180-7
 123. Ono M, Yoshino K, Tsubota K, Saito I. Subclass expression of IgA in lacrimal glands of patients with Sjogren's syndrome. *Adv Exp Med Biol* 1994;350:185-8
 124. Zhan H, Towler HM, Calder VL. The immunomodulatory role of human conjunctival epithelial cells. *Invest Ophthalmol Vis Sci* 2003;44:3906-10
 125. Barabino S, Shen L, Chen L, et al. The controlled-environment chamber: a new mouse model of dry eye. *Invest Ophthalmol Vis Sci* 2005;46:2766-71
 126. Niederkorn J, Stern ME, Pflugfelder SC, et al. Desiccating stress induces T cell-mediated Sjogren's syndrome-like lacrimal keratoconjunctivitis. *J Immunol* 2006;176:3950-57
 127. van Blokland SC, Versnel MA. Pathogenesis of Sjogren's syndrome: characteristics of different mouse models for autoimmune exocrinopathy. *Clin Immunol* 2002;103:111-24
 128. Hassan AS, Clouthier SG, Ferrara JL, et al. Lacrimal gland involvement in graft-versus-host disease: a murine model. *Invest Ophthalmol Vis Sci* 2005;46:2692-7
 129. Yang T, Zeng H, Zhang J, et al. MHC class II molecules, cathepsins, and La/SB proteins in lacrimal acinar cell endomembranes. *Am J Physiol* 1999;277:C994-C1007
 130. McDermott A, Perez V, Huang AJ, et al. Pathways of corneal and ocular surface inflammation: A perspective from the Cullen Symposium. *Ocul Surf* 2005;3:S131-S138
 131. Lee-Wing MW, Hodge WG, Diaz-Mitoma F. Investigating a viral etiology for keratoconjunctivitis sicca among patients who are positive for human immunodeficiency virus. *Cornea* 1999;18:671-4
 132. Matoba AY. Ocular disease associated with Epstein-Barr virus infection. *Surv Ophthalmol* 1990;35:145-50
 133. Tsubota K, Fujishima H, Toda I, et al. Increased levels of Epstein-Barr virus DNA in lacrimal glands of Sjogren's syndrome patients. *Acta Ophthalmol Scand* 1995;73:425-30
 134. Zegans ME, Annigeri W, Chapman C, Gordon SR. Ocular manifestations of hepatitis C virus infection. *Curr Opin Ophthalmol* 2002;13:423-7
 135. Merayo-Lloves J, Baltatzis S, Foster CS. Epstein-Barr virus dacryoadenitis resulting in keratoconjunctivitis sicca in a child. *Am J Ophthalmol* 2001;132:922-3
 136. Bacman S, Perez-Leiros C, Sterin-Borda L, et al. Autoantibodies against lacrimal gland M3 muscarinic acetylcholine receptors in patients with primary Sjogren's syndrome. *Invest Ophthalmol Vis Sci* 1998;39:151-6
 137. Tsubota K, Fujihara T, Takeuchi T. Soluble interleukin-2 receptors and serum autoantibodies in dry eye patients: correlation with lacrimal gland function. *Cornea* 1997;16:339-44
 138. Paulsen F, Langer G, Hoffman W, Berry M. Human lacrimal gland mucins. *Cell Tissue Res* 2004;316:167-77
 139. Rivas L, Murube J, Toledano A. [Innervation of the lachrymal gland in patients with primary Sjogren's syndrome. An immunohistopathological study]. *Arch Soc Esp Oftalmol* 2002;77:623-29
 140. Obata H, Yamamoto S, Horiuchi H, Machinami R. Histopathologic study of human lacrimal gland. Statistical analysis with special reference to aging. *Ophthalmology* 1995;102:678-86
 141. McCarty CA, Bansal AK, Livingston PM, et al. The epidemiology of dry eye in Melbourne, Australia. *Ophthalmology* 1998;105:1114-9
 142. Gillette T, Allansmith MR, Greiner JV, Janusz M. Histologic and immunohistologic comparison of main and accessory lacrimal tissue. *Am J Ophthalmol* 1980;89:724-30
 143. Seifert P, Spitznas M, Koch F, Cusumano A. The architecture of human accessory lacrimal glands. *Ger J Ophthalmol* 1993;2:444-54
 144. Allansmith MR, Kajiyama G, Abelson MB, Simon MA. Plasma cell content of main and accessory lacrimal glands and conjunctiva. *Am J Ophthalmol* 1976;82:819-26
 145. Hunt S, Spitznas M, Seifert P, Rauwolf M. Organ culture of human main and accessory lacrimal glands and their secretory behaviour. *Exp Eye Res* 1996;62:541-54
 146. Seifert P, Spitznas M. Vasoactive intestinal polypeptide (VIP) innervation of the human eyelid glands. *Exp Eye Res* 1999;68:685-92
 147. Esmaeli-Gutstein B, Hewlett BR, Harvey JT. Characterization of adrenergic receptors in the accessory lacrimal glands of the upper eyelid. *Ophthal Plast Reconstr Surg* 1999;15:245-51
 148. Gillette TE, Greiner JV, Allansmith MR. Immunohistochemical localization of human tear lysozyme. *Arch Ophthalmol* 1981;99:298-300
 149. Obata H, Horiuchi H, Dobashi Y, et al. Immunohistochemical localization of epidermal growth factor in human main and accessory lacrimal glands. *Jpn J Ophthalmol* 1993;37:113-21
