CURRICULUM VITAE JAN HOEIJMAKERS

Name and title(s)	Jan Hoeijmakers, Prof., M.Sc., Ph.D.
Date of birth:	March 15, 1951
University and Faculty:	Erasmus University Medical Center (Erasmus MC) Rotterdam
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Education

M.Sc. Molecular Biology, Radboud University Nijmegen, 1975 *(cum laude)*

Ph.D. University of Amsterdam, PhD work 1975-1979 (promotor Prof. Dr. Piet Borst)
PhD Thesis: *'Trypanosomes: Kinetoplast DNA and Antigenic Variation'* 1982
(for this work the *'Harold Quintus Bosz'* Prize was awarded, 1983)

Current and previous positions

Associate Professor:	Dept. of Genetics, Erasmus MC, Rotterdam, 1985-1993
Prof. Molecular Genetics:	Dept. of Genetics, Erasmus MC, Rotterdam, since 1993, head since 1999-2016

Chairman of the EMC Biomedical Research Theme (6 departments, 2 cores, ~400 fte's), since 2008

Awards and Honours (partial list)

- *'Harold Quintus Bosz'* Prize (Utrecht, 1983, for the discovery of the molecular mechanism of antigenic variation in trypanosomes, PhD thesis)
- *'Snoo van t' Hoogerhuys'* Prize (Utrecht, 1986, isolation of the first human DNA repair gene)
- The very prestigious *'Louis Jeantet'* Prize for Medical Research in Europe for the entire work on DNA repair (Geneva, 1995)
- *'Spinoza'* Prize, most recognized prize of the Dutch Science Organization (The Hague, 1999)
- *'Descartes-Huygens'* Award for French-Dutch scientific collaborations (The Hague, 2000)
- *'Van Gogh'* Prize from the Dutch Science Organization (2000)
- *'EC-Descartes'* Award for European collaboration on DNA repair (Brussels, 2000)
- *'Josephine Nefkens Prize'* for cancer research (First awardee, Rotterdam, 2001)
- *Seneca Medaille des Industrie-Clubs für Altensforschung Prize*, for pioneering research on the molecular basis of aging (First awardee, Düsseldorf, 2008)
- *ERC Advanced Grant* ***DamAge*** – *Multi-disciplinary Sciences* European Research Council (2 M€, 2008)
- *Cancer Research Prize of the Charles Rudolph Brupbacher Stiftung* for research on the role of genome stability in cancer and aging, shared with Bert Vogelstein (Zurich, 2011)
- *Academy Professor of the Royal Academy of Sciences of The Netherlands* (KNAW), First Academy Professor new style in the broad domain of Beta sciences (Amsterdam, 2011)
- *Koningin Wilhelmina Research Prize* of the Dutch Cancer Society, for research on DNA damage response in prostate and urinary bladder cancer (2M€) (Leiden, 2011)
- *Mendel Medal* on the occasion of the 190th anniversary of Mendel's birth (Brno, 2012)
- Royal distinction *Knight in the Order of the Dutch Lion* for important scientific achievements in the area of cancer and aging research (2013).
- Consulted by the Nobel Committee for the Nobel Prize in Chemistry for DNA repair (2014-2015)
- *ERC PoC grant* ***DEMENTIA*** European Research Council (2015)
- *NVHG Galjaard Prize* of the Netherlands Society of Human Genetics (Leuven, 2016)
- Selected for the *Nobel-Forum* lecture at the Karolinska Istitutet (Stockholm, 2016)

- Professor International Faculty, Cologne University (Cologne, Guest Professor, 2016 - …)
- Honorary TEFAF Oncology Chair of the Maastricht University Medical Center 2017 (previous awardees: Harald zur Hausen, Aaron Chiechanover, Hans Clevers, Doug Hanahan)
- Recipient of the very prestigious International *Olav Thon Foundation* personal research Award 2017 (>0.5 M€, Oslo, for work on DNA damage, aging and neurodegeneration)
- For second time obtained a highly competitive *ERC Advanced grant* ***Dam2Age***, 2017 (2.2 M€)

In addition elected member of KNAW (section 'Medicine', dept. 'Physics', 2000), and EMBO (1995).

