

BIBLIOGRAPHIE

- [1] Augusteyn RC, Nankivil D, Mohamed A, et al. Human ocular biometry. *Exp Eye Res* 2012;102:70–5.
- [2] Galgauskas S, Norvydaitė D, Krasauskaitė D, et al. Age-related changes in corneal thickness and endothelial characteristics. *Clin Interv Aging* 2013;8:1445–50.
- [3] Fares U, Otri AM, Al-Aqaba MA, Dua HS. Correlation of central and peripheral corneal thickness in healthy corneas. *Cont Lens Anterior Eye* 2012;35(1):39–45.
- [4] Arici C, Arslan OS, Dikkaya F. Corneal endothelial cell density and morphology in healthy Turkish eyes. *J Ophthalmol* 2014;2014:852624.
- [5] Abdellah MM, Ammar HG, Anbar M, et al. Corneal endothelial cell density and morphology in healthy Egyptian eyes. *J Ophthalmol* 2019;2019:6370241.
- [6] Higa A, Sakai H, Sawaguchi S, et al. Corneal endothelial cell density and associated factors in a population-based study in Japan : the Kumejima study. *Am J Ophthalmol* 2010;149(5):794–9.
- [7] Ko MK, Park WK, Lee JH, Chi JG. A histomorphometric study of corneal endothelial cells in normal human fetuses. *Exp Eye Res* 2001;72(4):403–9.
- [8] Elbaz U, Mireskandari K, Tehrani N, et al. Corneal endothelial cell density in children : normative data from birth to 5 years old. *Am J Ophthalmol* 2017;173:134–8.
- [9] Murphy C, Alvarado J, Juster R, Maglio M. Prenatal and postnatal cellularity of the human corneal endothelium. A quantitative histologic study. *Invest Ophthalmol Vis Sci* 1984;25(3):312–22.
- [10] Bourne WM, Nelson LR, Hodge DO. Central corneal endothelial cell changes over a ten-year period. *Invest Ophthalmol Vis Sci* 1997;38(3):779–82.
- [11] Moller-Pedersen T. A comparative study of human corneal keratocyte and endothelial cell density during aging. *Cornea* 1997;16(3):333–8.
- [12] Snellingen T, et al. Quantitative and morphological characteristics of the human corneal endothelium in relation to age, gender, and ethnicity in cataract populations of South Asia. *Cornea* 2001;20(1):55–8.
- [13] He Z, Rao GN, Shrestha JK, et al. 3D map of the human corneal endothelial cell. *Sci Rep* 2016;6:29047.
- [14] Harrison TA, He Z, Boggs K, et al. Corneal endothelial cells possess an elaborate multipolar shape to maximize the basolateral to apical membrane area. *Mol Vis* 2016;22:31–9.
- [15] Karihaloo BL, Zhang K, Wang J. Honeybee combs: how the circular cells transform into rounded hexagons. *J R Soc Interface* 2013;10(86). 20130299.
- [16] Doughty MJ. Changes in cell surface primary cilia and microvilli concurrent with measurements of fluid flow across the rabbit corneal endothelium ex vivo. *Tissue Cell* 1998;30(6):634–43.
- [17] Svedbergh B, Bill A. Scanning electron microscopic studies of the corneal endothelium in man and monkeys. *Acta Ophthalmol (Copenh)* 1972;50(3):321–36.
- [18] Blitzer AL, Panagis L, Gusella GL, et al. Primary cilia dynamics instruct tissue patterning and repair of corneal endothelium. *Proc Natl Acad Sci U S A* 2011;108(7):2819–24.
- [19] Stepp MA. Corneal integrins and their functions. *Exp Eye Res* 2006;83(1):3–15.
- [20] Goyer B, Thériault M, Gendron SP, et al. Extracellular matrix and integrin expression profiles in Fuchs endothelial corneal dystrophy cells and tissue model. *Tissue Eng Part A* 2018;24(7-8):607–15.
- [21] Rayner SA, Gallop JL, George AJ, Larkin DF. Distribution of integrins alpha v beta 5, alpha v beta 3 and alpha v in normal human cornea : possible implications in clinical and therapeutic adenoviral infection. *Eye (Lond)* 1998;12(Pt 2):273–7.
- [22] Aptel F, Olivier N, Deniset-Besseau A, et al. Multimodal nonlinear imaging of the human cornea. *Invest Ophthalmol Vis Sci* 2010;51(5):2459–65.
- [23] Poulsen ET, et al. Proteomics of Fuchs' endothelial corneal dystrophy support that the extracellular matrix of Descemet's membrane is disordered. *J Proteome Res* 2014;13(11):4659–67.