 150. Yen MT, Pflugfelder SC, Feuer WJ. The effect of punctal occlusion on tear production, tear clearance, and ocular surface sensation in normal subjects. *Am J Ophthalmol* 2001;131:314-23
 151. Ayub M, Thale AB, Hedderich J, et al. The cavernous body of the human efferent tear ducts contributes to regulation of tear outflow. *Invest Ophthalmol Vis Sci* 2003;44:4900-7
 152. Paulsen FP, Thale AB, Hallman UJ, et al. The cavernous body of the human efferent tear ducts: function in tear outflow mechanism. *Invest Ophthalmol Vis Sci* 2000;41:965-70
 153. Guo Z, Azzarolo AM, Scheeter JE, et al. Lacrimal gland epithelial cells stimulate proliferation in autologous lymphocyte preparations. *Exp Eye Res* 2000;71:11-22
 154. Guo Z, Song D, Azzarolo AM, et al. Autologous lacrimal-lymphoid mixed-cell reactions induce dacryoadenitis in rabbits. *Exp Eye Res* 2000;71:23-31
 155. Zhu Z. Lacrimal histopathology and ocular surface disease in a rabbit model of autoimmune dacryoadenitis. *Cornea* 2003;22:25-32
 156. Franklin R, McGee DW, Shepard KF. Lacrimal gland-directed B cell responses. *J Immunol* 1985;135:95-99
 157. Liu S, Zhou DH, Franklin RM. Lacrimal gland-derived lymphocyte proliferation potentiating factor. *Invest Ophthalmol Vis Sci* 1993;34:650-7
 158. Jabs DA, Enger C, Prendergast RA. Murine models of Sjogren's syndrome. Evolution of the lacrimal gland inflammatory lesions. *Invest Ophthalmol Vis Sci* 1991;32:371-80
 159. Jabs DA, Prendergast RA, Rorer EM, et al. Cytokines in autoimmune lacrimal gland disease in MRL/Mpj mice. *Invest Ophthalmol Vis Sci* 2001;42:2567-71
 160. Akpek EK, Jabs DA, Gerard HC, et al. Chemokines in autoimmune lacrimal gland disease in MRL/Mpj mice. *Invest Ophthalmol Vis Sci* 2004;45:185-90
 161. Sato EH, Ariga H, Sullivan DA. Impact of androgen therapy in Sjogren's syndrome: hormonal influence on lymphocyte populations and Ia expression in lacrimal glands of MRL/Mp-lpr/lpr mice. *Invest Ophthalmol Vis Sci* 1992;33:2537-45
 162. Rocha E, Wickham LA, Huang Z, et al. Presence and testosterone influence on the levels of anti- and pro-inflammatory cytokines in lacrimal tissues of a mouse model of Sjogren's syndrome. *Adv Exp Med Biol* 1998;438:485-91
 163. Toda I, Wickham LA, Sullivan DA. Gender and androgen treatment influence the expression of proto-oncogenes and apoptotic factors in lacrimal and salivary tissues of MRL/lpr mice. *Clin Immunol Immunopathol* 1998;86:59-71
 164. Toda I, Sullivan BD, Wickham LA, Sullivan DA. Gender- and androgen-related influence on the expression of proto-oncogene and apoptotic factor mRNAs in lacrimal glands of autoimmune and non-autoimmune mice. *J Steroid Biochem Mol Biol* 1999;71:49-61
 165. Tornwall J, Lane TE, Fox RI, Fox HS. T cell attractant chemokine expression initiates lacrimal gland destruction in nonobese diabetic mice. *Lab Invest* 1999;79:1719-26
 166. Robinson CP, Cornelius J, Bounous DE, et al. Characterization of the changing lymphocyte populations and cytokine expression in the exocrine tissues of autoimmune NOD mice. *Autoimmunity* 1998;27:29-44
 167. Vendramini AC, Soo C, Sullivan DA. Testosterone-induced suppression of autoimmune disease in lacrimal tissue of a mouse model (NZB/NZW F1) of Sjogren's syndrome. *Invest Ophthalmol Vis Sci* 1991;32:3002-6
 168. Sullivan DA, Edwards JA. Androgen stimulation of lacrimal gland function in mouse models of Sjogren's syndrome. *J Steroid Biochem Mol Biol* 1997;60:237-45
 169. Ariga H, Edwards J, Sullivan DA. Androgen control of autoimmune expression in lacrimal glands of MRL/Mp-lpr/lpr mice. *Clin Immunol Immunopathol* 1989;53:499-508
 170. Sato E, Sullivan D. Comparative influence of steroid hormones and immunosuppressive agents on autoimmune expression in lacrimal glands of a female mouse model of Sjogren's syndrome. *Invest Ophthalmol Vis Sci* 1994;35:2632-42
 171. Rocha F, et al. Effect of androgen analogue treatment and androgen withdrawal on lacrimal gland inflammation in a mouse model (MRL/Mp-lpr/lpr) of Sjogren's syndrome. *Reg Immunol* 1994;6:270-7
 172. Liu SH, Prendergast RA, Silverstein AM. Experimental autoimmune dacryoadenitis. I. Lacrimal gland disease in the rat. *Invest Ophthalmol Vis Sci* 1987;28:270-5
 173. Mizejewski G. Studies of autoimmune induction in the rat lacrimal gland.

