



Recent Publications in Telomeres: Feb 2021 – April 2021

a quarterly collection from the Telomere Research Network, featuring recent publications in population-based telomere research

Research Articles:

Methodology

Adam N, Beattie TL, Riabowol K. Fluorescence microscopy methods for examining telomeres during cell aging. *Ageing Res Rev.* 2021;68:101320. doi:10.1016/j.arr.2021.101320
<https://www.sciencedirect.com/science/article/pii/S1568163721000672?via%3Dihub>

Zhang N, Li Y, Lai TP, Shay JW, Danuser G. Imaging assay to probe the role of telomere length shortening on telomere-gene interactions in single cells. *Chromosoma.* 2021;130(1):61-73.
doi:10.1007/s00412-020-00747-4
<https://link.springer.com/article/10.1007%2Fs00412-020-00747-4#Abs1>

Galtseva IV, Filipenko ML, Davydova YO, et al. Comparison of polymerase chain reaction and flow cytometry for measuring telomere length of human leukocytes. [Russian] Сопоставление методов полимеразной цепной реакции и проточной цитометрии для измерения длины теломер лейкоцитов человека. *Klin Lab Diagn.* 2021;66(3):154-159. doi:10.51620/0869-2084-2021-66-3-154-159 <https://pubmed.ncbi.nlm.nih.gov/33793114/>

Lyčka M, Peska V, Demko M, et al. WALTER: an easy way to online evaluate telomere lengths from terminal restriction fragment analysis. *BMC Bioinformatics.* 2021;22(1):145. Published 2021 Mar 22. doi:10.1186/s12859-021-04064
<https://bmcbioinformatics.biomedcentral.com/articles/10.1186/s12859-021-04064-0>

Yu P, Yang T, Zhang D, et al. An all-in-one telomerase assay based on CRISPR-Cas12a trans-cleavage while telomere synthesis. *Anal Chim Acta.* 2021;1159:338404. doi:10.1016/j.aca.2021.338404
<https://www.sciencedirect.com/science/article/pii/S0003267021002300?via%3Dihub>

Cardiovascular Health Associations

Romaine SPR, Denniff M, Codd V, et al. Telomere length is independently associated with all-cause mortality in chronic heart failure [published online ahead of print, 2021 Mar 31]. *Heart.* 2021;heartjnl-2020-318654. doi:10.1136/heartjnl-2020-318654
<https://heart.bmj.com/content/early/2021/03/31/heartjnl-2020-318654.long>

Li Y, Cheang I, Zhang Z, et al. Prognostic Association of TERC, TERT Gene Polymorphism, and Leukocyte Telomere Length in Acute Heart Failure: A Prospective Study. *Front Endocrinol (Lausanne).* 2021;12:650922. Published 2021 Mar 8. doi:10.3389/fendo.2021.650922
<https://www.frontiersin.org/articles/10.3389/fendo.2021.650922/full>



Doroschuk NA, Postnov AY, Doroschuk AD, et al. An original biomarker for the risk of developing cardiovascular diseases and their complications: Telomere length. *Toxicol Rep.* 2021;8:499-504. Published 2021 Mar 4. doi:10.1016/j.toxrep.2021.02.024
<https://www.sciencedirect.com/science/article/pii/S221475002100041X?via%3Dihub>

Environmental Exposures

Bi J, Wu M, Liu Y, et al. Association between maternal urinary manganese concentrations and newborn telomere length: Results from a birth cohort study. *Ecotoxicol Environ Saf.* 2021;213:112037. doi:10.1016/j.ecoenv.2021.112037
<https://www.sciencedirect.com/science/article/pii/S0147651321001482?via%3Dihub>

Lin Z, Gao H, Wang B, Wang Y. Cytomegalovirus Infection and Its Relationship with Leukocyte Telomere Length: A Cross-Sectional Study. *Mediators Inflamm.* 2021;2021:6675353. Published 2021 Feb 15. doi:10.1155/2021/6675353 <https://www.hindawi.com/journals/mi/2021/6675353/>

Cardenas A, Rifas-Shiman SL, Sordillo JE, et al. DNA methylation architecture of the ACE2 gene in nasal cells of children. *Sci Rep.* 2021;11(1):7107. Published 2021 Mar 29. doi:10.1038/s41598-021-86494-7 <https://www.nature.com/articles/s41598-021-86494-7>

Telomere Length Across the Life Course

Lee EH, Han MH, Ha J, et al. Relationship between telomere shortening and age in Korean individuals with mild cognitive impairment and Alzheimer's disease compared to that in healthy controls. *Aging (Albany NY).* 2020;13(2):2089-2100. doi:10.18632/aging.202206
<https://www.aging-us.com/article/202206/text>

