

Publications Stemming From

The Progeria Research Foundation Cell and Tissue Bank

The Progeria Research Foundation Cell and Tissue Bank has contributed to the following medical publications, categorized by cell line for researcher convenience:

HGADFN001

[Anti-hsa-miR-59 alleviates premature senescence associated with Hutchinson-Gilford progeria syndrome in mice](#)

Hu Q, Zhang N, Sui T, et al. [published online ahead of print, 2022 Nov 16]. *EMBO J*. 2022;e110937. doi:10.15252/embj.2022110937

[Age-dependent loss of MMP-3 in Hutchinson-Gilford progeria syndrome.](#)

Harten IA, Zahr RS, Lemire JM, Machan JT, Moses MA, Doiron RJ, Curatolo AS, Rothman FG, Wight TN, Toole BP, Gordon LB. *J Gerontol A Biol Sci Med Sci*. 2011 Nov;66(11):1201-7.

[The mutant form of lamin A that causes Hutchinson-Gilford progeria is a biomarker of cellular aging in human skin.](#)

McClintock D, Ratner D, Lokuge M, Owens DM, Gordon LB, Collins FS, Djabali K. *PLoS One*. 2007 Dec 5;2(12):e1269.

[Hutchinson-Gilford progeria mutant lamin A primarily targets human vascular cells as detected by an anti-Lamin A G608G antibody.](#)

McClintock D, Gordon LB, Djabali K. *Proc Natl Acad Sci U S A*. 2006 Feb 14;103(7):2154-9.

[Aggrecan expression is substantially and abnormally upregulated in Hutchinson-Gilford Progeria Syndrome dermal fibroblasts.](#)

Lemire JM, Patis C, Gordon LB, Sandy JD, Toole BP, Weiss AS. *Mech Ageing Dev*. 2006 Aug;127(8):660-9.

[Rescue of heterochromatin organization in Hutchinson-Gilford progeria by drug treatment.](#)

Columbaro M, Capanni C, Mattioli E, Novelli G, Parnaik VK, Squarzoni S, Maraldi NM, Lattanzi G. *Cell Mol Life Sci*. 2005 Nov;62(22):2669-78.

[Recurrent de novo point mutations in lamin A cause Hutchinson-Gilford progeria syndrome.](#)

Eriksson M, Brown WT, Gordon LB, Glynn MW, Singer J, Scott L, Erdos MR, Robbins CM, Moses TY, Berglund P, Dutra A, Pak E, Durkin S, Csoka AB, Boehnke M, Glover TW, Collins FS. *Nature*. 2003 May 15;423(6937):293-8.

HGADFN003

[Enhancing Cellular Homeostasis: Targeted Botanical Compounds Boost Cellular Health Functions in Normal and Premature Aging Fibroblasts](#)

Hartinger R, Singh K, Leverett J, Djabali K. *Biomolecules*. 2024;14(10):1310. Published 2024 Oct 16. doi:10.3390/biom14101310

[Ghrelin delays premature aging in Hutchinson-Gilford progeria syndrome](#)

Ferreira-Marques M, Carvalho A, Franco AC, et al. Ghrelin delays premature aging in Hutchinson-Gilford progeria syndrome [published online ahead of print, 2023 Oct 19]. *Aging Cell*. 2023;e13983. doi:10.1111/ace1.13983

[Impact of Combined Baricitinib and FTI Treatment on Adipogenesis in Hutchinson-Gilford Progeria Syndrome and Other Lipodystrophic Laminopathies](#)

Hartinger R, Lederer EM, Schena E, Lattanzi G, Djabali K. *Cells*. 2023;12(10):1350. Published 2023 May 9. doi:10.3390/cells12101350

[Unique progerin C-terminal peptide ameliorates Hutchinson-Gilford progeria syndrome phenotype by rescuing BUBR1.](#)

Zhang N, Hu Q, Sui T, Fu L, Zhang X, Wang Y, Zhu X, Huang B, Lu J, Li Z, Zhang Y. *Nat Aging*. 2023 Feb;3(2):185-201. doi: 10.1038/s43587-023-00361-w. Epub 2023 Feb 2. Erratum in: *Nat Aging*. 2023 May 2;; PMID: 37118121; PMCID: PMC10154249.