- Experientia* 1978;34:1093-5
174. Huang Z, Lambert RW, Wickham LA, Sullivan DA. Analysis of cytomegalovirus infection and replication in acinar epithelial cells of the rat lacrimal gland. *Invest Ophthalmol Vis Sci* 1996;37:1174-86
 175. Stern M. Ocular surface inflammation: a causative factor in dry eye. *J Rheumatol* 1997;50(Suppl):42
 176. Gao J, Stern M. Modulators of apoptosis in the lacrimal gland of dry eye dogs. *J Rheumatol* 1997;50(Suppl):43
 177. Liu SH, Zhou DH, Hess AD. Adoptive transfer of experimental autoimmune dacryoadenitis in susceptible and resistant mice. *Cell Immunol* 1993;150:311-20
 178. Ono M, Rocha FJ, Sullivan DA. Immunocytochemical location and hormonal control of androgen receptors in lacrimal tissues of the female MRL/Mp-lpr/lpr mouse model of Sjogren's syndrome. *Exp Eye Res* 1995;61:659-66
 179. Yamamoto H, Sims NE, Maccauley SP, et al. Alterations in the secretory response of non-obese diabetic (NOD) mice to muscarinic receptor stimulation. *Clin Immunol Immunopathol* 1996;78:245-55
 180. Winer S, Astsaturov I, Cheung R, et al. Primary Sjogren's syndrome and deficiency of ICA69. *Lancet* 2002;360:1063-9
 181. Zoukhri D, Kublin CL. Impaired neurotransmitter release from lacrimal and salivary gland nerves of a murine model of Sjogren's syndrome. *Invest Ophthalmol Vis Sci* 2001;42:925-32
 182. Haneji N, Nakamura T, Takio K, et al. Identification of alpha-fodrin as a candidate autoantigen in primary Sjogren's syndrome. *Science* 1997;276:604-7
 183. Fang Y, Choi D, Searles RP, Mathers WD. A time course microarray study of gene expression in the mouse lacrimal gland after acute corneal trauma. *Invest Ophthalmol Vis Sci* 2005;46:461-9
 184. Paulsen FP, Foge M, Thale AB, et al. Animal model for the absorption of lipophilic substances from tear fluid by the epithelium of the nasolacrimal ducts. *Invest Ophthalmol Vis Sci* 2002;43:3137-43
 185. Paulsen F, Thale AB, Mentlein R. What happens to tears inside the efferent lacrimal passage? An animal experimental study. *Graefes Arch Clin Exp Ophthalmol* 2000;238:
 186. Hirt RA. Comparative anatomy of the canine efferent tear duct system with regard to mucin production. *Ann Anat Supp* 2003;185:259-260
 187. Rios JD, Horikawa Y, Chen LL, et al. Age-dependent alterations in mouse exorbital lacrimal gland structure, innervation and secretory response. *Exp Eye Res* 2005;80:477-91
 188. Sullivan BD, Cermak JM, Sullivan RM, et al. Correlations between nutrient intake and the polar lipid profiles of meibomian gland secretions in women with Sjogren's syndrome. *Adv Exp Med Biol* 2002;506(Pt A):441-7
 189. Robin JB, Jester JV, Nobe J, et al. In vivo transillumination biomicroscopy and photography of meibomian gland dysfunction. A clinical study. *Ophthalmology* 1985;92:1423-6
 190. Gutgesell VJ, Stern GA, Hood CI. Histopathology of meibomian gland dysfunction. *Am J Ophthalmol* 1982;94:383-7
 191. Matsuoka T. Video-meibographic observations of the meibomian gland. *Jpn J Clin Ophthalmol* 1996;50:351-4
 192. Yokoi N, Mossa F, Tiffany JM, Bron AJ. Assessment of meibomian gland function in dry eye by meibometry. *Arch Ophthalmol* 1999;117:723-9
 193. Hykin PG, Bron AJ. Age-related morphological changes in lid margin and meibomian gland anatomy. *Cornea* 1992;11:334-42
 194. Shimazaki J, Goto E, Ono M, et al. Meibomian gland dysfunction in patients with Sjögren syndrome. *Ophthalmology* 1998;105:1485-8
 195. Shimazaki J, Sakata M, Tsuboto K. Ocular surface changes and discomfort in patients with meibomian gland dysfunction. *Arch Ophthalmol* 1995;113:1266-70