Wei B, Shao Y, Liang J, et al. Maternal overweight but not paternal overweight before pregnancy is associated with shorter newborn telomere length: evidence from Guangxi Zhuang birth cohort in China. *BMC Pregnancy Childbirth.* 2021;21(1):283. Published 2021 Apr 9. doi:10.1186/s12884-021-03757-x <https://bmcpregnancychildbirth.biomedcentral.com/articles/10.1186/s12884-021-03757-x>

Sindi S, Solomon A, Kåreholt I, et al. Telomere Length Change in a Multidomain Lifestyle Intervention to Prevent Cognitive Decline: A Randomized Clinical Trial. *J Gerontol A Biol Sci Med Sci.* 2021;76(3):491-498. doi:10.1093/gerona/glaa279
<https://academic.oup.com/biomedgerontology/article/76/3/491/5974120>

Howard JT, Janak JC, Santos-Lozada AR, et al. Telomere Shortening and Accelerated Aging in US Military Veterans. *Int J Environ Res Public Health.* 2021;18(4):1743. Published 2021 Feb 11. doi:10.3390/ijerph18041743
<https://www.mdpi.com/1660-4601/18/4/1743/htm>

Arts MHL, van den Berg KS, Marijnissen RM, et al. Frailty as a Predictor of Mortality in Late-Life Depression: A Prospective Clinical Cohort Study. *J Clin Psychiatry.* 2021;82(3):20m13277. Published 2021 Mar 30. doi:10.4088/JCP.20m13277
<https://pubmed.ncbi.nlm.nih.gov/34000109/>



Yu G, Lu L, Ma Z, Wu S. Genetically Predicted Telomere Length and Its Relationship With Alzheimer's Disease. *Front Genet.* 2021;12:595864. Published 2021 Feb 19. doi:10.3389/fgene.2021.595864
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7934420/>

Cancer

Hartlieb SA, Sieverling L, Nadler-Holly M, et al. Alternative lengthening of telomeres in childhood neuroblastoma from genome to proteome. *Nat Commun.* 2021;12(1):1269. Published 2021 Feb 24. doi:10.1038/s41467-021-21247-8
<https://www.nature.com/articles/s41467-021-21247-8>

Jang JW, Kim JS, Kim HS, et al. Significance of *TERT* Genetic Alterations and Telomere Length in Hepatocellular Carcinoma. *Cancers (Basel).* 2021;13(9):2160. Published 2021 Apr 30. doi:10.3390/cancers13092160
<https://www.mdpi.com/2072-6694/13/9/2160/htm>

Ismail H, Helby J, Hölmich LR, et al. Genetic predisposition to long telomeres is associated with increased mortality after melanoma: A study of 2101 melanoma patients from hospital clinics and the general population [published online ahead of print, 2021 Mar 22]. *Pigment Cell Melanoma Res.* 2021;10.1111/pcmr.12971. doi:10.1111/pcmr.12971
<https://onlinelibrary.wiley.com/doi/10.1111/pcmr.12971>

Brown DW, Lan Q, Rothman N, et al. Genetically Inferred Telomere Length and Testicular Germ Cell Tumor Risk. *Cancer Epidemiol Biomarkers Prev.* 2021;30(6):1275-1278. doi:10.1158/1055-9965.EPI-20-1775 <https://cebp.aacrjournals.org/content/30/6/1275.long>

Giaccherini M, Macaudo A, Orciuolo E, et al. Genetically determined telomere length and multiple myeloma risk and outcome. *Blood Cancer J.* 2021;11(4):74. Published 2021 Apr 14. doi:10.1038/s41408-021-00462-y
<https://www.nature.com/articles/s41408-021-00462-y>

Furuie H, Arimura-Omori M, Hamada N, Yanagihara T, Kiyohara C. The Association of Aging-Related Polymorphisms with Susceptibility to Lung Cancer: A Case-Control Study in a Japanese Population. *Asian Pac J Cancer Prev.* 2021;22(4):1279-1285. Published 2021 Apr 1. doi:10.31557/APJCP.2021.22.4.1279
<http://journal.waocp.org/?sid=Entrez:PubMed&id=pmid:33906323&key=2021.22.4.1279>

Other Biological Associations

Tucker LA. Fruit and Vegetable Intake and Telomere Length in a Random Sample of 5448 U.S. Adults. *Nutrients.* 2021;13(5):1415. Published 2021 Apr 23. doi:10.3390/nu13051415
<https://www.mdpi.com/2072-6643/13/5/1415/htm>