Teaching and Scientific coaching activities (main activities only)

- Initiator/co-developer of a new -more patient-oriented- medical curriculum of the Erasmus MC, (>400 students each year), repeatedly elected as the best medical curriculum of the country in 2013, 2014 and 2015.
- Designer and coordinator of the 13-week teaching module: 'Oncology' of the medical curriculum
- Supervisor/promotor of ~50 PhD students (thesis completed), and 6 PhD students (ongoing)
- The Hoeijmakers aging team consists of 5 senior scientists/postdocs, 6 PhDs and 3 technicians

Acquisition of National and International support (partial list since 2004)

It is too elaborate to list all grants that have been obtained individually or jointly with collaborators by the department. Therefore, a summary is provided with an estimated number of grants obtained:

- From EU (various frame work programs) and ESF/Mdm. Curie (~10 grants). E.g. Coordinator of an FP6 Integrated Project on DNA repair involving 15 leading laboratories and 2 companies (total budget 12 M€, ended 2009). Coordinator of FP7 program DNA damage response (DDR) focusing on cancer treatment involving 6 European teams and 2 companies (total budget 6 M€, 2011- ended 2015)
- Recipient of ERC advanced grant (in multi-disciplinary sciences) ***"DamAge"*** 2008-2014 (2M€)
- NIH grants (Program grant for 3 successive R1 rounds from 1999, recently extended to 2019)
- National (Science) Organizations like NWO, NGI/Senter Novem (Cancer Genomics Center, Netherlands Toxicogenomics Center), Center Biomedical Genetics (all funds ended 2013)
- Charity organization: Dutch Cancer Society KWO award (2012-2017)
- Royal Academy of Sciences in The Netherlands (Academy Professor, 2011-2016)
- Recipient of a second ERC advanced grant ***"Dam2Age"***, 2017-2021 (2.5M€)

(Co)organiser of international meetings (partial list of more recent conferences)

- Seven successive International Workshops on DNA Repair, Noordwijkerhout NL 1988, 1991, 1996, 2001, 2006, 2011, 2016
- "DNA Repair and Mutagenesis: From Molecular Structure to Biological Consequences", Fairmont Southampton, Princess, Bermuda, December 7-13, 2003
- 19th annual Forbeck Forum on Cancer, Hilton Head, USA, November, 6-9, 2003
- Molecular Basis of Aging, Titisee Conference. Boehringer Ingelheim Foundation, Titisee 2007
- AACR, Genetic Instability Mechanisms, Los Angeles, USA, 2007
- International Scientific Meeting on Aging CBG/CGC, Amsterdam, NL 2011
- Co-organizer of the 11th International Conference on Environmental Mutagens - AEMS meeting, Brazil, 2013
- Main organizer of 30th Ernst Klenk Symposium "DNA Damage - Repair Mechanisms in Aging and Disease" September 2014, Cologne, Germany (>400 participants)
- Co-organizer: First European Meeting on the Molecular Biology of Aging, Groningen, NL, 2015
- Main organizer: DNA Damage Response workshop, Amsterdam, 2015

Functions in (inter)national scientific organizations (too numerous to list all, selection made)

- Board of the Dutch Science Organization, Section 'Chemical Sciences' (2009-present)
- Member of various committees of the Royal Netherlands Academy of Sciences; e.g. Jury of the Heineken Prize (selection of two later Nobel Laureates) (2002-2008), Scientific Trend Analyses of Biotechnology of Animals (2009-2013), Ammodo-Prize committee (2014-present)
- Member of numerous national selection committees for grant applications for NWO, Dutch cancer society, etc (e.g. personal research fellowships for Veni, Vidi, Vici, regular grants, etc.)
- Panel member for ERC advanced grant applications (LS4 panel, Brussels, 2008, 2010, 2012)
- Member of the project committee Trend Analyses Biotechnology (2007 and 2009)
- Member and vice-Chairman of the National Committee for Biotechnology of Animals (Ministry of Agriculture, 2001-2014)
- Member of numerous site-visit committees e.g.: MRC units (e.g. Cambridge, Sussex, London), CRC/CRUK institutes (UK), RIKEN institute (Japan), Swiss NCCR program 'Frontiers in Genetics' involving >12 research groups in Switzerland (yearly 2002-2011), Institute of Molecular Cancer Research (Univ. Zurich), etc.
- Chairman committee for cancer research of the National Program on Cancer (NPK, 2007)
- Member of the Scientific Advisory Board of numerous organizations: e.g. SBDR 'Structural Cell Biology of DNA Repair' of NIH/DOE involving more than 15 groups, Berkeley, US (yearly since 2000), the FLI (Jena, Germany, 2008-2013), the IFOM (Milan, Italy, 2011-present), various Max Planck Institutes (e.g. Munich, Mainz), CECAD-SFB (Cologne, 2011-2015), etc.
- Vice-Chairman of the commission Building blocks of Life, NWO (since 2014)
- Member of the Supervisory Board of the Netherlands Cancer Institute (since 2014)
- Member of the Jury for the Gairdner Prize Foundation (Toronto, Canada, since 2015)