 196. Sullivan BD, Evans JE, Dana MR, Sullivan DA. Impact of androgen deficiency on the lipid profiles in human meibomian gland secretions. *Adv Exp Med Biol* 2002;506(Pt A):449-58
 197. Sullivan BD, Evans JE, Krenzer KL, et al. Impact of antiandrogen treatment on the fatty acid profile of neutral lipids in human meibomian gland secretions. *J Clin Endocrinol Metab* 2000;85:4866-73
 198. Sullivan BD, Evans JE, Cermak JM, et al. Complete androgen insensitivity syndrome: effect on human meibomian gland secretions. *Arch Ophthalmol* 2002;120:1689-99
 199. Ong BI, Larke JR. Meibomian gland dysfunction: some clinical, biochemical and physical observations. *Ophthalmic Physiol Opt* 1990;10:144-8
 200. Dougherty JM, McCulley JP. Bacterial lipases and chronic blepharitis. *Invest Ophthalmol Vis Sci* 1986;27:486-91
 201. Isreb MA, Greiner VJ, Korb DR, et al. Correlation of lipid layer thickness measurements with fluorescein tear film break-up time and Schirmer's test. *Eye* 2003;17:79-83
 202. Sullivan BD, Evans JE, Dana MR, Sullivan DA. Influence of aging on the polar and neutral lipid profiles in human meibomian gland secretions. *Arch Ophthalmol* 2006;124:1286-92
 203. Lambert RW, Smith RE. Pathogenesis of blepharoconjunctivitis complicating 13-cis-retinoic acid (isotretinoin) therapy in a laboratory model. *Invest Ophthalmol Vis Sci* 1988;29:1559-64
 204. Lambert RW, Smith RE. Effects of 13-cis-retinoic acid on the hamster meibomian gland. *J Invest Dermatol* 1989;92:321-5
 205. Jester JV, Nicolaides N, Kiss-Palvolgyi I, Smith RE. Meibomian gland dysfunction. II. The role of keratinization in a rabbit model of MGD. *Invest Ophthalmol Vis Sci* 1989;30:936-45
 206. Nicolaides N, Santos EC, Smith RE, Jester JV. Meibomian gland dysfunction. III. Meibomian gland lipids. *Invest Ophthalmol Vis Sci* 1989;30:946-51
 207. Yagyu H, Kitamori T, Osuga J, et al. Absence of ACAT-1 attenuates atherosclerosis but causes dry eye and cutaneous xanthomatosis in mice with congenital hyperlipidemia. *J Biol Chem* 2000;275:21324-30
 208. Steagall R, Yamagami H, Wickham LA, Sullivan DA. Androgen control of gene expression in the rabbit meibomian gland. *Adv Exp Med Biol* 2002;506(Pt A):465-476
 209. Sullivan DA, Sullivan BD, Ullman MD, et al. Androgen influence on the meibomian gland. *Invest Ophthalmol Vis Sci* 2000;41:3732-42
 210. Schirra F, Suzuki T, Richards SM, et al. Androgen control of gene expression in the mouse meibomian gland. *Invest Ophthalmol Vis Sci* 2005;46:3666-75
 211. Gipson IK. Friedenwald Lecture: The ocular surface: the challenge to enable and protect vision. *Invest Ophthalmol Vis Sci* (2007, in press)
 212. Stern ME, Beuerman RW, Fox RI, et al. The pathology of dry eye: the interaction between the ocular surface and lacrimal glands. *Cornea* 1998;17:584-9
 213. Pflugfelder SC, Solomon A, Stern ME. The diagnosis and management of dry eye: a twenty-five year review. *Cornea* 2000;19:644-9
 214. Beuerman RW, Mircheff AK, Pflugfelder SC, Stern ME. The lacrimal functional unit, in Pflugfelder SC, Stern ME, Beuerman RW. Dry eye and the ocular surface—a unified approach. New York, Marcel Dekker, 2004
 215. Stern ME, Gao J, Siemasko KF, et al. The role of the lacrimal functional unit in the pathophysiology of dry eye. *Exp Eye Res* 2004;78:409-16
 216. Anonymous. Diagnosis and classification of dry eye: Report of the Diagnosis and Classification Subcommittee of the 2007 Dry Eye WorkShop. *Ocul Surf* 2007;5: EDITOR: INSERT PAGE NUMBERS.