[Establishment and Characterization of hTERT Immortalized Hutchinson-Gilford Progeria Fibroblast Cell Lines](#)

Lin H, Mensch J, Haschke M, et al. Published 2022 Sep 6. doi:10.3390/cells11182784

[Impact of MnTBAP and Baricitinib Treatment on Hutchinson-Gilford Progeria Fibroblasts](#)

Vehns E, at R, Djabali K. *Pharmaceuticals (Basel)*. 2022;15(8):945. Published 2022 Jul 29. doi:10.3390/ph15080945

[Serpine1 drives a cell-autonomous pathogenic signaling in Hutchinson-Gilford progeria syndrome](#)

Catarinella G, Nicoletti C, Bracaglia A, et al. *Cell Death Dis*. 2022;13(8):737. Published 2022 Aug 26. doi:10.1038/s41419-022-05168-y

[Isoprenylcysteine Carboxylmethyltransferase-Based Therapy for Hutchinson-Gilford Progeria Syndrome](#)

Marcos-Ramiro B, Gil-Ordóñez A, Marín-Ramos NI, et al. *ACS Cent Sci*. 2021;7(8):1300-1310. doi:10.1021/acscentsci.0c01698

[Baricitinib, a JAK-STAT Inhibitor, Reduces the Cellular Toxicity of the Farnesyltransferase Inhibitor Lonafarnib in Progeria Cells](#)

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[Impact of Progerin Expression on Adipogenesis in Hutchinson-Gilford Progeria Skin-Derived Precursor Cells](#)

Najdi F, Krüger P, Djabali K. *Cells*. 2021;10(7):1598. Published 2021 Jun 25.
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[Nuclear Pore Complexes Cluster in Dysmorphic Nuclei of Normal and Progeria Cells during Replicative Senescence.](#)

Röhrl JM, Arnold R, Djabali K. *Cells*. 2021 Jan 14;10(1):153. doi: 10.3390/cells10010153.
PMID: 33466669; PMCID: PMC7828780.

[Self-assembly of multi-component mitochondrial nucleoids via phase separation.](#)

Feric M, Demarest TG, Tian J, Croteau DL, Bohr VA, Misteli T. *EMBO J*. 2021 Mar 15;40(6):e107165. doi: 10.15252/embj.2020107165. Epub 2021 Feb 23. PMID: 33619770;
PMCID: PMC7957436.

[Inhibition of JAK-STAT Signaling With Baricitinib Reduces Inflammation and Improves Cellular Homeostasis in Progeria Cells](#)

Liu C, Arnold R, Henriques G, Djabali K. *Cells* 2019;8(10):1276. Published 2019 Oct 18.
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[Analysis of Somatic Mutations Identifies Signs of Selection During in Vitro Aging of Primary Dermal Fibroblasts](#)

Narisu N, Rothwell R, Vrtačnik P, et al. *Aging Cell* 2019;18(6):e13010. doi:10.1111/accel.13010

[Transient Introduction of Human Telomerase mRNA Improves Hallmarks of Progeria Cells](#)

Li Y, Zhou G, Bruno IG, et al. *Aging Cell*. 2019;18(4):e12979. doi:10.1111/accel.12979

[Autophagic Removal of Farnesylated Carboxy-Terminal Lamin Peptides](#)

Lu X, Djabali K. *Cells* 2018;7(4):33. Published 2018 Apr 23. doi:10.3390/cells7040033

[Targeting the Phospholipase A2 Receptor Ameliorates Premature Aging Phenotypes](#)

Griveau A, Wiel C, Le Calvé B, et al. *Aging Cell* 2018;17(6):e12835. doi:10.1111/accel.12835

[A Cell-Intrinsic Interferon-like Response Links Replication Stress to Cellular Aging Caused by Progerin.](#)

Kreienkamp R, Graziano S, Coll-Bonfill N, Bedia-Diaz G, Cybulla E, Vindigni A, Dorsett D, Kubben N, Batista LFZ, Gonzalo S. *Cell Rep*. 2018 Feb 20;22(8):2006-2015.