Invitations for (Inter)national Meetings, Keynote addresses etc. (very partial list)

The (inter)national appreciation for our scientific research is apparent from very frequent invitations for presenting our work at international meetings (>25 yearly), almost half of which concern keynote addresses (>10 keynotes yearly).

Prestigious keynote lectures include: the Dorcus Cummings public lecture at the 65th Cold Spring Harbor Symposium (2000), the Hans L. Falk Memorial lecture (NIEHS 2001), the Storer lecture (UC Davis 2002), the General Motors Lecture (2004), the Boehringer Ingelheim Fonds International Titisee Lecture (2007), keynotes of the Genome Dynamics in Neuroscience Conference (Brighton, 2010), Abcam Meeting (Closing lecture, Nassau, 2012), EMS meeting (Seattle 2012), Mendel Lecture (Brno 2012), Keynote GRC on Mammalian DNA Repair (Ventura 2013), 11th Intern. Conf. on Environm. Mutagens, (Opening lecture, >1000 participants, Brazil 2013), etc.

As an example a very partial list of keynote lectures from recent years: Keynote of the European Human Genetics Conf. (Milan, May 2014), ISCO-2014, Ploem lecture (Malaga, May 2014), the Alexander Symeonidis plenary keynote at the European Congress of Pathology (London, 2600 participants, Sept 2014), the prestigious Ernst Klenk Lecture (Cologne, 450 participants, Sept 2014), Keynote Workshop Croucher Advanced Study Alzheimer's (Hongkong, Jan 2015), Opening Keynote 3R Meeting (Giens, France, May 2015), Congress lecture 15th ICRR (Kyoto, May 2015, >2000 participants), First Plenary Keynote 52nd ERA-EDTA congress (London, May 2015, >8000 participants!), Lecture for the Nobel Forum, (Stockholm, Febr 2016). Closing keynotes at the Intern. Meeting on Mammalian DNA repair (Egmond aan Zee, April 2016) and at the Benzon Symp. on Genome Instability and Neurodegeneration (Copenhagen, August 2016). 13th Harold Ackroyd Memorial Lecture at the Caius College in Cambridge (March, 6, 2017)

Brief summary of the research of Jan H.J. Hoeijmakers **(emphasis on last decade)**

This summary focusses on the contributions of Jan Hoeijmakers to the field of DNA repair and its consequences. The team of Jan Hoeijmakers succeeded in cloning the first human DNA repair gene, *Ercc1*, followed by many more (~ half of all nucleotide excision repair (NER) genes), allowing elucidation of the NER reaction mechanism. He discovered the very strong evolutionary conservation of DNA repair and an unexpected link with basal transcription, which clarified the basis of a variety of -till then enigmatic- human repair syndromes, such as Cockayne syndrome and trichothiodystrophy and led to the identification of a new class of 'basal transcription disorders'. Subsequently, his team embarked upon the systematic generation of a series of mouse repair mutants, to cover the range from molecule to patient. These mouse mutants turned out to be extremely informative: they not only mimicked the corresponding human syndromes to an exceptional degree but also enabled detailed insight into the complex aetiology of human repair diseases. In this way he disclosed a -by now completely solid, but for long highly controversial- connection between accumulating DNA damage and accelerated but truly *bona fide* aging and a trade-off between cancer and aging and identified which repair processes primarily protect from cancer and which from accelerated aging.