ドライアイ疾患に伴う不定愁訴重症度・頻度インデックススコア
によるドライアイ診断の検討

調査票

医療機関名	
記載医師	
調査日	200 年 月 日

あなたは臨床医よりドライアイと診断されたことはありますか？

①はい

②いいえ

ドライアイ不定愁訴重症度・頻度インデックス

		いつも	よくある	時々	たまに	全然ない
1)	乾燥感（涙が出ない、潤いがないなど）を感じますか？	4	3	2	1	0
2)	目の違和感を感じますか？	4	3	2	1	0
3)	目の異物感を感じますか？	4	3	2	1	0
4)	目の痛み（ちくちくする、ひりひりするなど）を感じますか？	4	3	2	1	0
5)	目の疲れを感じますか？	4	3	2	1	0
6)	目の不快感を感じますか？	4	3	2	1	0
7)	目が充血しますか？	4	3	2	1	0
8)	目がかゆいことがありますか？	4	3	2	1	0
9)	目が開けにくいことはありますか？	4	3	2	1	0
10)	目がショボショボしますか？	4	3	2	1	0
11)	目が重たい感じがしますか？	4	3	2	1	0
12)	その他の症状があれば具体的に記入し、その頻度に○をつけて下さい。 ()	4	3	2	1	0
1)～12) で回答した質問スコアの合計						() … A