[Epigenetic clock for skin and blood cells applied to Hutchinson Gilford Progeria Syndrome and ex vivo studies](#)

Horvath S, Oshima J, Martin GM, et al. *Aging* (Albany NY). 2018;10(7):1758-1775.
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[Nucleoplasmic lamins define growth-regulating functions of lamina-associated polypeptide 2 \$\alpha\$ in progeria cells.](#)

Vidak S, Georgiou K, Fichtinger P, Naetar N, Dechat T, Foisner R. *J Cell Sci.* 2017 Dec 28. pii: jcs.208462. doi: 10.1242/jcs.208462. [Epub ahead of print]

[Intermittent treatment with farnesyltransferase inhibitor and sulforaphane improves cellular homeostasis in Hutchinson-Gilford progeria fibroblasts.](#)

Gabriel D, Shafry DD, Gordon LB, Djabali K. *Oncotarget.* 2017 Jul 18;8(39):64809-64826. doi: 10.18632/oncotarget.19363. eCollection 2017 Sep 12.

[Temsirolimus Partially Rescues the Hutchinson-Gilford Progeria Cellular Phenotype.](#)

Gabriel D, Gordon LB, Djabali K. *PLoS One* 2016;11(12):e0168988. Published 2016 Dec 29. doi:10.1371/journal.pone.0168988

[Progerin Impairs Chromosome Maintenance by Depleting CENP-F From Metaphase Kinetochores in Hutchinson-Gilford Progeria Fibroblasts](#)

Eisch V, Lu X, Gabriel D, Djabali K. *Oncotarget* 2016;7(17):24700-24718. doi:10.18632/oncotarget.8267

[Permanent farnesylation of lamin A mutants linked to progeria impairs its phosphorylation at serine 22 during interphase.](#)

Moiseeva O, Lopes-Paciencia S, Huot G, Lessard F, Ferbeyre G. *Aging* 2016 Feb;8(2):366-81.

[Vitamin D Receptor Signaling Improves Hutchinson-Gilford Progeria Syndrome Cellular Phenotypes](#)

Kreienkamp R, Croke M, Neumann MA, et al. *Oncotarget* 2016;7(21):30018-30031. doi:10.18632/oncotarget.9065

[Lamin A Is an Endogenous SIRT6 Activator and Promotes SIRT6-Mediated DNA Repair.](#)

Ghosh S, Liu B, Wang Y, Hao Q, Zhou Z. *Cell Rep.* 2015 Nov 17;13(7):1396-1406. doi: 10.1016/j.celrep.2015.10.006. Epub 2015 Nov 5. PMID:26549451

[Proliferation of progeria cells is enhanced by lamina-associated polypeptide 2 \$\alpha\$ \(LAP2 \$\alpha\$ \) through expression of extracellular matrix proteins.](#)

Vidak S, Kubben N, Dechat T, Foisner R. *Genes & Development.* 2015 Oct 1;29(19):2022-36.

[Sulforaphane enhances progerin clearance in Hutchinson-Gilford progeria fibroblasts.](#)

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[Depleting the methyltransferase Suv39h1 improves DNA repair and extends lifespan in a progeria mouse model.](#)

Liu B, Wang Z, Zhang L, Ghosh S, Zheng H, Zhou Z. *Nat Commun.* 2013;4:1868.