His team not only fully consolidated the relationship between DNA damage, repair and aging but even succeeded in getting grip on the aging process in mice by modulating DNA repair and surprisingly by nutritional interventions. The acceleration of specific aging features was found to strictly correlate with the severity of defects in specific repair pathways. The spectrum of accelerated aging symptoms (which organs age fast) is determined by the type of repair defect (which pathway is affected). E.g. transcription-coupled repair primarily protects post-mitotic tissues such as the neuronal system from accelerated aging, cross-link repair the proliferative organs e.g. bone marrow. DNA repair systems protecting primarily from mutagenic lesions or covering the entire genome (such as global genome NER) predominantly prevent cancer. Conditional repair mice allow targeting accelerated aging to any organ, tissue or stage of development, for instance mice in which only the cerebellum or heart exhibit dramatic accelerated aging. The *Ercc1*$^{\Delta/-}$ mutant, affected in at least 3 repair pathways, exhibits the most wide-spread premature aging phenotypes documented to date for any mammal: progressive neurodegeneration (dementia, ataxia, loss of hearing, vision, neuronal plasticity, etc.), osteoporosis, cardiovascular, hematological and immunological aging, thymic involution, cachexia, sarcopenia, early infertility, liver, kidney aging etc., accompanied by progressive behavioral-physiological-hormonal alterations, loss of stem cells, increased cellular senescence and gene expression patterns alike natural aging. Importantly, this mutant is found to be a superior model for Alzheimer and Parkinson disease addressing a tremendous unmet medical need. E.g. he recently discovered a connection between DNA damage and protein homeostatic stress explaining protein aggregates. These findings are fully consistent with the notion that aging is the most important risk factor for all these dementia's.

Rapid accumulation of unrepaired DNA damage in these mice causes premature cell death and senescence, but triggers also an anti-aging *'survival response'* likely in an attempt to extend lifespan. This response suppresses growth and enhances maintenance and defence systems (anti-oxidant defenses, stress resistance, immunological and metabolic parameters) and resembles the longevity response induced by dietary restriction (DR). Remarkably, subjecting the progeroid, dwarf mutants to actual DR resulted in the largest lifespan increase recorded in mammals: thirty percent DR tripled median and maximal remaining lifespan, and drastically retarded all aspects of accelerated aging investigated, but most impressively neurodegeneration, e.g. DR animals retained 50% more neurons and maintained full motoric function, virtually stopping the neuronal decline. Repair-deficient progeroid *Xpg*$^{-/-}$ mice responded similarly to DR, extending this observation beyond *Ercc1*. The DR response in *Ercc1*$^{\Delta/-}$ mice resembled DR in wt animals including further reduced IGF1 signaling. Interestingly, ad libitum *Ercc1*$^{\Delta/-}$ liver expression profiles showed preferential extinction of expression of long genes, consistent with genome-wide accumulation of stochastic, transcription-blocking lesions, which affect long genes more than short ones. DR largely prevented this decline of transcriptional output, indicating that DR prolongs genome function. These findings strengthen the link between DNA damage and aging, provide insight into the molecular mechanism underlying DR, establish *Ercc1*$^{\Delta/-}$ mice as powerful model for identifying interventions to promote healthy aging, reveal untapped potential for reducing endogenous damage, and suggest a counterintuitive DR-like therapy for human progeroid genome instability syndromes and DR-like interventions for preventing neurodegenerative diseases (Vermey et

al Nature, 2016, August 24, see also accompanying 'News and Views' of Oshima and Martin, Nature, 2016).

In separate lines of research his laboratory pioneered the *in vivo* analysis of the dynamics of DNA repair by fluorescent tagging in living cells and even living mammalian organisms in combination with local DNA damage induction opening a new field of DNA repair research that explores repair in the most relevant context: the intact organism. In addition, Hoeijmakers and his team generated the first mammals without a biological clock, and since then also investigated the biological mechanism and clinical impact of the circadian rhythm. In 2005 Hoeijmakers started a company called DNage and in 2012 he founded AgenD whose mission is to provide solutions for medical/health problems associated with aging.

In summary, this pioneering work places DNA damage at the basis of aging, highlights the flexible nature of aging and establishes the repair mutants as valid tools for identification of life- and healthspan-extending pharmaceutical and nutraceutical interventions in mammals. This opens new avenues for prevention or treatment of aging-related diseases, most notably neurodegenerative disorders including Alzheimers and Parkinson diseases, which are associated with enormous loss of QoL and constitute main medical and health care challenges in developed countries world-wide.