視機能障害不定愁訴重症度・頻度インデックス

		いつも	よくある	時々	たまに	全然ない
13)	ものが霞んで見える（ぼやっとする）	4	3	2	1	0
14)	光がまぶしい	4	3	2	1	0
15)	読書時はドライアイ症状が悪化し、長く続けられない	4	3	2	1	0
16)	運転時はドライアイ症状が悪化し、運転し辛くなる	4	3	2	1	0
17)	パソコン使用時、ゲームする時に症状が悪化し、長くできない	4	3	2	1	0
18)	テレビや映画を観賞すると自覚症状が悪化し、見辛くなる	4	3	2	1	0
19)	残像が残る	4	3	2	1	0
20)	瞬きが見え方に影響していると思いますか？	4	3	2	1	0

		全くできない	難しい	ままでできる	よく出来る	全く問題ない
21)	あなたは10秒以上に瞬きをせずに目を開いていられますか？	4	3	2	1	0
13)～21) で回答した質問スコアの合計					() … B	

環境因子重症度・頻度インデックス

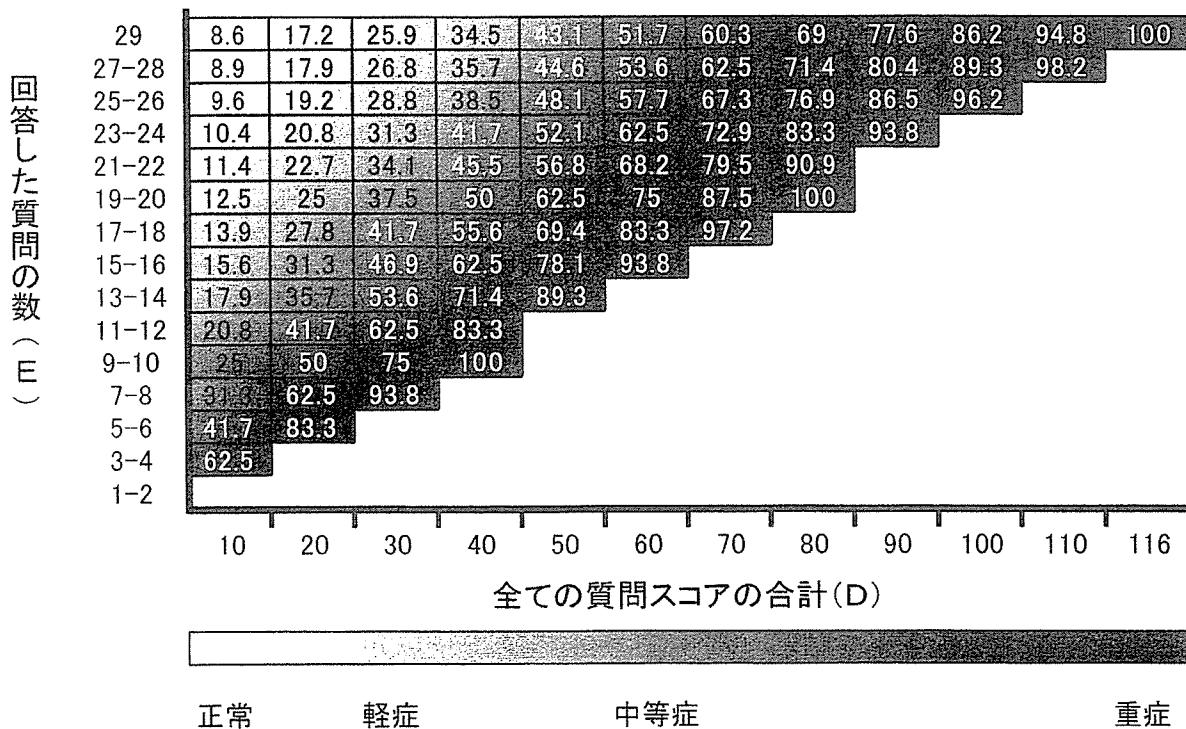
前ページで記入したドライアイならびに視機能にかんする自覚症状は、以下に示すような時に悪化しますか？