[Naïve adult stem cells from patients with Hutchinson-Gilford progeria syndrome express low levels of progerin in vivo.](#)

Wenzel V, Roedl D, Gabriel D, Gordon LB, Herlyn M, Schneider R, Ring J, Djabali K. *Biol Open*. 2012 Jun 15;1(6):516-26. Epub 2012 Apr 16.

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[Progerin and telomere dysfunction collaborate to trigger cellular senescence in normal human fibroblasts.](#)

Cao K, Blair CD, Faddah DA, Kieckhafer JE, Olive M, Erdos MR, Nabel EG, Collins FS. *J Clin Invest*. 2011 Jul 1;121(7):2833-44

[Defective lamin A-Rb signaling in Hutchinson-Gilford Progeria Syndrome and reversal by farnesyltransferase inhibition.](#)

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[Effect of progerin on the accumulation of oxidized proteins in fibroblasts from Hutchinson Gilford progeria patients.](#)

Viteri G, Chung YW, Stadtman ER. *Mech Ageing Dev*. 2010 Jan;131(1):2-8.

[Ageing-related chromatin defects through loss of the NURD complex.](#)

Pegoraro G, Kubben N, Wickert U, Göhler H, Hoffmann K, Misteli T. *Nat Cell Biol*. 2009 Oct;11(10):1261-7.

[Lamin A-dependent misregulation of adult stem cells associated with accelerated ageing.](#)

Scaffidi P, Misteli T. *Nat Cell Biol*. 2008 Apr;10(4):452-9.

[Perturbation of wild-type lamin A metabolism results in a progeroid phenotype.](#)

Candelario J, Sudhakar S, Navarro S, Reddy S, Comai L. *Aging Cell*. 2008 Jun;7(3):355-67

[Alterations in mitosis and cell cycle progression caused by a mutant lamin A known to accelerate human aging.](#)

Dechat T, Shimi T, Adam SA, Rusinol AE, Andres DA, Spielmann HP, Sinensky MS, Goldman RD. *Proc Natl Acad Sci USA*. 2007 Mar 20;104(12):4955-60.

[The mutant form of lamin A that causes Hutchinson-Gilford progeria is a biomarker of cellular aging in human skin.](#)

McClintock D, Ratner D, Lokuge M, Owens DM, Gordon LB, Collins FS, Djabali K. *PLoS One*. 2007 Dec 5;2(12):e1269.

[A lamin A protein isoform overexpressed in Hutchinson-Gilford progeria syndrome interferes with mitosis in progeria and normal cells.](#)

Cao K, Capell BC, Erdos MR, Djabali K, Collins FS. *Proc Natl Acad Sci USA*. 2007 Mar

20;104(12):4949-54.

[Hutchinson-Gilford progeria mutant lamin A primarily targets human vascular cells as detected by an anti-Lamin A G608G antibody.](#)

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Columbaro M, Capanni C, Mattioli E, Novelli G, Parnaik VK, Squarazoni S, Maraldi NM, Lattanzi G. *Cell Mol Life Sci*. 2005 Nov;62(22):2669-78.

[Genomic instability in laminopathy-based premature aging.](#)

Liu B, Wang J, Chan KM, Tjia WM, Deng W, Guan X, Huang JD, Li KM, Chau PY, Chen DJ, Pei D, Pendas AM, Cadiñanos J, López-Otín C, Tse HF, Hutchison C, Chen J, Cao Y, Cheah KS, Tryggvason K, Zhou Z. *Nat Med*. 2005 Jul;11(7):780-5.

[Incomplete processing of mutant lamin A in Hutchinson-Gilford progeria leads to nuclear abnormalities, which are reversed by farnesyltransferase inhibition.](#)

Glynn MW, Glover TW. *Hum Mol Genet*. 2005 Oct 15;14(20):2959-69.