- [24] Jurkunas UV, Bitar M, Rawe I. Colocalization of increased transforming growth factor-beta-induced protein (TGFBIP) and Clusterin in Fuchs endothelial corneal dystrophy. *Invest Ophthalmol Vis Sci* 2009;50(3):1129–36.
- [25] Kabosova A, Azar DT, Bannikov GA, et al. Compositional differences between infant and adult human corneal basement membranes. *Invest Ophthalmol Vis Sci* 2007;48(11):4989–99.
- [26] Johnson DH, Bourne WM, Campbell RJ. The ultrastructure of Descemet's membrane. I. Changes with age in normal corneas. *Arch Ophthalmol* 1982;100(12):1942–7.
- [27] Blackburn BJ, Jenkins MW, Rollins AM, Dupps WJ. A review of structural and biomechanical changes in the cornea in aging, disease, and photochemical crosslinking. *Front Bioeng Biotechnol* 2019;7:66.
- [28] Last JA, Liliensiek SJ, Nealey PF, Murphy CJ. Determining the mechanical properties of human corneal basement membranes with atomic force microscopy. *J Struct Biol* 2009;167(1):19–24.
- [29] Tavazzi S, Cozza F, Colciago S, Zeri F. Slit-lamp based assessment of peripheral versus central regions of the human corneal endothelium. *Cont Lens Anterior Eye* 2020;43(2):149–53.
- [30] Amann J, Holley GP, Lee SB, Edelhauser HF. Increased endothelial cell density in the paracentral and peripheral regions of the human cornea. *Am J Ophthalmol* 2003;135(5):584–90.
- [31] Yam GH, Seah X, Yusoff NZBM, et al. Characterization of human transition zone reveals a putative progenitor-enriched niche of corneal endothelium. *Cells* 2019;8(10). doi:<https://doi.org/10.3390/cells8101244>. pii : E1244.
- [32] Schimmelpfennig BH. Direct and indirect determination of nonuniform cell density distribution in human corneal endothelium. *Invest Ophthalmol Vis Sci* 1984;25(2):223–9.
- [33] HE Z. Application de l'immunolocalisation à la recherche de la cellule souche endothéliale cornéenne humaine. Saint-Étienne: Thèse. Université Jean Monnet; 2011.
- [34] Zheng T, Le Q, Hong J, Jianjiang X. Comparison of human corneal cell density by age and corneal location: an in vivo confocal microscopy study. *BMC Ophthalmol* 2016;16:109.
- [35] Tanaka H, Okumura N, Koizumi N, et al. Panoramic view of human corneal endothelial cell layer observed by a prototype slit-scanning wide-field contact specular microscope. *Br J Ophthalmol* 2017;101(5):655–9.
- [36] Lee J, Mori Y, Ogata M, et al. Central and peripheral corneal endothelial cell analysis with slit-scanning wide-field contact specular microscopy: agreement with noncontact specular microscopy. *Cornea* 2019;38(9):1137–41.
- [37] He Z, Campolmi N, Ha Thi BM, et al. Optimization of immunolocalization of cell cycle proteins in human corneal endothelial cells. *Mol Vis* 2011;17:3494–511.
- [38] Forest F, Thuret G, Gain P, et al. Optimization of immunostaining on flat-mounted human corneas. *Mol Vis* 2015;21:1345–56.
- [39] He Z, Campolmi N, Gain P, et al. Revisited microanatomy of the corneal endothelial periphery: new evidence for continuous centripetal migration of endothelial cells in humans. *Stem Cells* 2012;30(11):2523–34.
- [40] Inaba K, Tanishima T, Hirosawa K. Electron microscopic observations of Descemet's membrane of peripheral cornea. *Jpn J Ophthalmol* 1986;30(1):1–13.
- [41] Webster M, Witkin KL, Cohen-Fix O. Sizing up the nucleus: nuclear shape, size and nuclear-envelope assembly. *J Cell Sci* 2009;122(Pt 10):1477–86.
- [42] McGowan SL. Stem cell markers in the human posterior limbus and corneal endothelium of unwounded and wounded corneas. *Mol Vis* 2007;13:1984–2000.
- [43] Whikehart DR, Parikh CH, Vaughn AV, et al. Evidence suggesting the existence of stem cells for the human corneal endothelium. *Mol Vis* 2005;11:816–24.
- [44] Hirata-Tominaga K, Nakamura T, Okumura N, et al. Corneal endothelial cell fate is maintained by LGR5 through the regulation of hedgehog and Wnt pathway. *Stem Cells* 2013;31(7):1396–407.
- [45] Yamagami S, Yokoo S, Mimura T, et al. Distribution of precursors in human corneal stromal cells and endothelial cells. *Ophthalmology* 2007;114(3):433–9.