		いつも	よくある	時々	たまに	全然ない
22)	風の強いとき	4	3	2	1	0
23)	冬や夏の乾燥している時	4	3	2	1	0
24)	冷房や暖房が入っている時	4	3	2	1	0
25)	飛行中	4	3	2	1	0
26)	日常でストレスを感じる時	4	3	2	1	0
27)	飲酒時やその翌日	4	3	2	1	0
28)	喫煙した時や隣で喫煙された時	4	3	2	1	0
29)	コンタクトレンズを装用した時	4	3	2	1	0
22)～29) で回答した質問スコアの合計					() ⋯ C	

1)～29) で回答した質問スコアの合計 (A + B + C) : _____ ⋯ D

1)～29) で回答した質問の数 : _____ ⋯ E

スコアによるドライアイ診断



①涙液検査

シルマー試験

R _____ mm

L _____ mm

涙膜破壊時間 (BUT)

R _____ 秒

L _____ 秒

②角結膜上皮検査

フルオレセインスコア

R _____

L _____

ローズベンガルスコア

R _____

L _____

Table 2. Prevalence of Clinically Diagnosed Dry Eye and Severe Symptoms of Dry Eye

	Number of DES*	Prevalence	
		Estimates	95% Confidence Interval
Clinically Diagnosed Dry Eye			
Men	123/2848	4.3%	
Women	47/585	8.0%	
Severe Symptoms of Dry Eye			
Men	599/2848	21.0%	
Women	143/585	24.4%	

*:DES indicates Dry Eye Syndrome.

Table 3. Logistic Regression Model of Predictors of the Prevalence of Clinically Diagnosed Dry Eye Syndrome in MEN

Variable	Number of Subjects (n=2,848)	Number with DES (n=123)	Univariate			Multivariate		
				Crude Odds Ratio (95%CI)	P-value		Adjusted Odds Ratio (95%CI)	
Contact lens								
No	1,844	39 (2.1%)	1.00				1.00	
SCL	971	81 (8.3%)	4.21 (2.85 - 6.22)	<0.001			4.16 (2.81 - 6.17)	
HCL	33	3 (9.1%)	4.63 (1.36 - 15.81)	<0.001			4.44 (1.28 - 15.36)	
Itchy sensation							1.00	
Never	208	5 (2.4%)	1.00				1.00	
Sometimes	1,274	37 (2.9%)	1.21 (0.47 - 3.13)	0.687			1.01 (0.39 - 2.63)	
Often	1,241	67 (5.4%)	2.32 (0.92 - 5.82)	0.074			1.79 (0.69 - 4.61)	
Always	125	14 (11.2%)	5.12 (1.80 - 14.59)	<0.001			3.64 (1.22 - 10.88)	
Trend test(per level increase)					<0.001			
Pollenosis							1.00	
No	1,588	54 (3.4%)	1.00				1.30 (0.88 - 1.93)	
Yes	1,260	69 (5.5%)	1.65 (1.14 - 2.37)	0.007				

Adjusted odds ratios were obtained by multiple logistic regression model with best-subset variables selection method.

CI denotes confidence interval.