[Accumulation of mutant lamin A causes progressive changes in nuclear architecture in Hutchinson-Gilford progeria syndrome.](#)

Goldman RD, Shumaker DK, Erdos MR, Eriksson M, Goldman AE, Gordon LB, Gruenbaum Y, Khuon S, Mendez M, Varga R, Collins FS. *Proc Natl Acad Sci U S A*. 2004 Jun 15;101(24):8963-8.

[Recurrent de novo point mutations in lamin A cause Hutchinson-Gilford progeria syndrome.](#)

Eriksson M, Brown WT, Gordon LB, Glynn MW, Singer J, Scott L, Erdos MR, Robbins CM, Moses TY, Berglund P, Dutra A, Pak E, Durkin S, Csoka AB, Boehnke M, Glover TW, Collins FS. *Nature*. 2003 May 15;423(6937):293-8.

HGADFN004

[Incomplete processing of mutant lamin A in Hutchinson-Gilford progeria leads to nuclear abnormalities, which are reversed by farnesyltransferase inhibition.](#)

Glynn MW, Glover TW. *Hum Mol Genet*. 2005 Oct 15;14(20):2959-69.

HGADFN005

[Recurrent de novo point mutations in lamin A cause Hutchinson-Gilford progeria syndrome.](#)

Eriksson M, Brown WT, Gordon LB, Glynn MW, Singer J, Scott L, Erdos MR, Robbins CM, Moses TY, Berglund P, Dutra A, Pak E, Durkin S, Csoka AB, Boehnke M, Glover TW, Collins FS. *Nature*. 2003 May 15;423(6937):293-8.

HGADFN008

[Recurrent de novo point mutations in lamin A cause Hutchinson-Gilford progeria syndrome.](#)

Eriksson M, Brown WT, Gordon LB, Glynn MW, Singer J, Scott L, Erdos MR, Robbins CM, Moses TY, Berglund P, Dutra A, Pak E, Durkin S, Csoka AB, Boehnke M, Glover TW, Collins FS. *Nature*. 2003 May 15;423(6937):293-8.

HGADFN014

[Recurrent de novo point mutations in lamin A cause Hutchinson-Gilford progeria syndrome.](#)

Eriksson M, Brown WT, Gordon LB, Glynn MW, Singer J, Scott L, Erdos MR, Robbins CM, Moses TY, Berglund P, Dutra A, Pak E, Durkin S, Csoka AB, Boehnke M, Glover TW, Collins FS. *Nature*. 2003 May 15;423(6937):293-8.

HGMDFN090

[Activation of endoplasmic reticulum stress in premature aging via the inner nuclear membrane protein SUN2](#)

Vidak S, Serebryanny LA, Pegoraro G, Misteli T. *Cell Rep*. 2023;42(5):112534.
doi:10.1016/j.celrep.2023.112534

[Unique progerin C-terminal peptide ameliorates Hutchinson-Gilford progeria syndrome phenotype by rescuing BUBR1.](#)

Zhang N, Hu Q, Sui T, Fu L, Zhang X, Wang Y, Zhu X, Huang B, Lu J, Li Z, Zhang Y. *Nat Aging*. 2023 Feb;3(2):185-201. doi: 10.1038/s43587-023-00361-w. Epub 2023 Feb 2. Erratum in: *Nat Aging*. 2023 May 2;; PMID: 37118121; PMCID: PMC10154249.

[Quantification of Farnesylated Progerin in Hutchinson-Gilford Progeria Patient Cells by Mass Spectrometry](#)

Camafeita E, Jorge I, Rivera-Torres J, Andrés V, Vázquez J. *Int J Mol Sci*. 2022;23(19):11733. Published 2022 Oct 3. doi:10.3390/ijms231911733

[Self-assembly of multi-component mitochondrial nucleoids via phase separation.](#)

Feric M, Demarest TG, Tian J, Croteau DL, Bohr VA, Misteli T. *EMBO J*. 2021 Mar

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[Epigenetic Deregulation of Lamina-Associated Domains in Hutchinson-Gilford Progeria Syndrome](#)