- Pathak GA, Wendt FR, Levey DF, et al. Pleiotropic effects of telomere length loci with brain morphology, and brain tissue expression [published online ahead of print, 2021 Apr 7]. *Hum Mol Genet.* 2021;ddab102. doi:10.1093/hmg/ddab102
<https://academic.oup.com/hmg/advance-article/doi/10.1093/hmg/ddab102/6217475>
- Gentiluomo M, Luddi A, Cingolani A, et al. Telomere Length and Male Fertility. *Int J Mol Sci.* 2021;22(8):3959. Published 2021 Apr 12. doi:10.3390/ijms22083959
<https://www.mdpi.com/1422-0067/22/8/3959/htm>
- Garfein J, Flannagan KS, Rittman D, Ramirez-Zea M, Villamor E; Nine Mesoamerican Countries Metabolic Syndrome Study (NiMeCoMeS) Group. Leukocyte telomere length is inversely associated with a metabolic risk score in Mesoamerican children [published online ahead of print, 2021 Mar 15]. *Am J Hum Biol.* 2021;e23596. doi:10.1002/ajhb.23596
<https://onlinelibrary.wiley.com/doi/10.1002/ajhb.23596>
- Norris K, Walne AJ, Ponsford MJ, et al. High-throughput STELA provides a rapid test for the diagnosis of telomere biology disorders. *Hum Genet.* 2021;140(6):945-955. doi:10.1007/s00439-021-02257-4
<https://link.springer.com/article/10.1007%2Fs00439-021-02257-4>
- Jansen R, Han LK, Verhoeven JE, et al. An integrative study of five biological clocks in somatic and mental health. *Elife.* 2021;10:e59479. Published 2021 Feb 9. doi:10.7554/eLife.59479
<https://elifesciences.org/articles/59479>

Reviews and Meta-Analyses

- Vodicka P, Andera L, Opattova A, Vodickova L. The Interactions of DNA Repair, Telomere Homeostasis, and p53 Mutational Status in Solid Cancers: Risk, Prognosis, and Prediction. *Cancers (Basel).* 2021;13(3):479. Published 2021 Jan 27. doi:10.3390/cancers13030479
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7865496/>
- Hägg S, Jylhävä J. Sex differences in biological aging with a focus on human studies. *Elife.* 2021;10:e63425. Published 2021 May 13. doi:10.7554/eLife.63425
<https://elifesciences.org/articles/63425#content>
- Lee AY. Skin Pigmentation Abnormalities and Their Possible Relationship with Skin Aging. *Int J Mol Sci.* 2021;22(7):3727. Published 2021 Apr 2. doi:10.3390/ijms22073727
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8038212/>
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<https://rep.bioscientifica.com/view/journals/rep/161/4/REP-20-0633.xml>
- Li X, Liu L, Li T, et al. SIRT6 in Senescence and Aging-Related Cardiovascular Diseases. *Front Cell Dev Biol.* 2021;9:641315. Published 2021 Mar 29. doi:10.3389/fcell.2021.641315
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8039379/>



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- Gavia-García G, Rosado-Pérez J, Arista-Ugalde TL, Aguiñiga-Sánchez I, Santiago-Osorio E, Mendoza-Núñez VM. Telomere Length and Oxidative Stress and Its Relation with Metabolic Syndrome Components in the Aging. *Biology (Basel)*. 2021;10(4):253. Published 2021 Mar 24. doi:10.3390/biology10040253 <https://www.mdpi.com/2079-7737/10/4/253>
- Sharma S, Sengupta A, Chowdhury S. Emerging Molecular Connections between NM23 Proteins, Telomeres and Telomere-Associated Factors: Implications in Cancer Metastasis and Ageing. *Int J Mol Sci*. 2021;22(7):3457. Published 2021 Mar 27. doi:10.3390/ijms22073457 <https://www.mdpi.com/1422-0067/22/7/3457>
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- Isaevska E, Moccia C, Asta F, et al. Exposure to ambient air pollution in the first 1000 days of life and alterations in the DNA methylome and telomere length in children: A systematic review. *Environ Res*. 2021;193:110504. doi:10.1016/j.envres.2020.110504 <https://www.sciencedirect.com/science/article/pii/S0013935120314018?via%3Dihub>
- Corfdir C, Pignon B, Szöke A, Schürhoff F. Érosion prématurée des télomères et schizophrénies : synthèse et hypothèses [French] [Accelerated telomere erosion in schizophrenia: A literature review] [published online ahead of print, 2021 Apr 13]. *Encephale*. 2021;S0013-7006(21)00058-0. doi:10.1016/j.encep.2020.12.001 <https://www.sciencedirect.com/science/article/abs/pii/S0013700621000580?via%3Dihub>
- Tan SY, Tey SL, Brown R. Nuts and Older Adults' Health: A Narrative Review. *Int J Environ Res Public Health*. 2021;18(4):1848. Published 2021 Feb 14. doi:10.3390/ijerph18041848 <https://www.mdpi.com/1660-4601/18/4/1848/htm>
- Imran SAM, Yazid MD, Idrus RBH, et al. Is There an Interconnection between Epithelial-Mesenchymal Transition (EMT) and Telomere Shortening in Aging?. *Int J Mol Sci*. 2021;22(8):3888. Published 2021 Apr 9. doi:10.3390/ijms22083888 <https://www.mdpi.com/1422-0067/22/8/3888/htm>