For **key papers** (selected from >420 publications in international scientific journals) see:

1. J.H.J. Hoeijmakers, A.C.C. Frasch, A. Bernards, P. Borst and G.A.M. Cross.
   Novel expression-linked copies of the genes for variant surface antigens in trypanosomes.
   Nature 284: 78-80 (1980).
2. A. Westerveld, J.H.J. Hoeijmakers, M. van Duin, J. de Wit, H. Odijk, A. Pastink, R.D. Wood and D. Bootsma.
   Molecular cloning of a human repair gene.
   Nature 310: 425-429 (1985).
3. M. van Duin, J. de Wit, H. Odijk, A. Westerveld, A. Yasui, M. Koken, J.H.J. Hoeijmakers and D. Bootsma.
   Molecular characterization of the human excision repair gene *ERCC-1*: cDNA cloning and aminoacid homology with the yeast DNA repair gene RAD10.
   Cell 44: 913-923 (1986).
4. J.H.J. Hoeijmakers.
   Cryptic initiation sequence revealed.
   Nature 343: 417-418 (1990).
5. G. Weeda, R.C.A. van Ham, W. Vermeulen, D. Bootsma, A.J. van der Eb and J.H.J. Hoeijmakers.
   A presumed DNA helicase, encoded by the excision repair gene ERCC-3 is involved in the human repair disorders xeroderma pigmentosum and Cockayne's syndrome.
   Cell 62: 777-791 (1990).
6. C. Troelstra, A. van Gool, J. de Wit, W. Vermeulen, D. Bootsma and J.H.J. Hoeijmakers.
   ERCC6, a member of a subfamily of putative helicases is involved in Cockayne's syndrome and preferential repair of active genes.
   Cell 71: 939-953 (1992).
7. D. Bootsma and J.H.J. Hoeijmakers.
   DNA repair engagement with transcription (News and Views).
   Nature 363: 114-115 (1993).
8. H. Roest, J. van Klaveren, J. de Wit, C.G. van Gurp, M.H.M. Koken, M. Vermey, J.H. van Roijen, J.T.M. Vreeburg, W.M. Baarends, D. Bootsma, J.A. Grootegoed and J.H.J. Hoeijmakers.
   Inactivation of a ubiquitin-conjugating DNA repair enzyme in mice causes a defect in spermatogenesis associated with chromatin modification.
   Cell 86: 799-810 (1996).
9. G.T.J. van der Horst, H. van Steeg, R.J.W. Berg, A.J. van Gool, J. de Wit, G. Weeda, H. Morreau, R.B. Beems, C.F. van Kreijl, F.R. de Gruijl, D. Bootsma and J.H.J. Hoeijmakers.

Defective transcription-coupled repair in Cockayne syndrome B mice is associated with skin cancer predisposition.
Cell 89: 425-435 (1997).