Köhler F, Bormann F, Raddatz G, et al. *Genome Med* 2020;12(1):46. Published 2020 May 25. doi:10.1186/s13073-020-00749-y

[Chromatin and Cytoskeletal Tethering Determine Nuclear Morphology in Progerin-Expressing Cells](#)

Lionetti MC, Bonfanti S, Fumagalli MR, Budrikis Z, Font-Clos F, Costantini G, Chepizhko O, Zapperi S, La Porta CAM. *Biophysical Journal* 2020 May 5;118(9):2319-2332.

[Transient Introduction of Human Telomerase mRNA Improves Hallmarks of Progeria Cells](#)

Li Y, Zhou G, Bruno IG, et al. *Aging Cell* 2019;18(4):e12979. doi:10.1111/accel.12979

[A Cell-Intrinsic Interferon-like Response Links Replication Stress to Cellular Aging Caused by Progerin.](#)

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[Nucleoplasmic lamins define growth-regulating functions of lamina-associated polypeptide 2 \$\alpha\$ in progeria cells.](#)

Vidak S, Georgiou K, Fichtinger P, Naetar N, Dechat T, Foisner R. *J Cell Sci.* 2017 Dec 28. pii: jcs.208462. doi: 10.1242/jcs.208462. [Epub ahead of print]

[Progerin sequestration of PCNA promotes replication fork collapse and mislocalization of XPA in laminopathy-related progeroid syndromes](#)

Hilton BA, Liu J, Cartwright BM, et al. *FASEB J* 2017;31(9):3882-3893. doi:10.1096/fj.201700014R

[Vitamin D Receptor Signaling Improves Hutchinson-Gilford Progeria Syndrome Cellular Phenotypes](#)

Kreienkamp R, Croke M, Neumann MA, et al. *Oncotarget* 2016;7(21):30018-30031. doi:10.18632/oncotarget.9065

[Methylene blue alleviates nuclear and mitochondrial abnormalities in progeria.](#)

Xiong ZM, Choi JY, Wang K, Zhang H, Tariq Z, Wu D, Ko E, LaDana C, Sesaki H, Cao K.

Aging Cell. 2015 Dec 14. [Epub ahead of print]

[Proliferation of progeria cells is enhanced by lamina-associated polypeptide 2 \$\alpha\$ \(LAP2 \$\alpha\$ \) through expression of extracellular matrix proteins.](#)

Vidak S, Kubben N, Dechat T, Foisner R. *Genes & Development*. 2015 Oct 1;29(19):2022-36.

[Higher-order unfolding of satellite heterochromatin is a consistent and early event in cell senescence.](#)

Swanson EC, Manning B, Zhang H, Lawrence JB. *J Cell Biol*. 2013 Dec 23;203(6):929-42.

[Correlated alterations in genome organization, histone methylation, and DNA-lamin A/C interactions in Hutchinson-Gilford progeria syndrome.](#)

McCord RP, Nazario-Toole A, Zhang H, Chines PS, Zhan Y, Erdos MR, Collins FS, Dekker J, Cao K. *Genome Res*. 2013 Feb;23(2):260-9. Epub 2012 Nov 14.

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Arlt MF, Ozdemir AC, Birkeland SR, Wilson TE, Glover TW. *Proc Natl Acad Sci USA*. 2011 Oct 18;108(42):17360-5

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Cao K, Blair CD, Faddah DA, Kieckhafer JE, Olive M, Erdos MR, Nabel EG, Collins FS. *J Clin Invest*. 2011 Jul 1;121(7):2833-44

[CTP:phosphocholine cytidyltransferase \$\alpha\$ \(CCT \$\alpha\$ \) and lamins alter nuclear membrane structure without affecting phosphatidylcholine synthesis.](#)

Gehrig K, Ridgway ND. *Biochim Biophys Acta*. 2011 Jun;1811(6):377-85.