Table 3. Logistic Regression Model of Predictors of the Prevalence of Clinically Diagnosed Dry Eye Syndrome in WOMEN

Variable	Number of Subjects (n=585)	Number with DES (n=47)	Univariate			Multivariate		
			Crude Odds Ratio (95%CI)	P-value	Adjusted Odds Ratio (95%CI)			
Contact lens								
No	291	9 (3.1%)	1.00			1.00		
SCL	267	36 (13.5%)	4.88 (2.31 - 10.35)	<0.001	4.88 (2.31 - 10.35)			
HCL	27	2 (7.4%)	2.51 (0.51 - 12.24)	<0.001	2.51 (0.51 - 12.24)			
Itchy sensation								
Never	40	3 (7.5%)	1.00			1.00		
Sometimes	269	25 (9.3%)	2.80 (0.36 - 21.55)	0.170	2.80 (0.36 - 21.55)			
Often	261	18 (6.9%)	4.13 (0.54 - 31.37)	0.058	4.13 (0.54 - 31.37)			
Always	15	1 (6.7%)	9.75 (0.93 - 102.63)	<0.001	9.75 (0.93 - 102.63)			
Trend test(per level increase)								
Pollenosis								
No	338	24 (7.1%)	1.00					
Yes	247	23 (9.3%)	1.34 (0.74 - 2.44)	0.333	1.30 (0.88 - 1.93)			

Adjusted odds ratios were obtained by multiple logistic regression model with best-subset variables selection method.

CI denotes confidence interval.

Table 3. Logistic Regression Model of Predictors of the Prevalence of Severe Symptoms Dry Eye Syndrome in MEN

Variable	Number of	Number with	Univariate					Multivariate				
	Subjects (n=2,848)	DES (n=599)	Crude Odds Ratio (95%CI)			P-value	Adjusted Odds Ratio (95%CI)					
Contact lens												
No	1,844	230 (12.5%)	1.00				1.00					
SCL	971	360 (37.1%)	4.14 (3.42 - 5.00)	<0.001	4.63 (3.77 - 5.68)							
HCL	33	9 (27.3%)	2.63 (1.21 - 5.73)	0.015	2.55 (1.10 - 5.92)							
Itchy sensation							1.00					
Never	208	11 (5.3%)	1.00				1.00					
Sometimes	1,274	134 (10.5%)	2.11 (1.12 - 3.97)	0.007	1.88 (0.99 - 3.58)							
Often	1,241	387 (31.2%)	8.12 (4.37 - 15.07)	<0.001	8.02 (4.24 - 15.17)							
Always	125	67 (53.6%)	20.69 (10.26 - 41.73)	<0.001	21.82 (10.44 - 45.64)							
Trend test(per level increase)				<0.001								
Pollenosis												
No	1,588	274 (17.3%)	1.00									
Yes	1,260	325 (25.8%)	1.67 (1.39 - 2.00)	<0.001	1.02 (0.82 - 1.25)							

Adjusted odds ratios were obtained by multiple logistic regression model with best-subset variables selection method.

CI denotes confidence interval.

Table 3. Logistic Regression Model of Predictors of the Prevalence of Severe Symptoms Dry Eye Syndrome in WOMEN

Variable	Number of Subjects (n=585)	Number with DES (n=143)	Univariate				Multivariate		
			Crude Odds Ratio (95%CI)			P-value	Adjusted Odds Ratio (95%CI)		
Contact lens									
No	291	33 (11.3%)	1.00				1.00		
SCL	267	100 (37.5%)	4.68 (3.02 - 7.26)	<0.001			5.77 (3.58 - 9.31)		
HCL	27	10 (37.0%)	4.60 (1.94 - 10.88)	<0.001			5.45 (2.17 - 13.71)		
Itchy sensation									
Never	40	4 (10.0%)	1.00				1.00		
Sometimes	269	35 (13.0%)	1.35 (0.45 - 4.01)	0.594			1.44 (0.47 - 4.41)		
Often	261	94 (36.0%)	5.06 (1.75 - 14.67)	0.003			5.98 (1.98 - 18.10)		
Always	15	10 (66.7%)	17.99 (0.45 - 79.78)	<0.001			33.40 (6.76 - 165.02)		
Trend test(per level increase)				<0.001					
Pollenosis									
No	338	71 (21.0%)	1.00						
Yes	247	72 (29.1%)	1.55 (1.06 - 2.26)	<0.001			1.04 (0.68 - 1.61)		

Adjusted odds ratios were obtained by multiple logistic regression model with best-subset variables selection method.

CI denotes confidence interval.