- [46] Mimura T, Joyce NC. Replication competence and senescence in central and peripheral human corneal endothelium. *Invest Ophthalmol Vis Sci* 2006;47(4):1387–96.

- [47] Konomi K, Joyce NC. Age and topographical comparison of telomere lengths in human corneal endothelial cells. *Mol Vis* 2007;13:1251–8.
- [48] Chen J, Li Z, Zhang L, et al. Descemet's membrane supports corneal endothelial cell regeneration in rabbits. *Sci Rep* 2017;7(1):6983.
- [49] Joyce NC, Meklir B, Joyce SJ, Zieske JD. Cell cycle protein expression and proliferative status in human corneal cells. *Invest Ophthalmol Vis Sci* 1996;37(4):645–55.
- [50] Joyce NC, Navon SE, Roy S, Zieske JD. Expression of cell cycle-associated proteins in human and rabbit corneal endothelium *in situ*. *Invest Ophthalmol Vis Sci* 1996;37(8):1566–75.
- [51] Jampel HD. Transforming growth factor-beta in human aqueous humor. *Curr Eye Res* 1990;9(10):963–9.
- [52] Joyce NC, Harris DL, Mello DM. Mechanisms of mitotic inhibition in corneal endothelium: contact inhibition and TGF-beta2. *Invest Ophthalmol Vis Sci* 2002;43(7):2152–9.
- [53] Okumura N, Kay EP, Nakahara M, et al. Inhibition of TGF-beta signaling enables human corneal endothelial cell expansion *in vitro* for use in regenerative medicine. *PLoS One* 2013;8(2). e58000.
- [54] Senoo T, Obara Y, Joyce NC. EDTA: a promoter of proliferation in human corneal endothelium. *Invest Ophthalmol Vis Sci* 2000;41(10):2930–5.
- [55] Engelmann K, Bednarz J, Bohnke M. Endothelial cell transplantation and growth behavior of the human corneal endothelium. *Ophthalmologe* 1999;96(9):555–62.
- [56] Joyce NC, Zhu CC, Harris DL. Relationship among oxidative stress, DNA damage, and proliferative capacity in human corneal endothelium. *Invest Ophthalmol Vis Sci* 2009;50(5):2116–22.
- [57] Kinoshita S, Koizumi N, Ueno M, et al. Injection of cultured cells with a ROCK inhibitor for bullous keratopathy. *N Engl J Med* 2018;378(11):995–1003.
- [58] Bednarz J, Teifel M, Friedl P, Engelmann K. Immortalization of human corneal endothelial cells using electroporation protocol optimized for human corneal endothelial and human retinal pigment epithelial cells. *Acta Ophthalmol Scand* 2000;78(2):130–6.
- [59] Valtink M, Gruschwitz R, Funk RHW, Engelmann K. Two clonal cell lines of immortalized human corneal endothelial cells show either differentiated or precursor cell characteristics. *Cells Tissues Organs* 2008;187(4):286–94.
- [60] Schmedt T, Chen Y, Li S, et al. Spontaneous and telomerase immortalization of primary human corneal endothelial cells. *Invest Ophthalmol Vis Sci* 2012;53:1736.
- [61] Kageyama T, Hayashi R, Hara S, et al. Spontaneous acquisition of infinite proliferative capacity by a rabbit corneal endothelial cell line with maintenance of phenotypic and physiological characteristics. *J Tissue Eng Regen Med* 2017;11(4):1057–64.
- [62] Senoo T, Joyce NC. Cell cycle kinetics in corneal endothelium from old and young donors. *Invest Ophthalmol Vis Sci* 2000;41(3):660–7.
- [63] Toda M, Ueno M, Hiraga A, et al. Production of homogeneous cultured human corneal endothelial cells indispensable for innovative cell therapy. *Invest Ophthalmol Vis Sci* 2017;58(4):2011–20.
- [64] Bednarz J, Rodokanaki-von Schrenck A, Engelmann K. Different characteristics of endothelial cells from central and peripheral human cornea in primary culture and after subculture. *In Vitro Cell Dev Biol Anim* 1998;34(2):149–53.
- [65] Patel SP, Bourne WM. Corneal endothelial cell proliferation: a function of cell density. *Invest Ophthalmol Vis Sci* 2009;50(6):2742–6.
- [66] Konomi K, Zhu C, Harris D, Joyce NC. Comparison of the proliferative capacity of human corneal endothelial cells from the central and peripheral areas. *Invest Ophthalmol Vis Sci* 2005;46(11):4086–91.
- [67] Carlson KH, Bourne WM, McLaren JW, Brubaker RF. Variations in human corneal endothelial cell morphology and permeability to fluorescein with age. *Exp Eye Res* 1988;47(1):27–41.