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Viteri G, Chung YW, Stadtman ER. *Mech Ageing Dev*. 2010 Jan;131(1):2-8.

[Replication stress induces genome-wide copy number changes in human cells that resemble polymorphic and pathogenic variants.](#)

Arlt MF, Mulle JG, Schaibley VM, Ragland RL, Durkin SG, Warren ST, Glover TW. *Am J Hum Genet*. 2009 Mar;84(3):339-50.

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Glynn MW, Glover TW. *Hum Mol Genet*. 2005 Oct 15;14(20):2959-69.

HGADFN122

[Aberrant migration features in primary skin fibroblasts of Huntington's disease patients hold potential for unraveling disease progression using an image based machine learning tool](#)

Gharaba S, Shalem A, Paz O, Muchtar N, Wolf L, Weil M. *Comput Biol Med*. Published online August 2, 2024. doi:10.1016/j.compbiomed.2024.108970

[Perturbed actin cap as a new personalized biomarker in primary fibroblasts of Huntington's disease patients](#)

Gharaba S, Paz O, Feld L, Abashidze A, Weinrab M, Muchtar N, Baransi A, Shalem A, Sprecher U, Wolf L, Wolfenson H, Weil M. *Front Cell Dev Biol*. 2023 Jan 18;11:1013721. doi: 10.3389/fcell.2023.1013721. PMID: 36743412; PMCID: PMC9889876.

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Köhler F, Bormann F, Raddatz G, et al. *Genome Med*. 2020;12(1):46. Published 2020 May 25. doi:10.1186/s13073-020-00749-y

[PML2-mediated Thread-Like Nuclear Bodies Mark Late Senescence in Hutchinson-Gilford Progeria Syndrome](#)

Wang M, Wang L, Qian M, et al. [published online ahead of print, 2020 Apr 29]. *Aging Cell*
Correction acknowledging PRF for cell lines is pending

[Transient Introduction of Human Telomerase mRNA Improves Hallmarks of Progeria Cells](#)

Li Y, Zhou G, Bruno IG, et al. *Aging Cell* 2019;18(4):e12979. doi:10.1111/accel.12979

[Predicting Age From the Transcriptome of Human Dermal Fibroblasts](#)

Fleischer JG, Schulte R, Tsai HH, et al. *Genome Biol* 2018;19(1):221. Published 2018 Dec 20. doi:10.1186/s13059-018-1599-6

[Epigenetic clock for skin and blood cells applied to Hutchinson Gilford Progeria Syndrome and ex vivo studies](#)

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[Metformin Alleviates Aging Cellular Phenotypes in Hutchinson-Gilford Progeria Syndrome Dermal Fibroblasts.](#)

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[Insights into the role of immunosenescence during varicella zoster virus infection \(shingles\) in the aging cell model.](#)

Kim JA, Park SK, Kumar M, Lee CH, Shin OS. *Oncotarget*. 2015 Oct 14. [Epub ahead of print]

[Depleting the methyltransferase Suv39h1 improves DNA repair and extends lifespan in a progeria mouse model.](#)

Liu B, Wang Z, Zhang L, Ghosh S, Zheng H, Zhou Z. *Nat Commun*. 2013;4:1868.

HGADFN127

[Enhancing Cellular Homeostasis: Targeted Botanical Compounds Boost Cellular Health Functions in Normal and Premature Aging Fibroblasts](#)

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PSADFN317

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PSFDEN327

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PSMDFN346

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PSADFN373

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PSADFN392

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PSMDFN393

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PSADFN542

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HGADFN003 iPS1B

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HGALBV009

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HGMLBV010

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HGALBV011

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HGMLBV013

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HGFLBV021

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HGMLBV023

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HGFLBV031

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HGFLBV050

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HGALBV057

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HGMLBV058

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HGSLBV059

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HGMLBV066

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