10. Sugasawa, K., Ng, J.M.Y., Masutani, C., van der Spek, P.J., Eker, A.P.M., Hanaoka, F., Bootsma D. and Hoeijmakers J.H.J.
Xeroderma pigmentosum group C complex is the initiator of global genome repair.
Molecular Cell 2, 223-232 (1998).
11. van der Horst, G.T.J., Muijtjens, M., Kobayashi, K., Takano, R., Kanno, S-I., Takao, M., de Wit, J., Verkerk, A., Eker, A.P.M., van Leenen, D., Buijs, R., Bootsma, D., Hoeijmakers, J.H.J., Yasui, A.
Mammalian blue-light receptor homologs CRY1 and CRY2 are essential for maintenance of the biological clock.
Nature 398, 627-630 (1999).
(see also 'News and Views' Nature 398, 557-558, and Science 284, 422-423, 1999).
12. Houtsmuller, A.B., Rademakers, S., Nigg, A.L., Hoogstraten, D., Hoeijmakers J.H.J., and Vermeulen W.
Action of DNA repair endonuclease ERCC1/XPF in living cells.
Science 284, 958-961 (1999).
13. Hoeijmakers, J.H.J.
Genome maintenance mechanisms for preventing cancer.
Nature 411, 366-374 (2001),
(most cited paper in molec. sciences from Dutch scientist in 2000-2010).
14. Vermeulen, W., Rademakers, S., Jaspers, N.G.J., Appeldoorn, E., Raams, A., Klein, B., Kleijer, W., Kjærsgård, L. and Hoeijmakers, J.H.J.
A temperature-sensitive disorder in basal transcription and DNA repair in man.
Nature Gen. 27, 299-303 (2001). (see also Bioassays 'Hot News', 23, 671-673).
15. de Boer, J., Andressoo, J.O., de Wit, J., Huijmans, J., Beems, R.B., van Steeg, H., Weeda, G., van der Horst, G.T.J., van Leeuwen, W., Themmen, A.P.N., Meradji, M. and Hoeijmakers, J.H.J.
Premature aging in mice deficient in DNA repair and transcription.
Science (research article), 296, 1276-1279 (2002).
(see also Comments in Science, 296, 1250-1251, and in DNA Repair 2, 437-439).
16. L.J. Niedernhofer, A.S.Lalai and J.H. Hoeijmakers.
Fanconi anemia (cross)linked to DNA repair.
Cell 7, 1191-8 (2005).
17. Niedernhofer, L.J., Garinis, G.A., Raams, A., Lalai, S.A., Robinson, R.A., Appeldoorn, E., Odijk, H., Oostendorp, R., Ahmad, A., van Leeuwen, W., Theil, A., Vermeulen, W., van der Horst, G.T., Meinecke, P., Kleijer, W., Vijg, J., Jaspers, N.G.J., Hoeijmakers, J.H.J.
A new progeriod syndrome reveals that genotoxic stress suppresses the somatotroph axis.
Nature 444, 1038-1043 (2006, see also accompanying 'News and Views' Nature by Kirkwood).
18. Hoeijmakers, J.H.J.
DNA damage, aging, and cancer.
NEJM 361, 1475-1485 (2009).
19. Marteijn, J.A., Lans, H., Vermeulen, W. and Hoeijmakers J.H.J.
Understanding nucleotide excision repair and its roles in cancer and ageing.
Nature Rev Mol Cell Biol. 15, 465-481 (2014).
20. M. Tresini, D.O. Warmerdam, P. Kolovos, L. Snijder, M.G. Vrouwe, J.A.A. Demmers, W.F. van IJcken, F.G. Grosveld, R.H. Medema, J.H.J. Hoeijmakers , L.H.F. Mullenders, W. Vermeulen and J.A. Marteijn.
The core spliceosome as a target and effector of non-canonical ATM signaling.
Nature 523, 53-58 (2015). doi: 10.1038/nature14512.
21. H. Matsumura, Y. Mohri, N. Thanh Binh, H. Morinaga, M. Fukuda, M. Ito, S. Kurata, J.H.J. Hoeijmakers, and E.K. Nishimura.
Hair follicle aging is driven by transepidermal elimination of stem cells via Col17A1 proteolysis.
Science Feb 5;351(6273):aad4395. doi: 10.1126/science.aad4395. Epub 2016 Feb 4. PMID: 26912707 (see also Lei M, Chuong CM. STEM CELLS. Aging, alopecia, and stem cells. Science, 2016 Feb 5;351(6273):559-60. doi: 10.1126/science.aaf1635).

22. Vermeij W.P., Dollé M.E.T., Reiling E., Jaarsma D., Payan-Gomez C, Bombardieri C.R., Wu H., Roks A.J.M., Botter S.M., van der Eerden B.C., Youssef S.A., Kuiper R.V., Nagarajah B**.**, van Oostrom C.T., Brandt R.M.C., Barnhoorn S., Imholz S., Pennings J.L.A., de Bruin A., Gyenis Á., Pothof J, Vijg J, van Steeg H., and Hoeijmakers J.H.J.
Restricted diet delays accelerated aging and genomic stress in DNA repair deficient mice.
Nature 537, 427-431 (2016, see also accompanying Nature 'News and Views' of Oshima and Martin).
23. M.P. Baar, R.M. Brandt, D.A. Putavet, J.D. Klein, K.W. Derks, B.R. Bourgeois, S. Stryeck, Y. Rijksen, H. van Willigenburg, D.A. Feijtel, I. van der Pluijm, J. Essers, W.A. van Cappellen, W.F. van IJcken, A.B. Houtsmuller, J. Pothof, R.W. de Bruin, T. Madl, J.H. Hoeijmakers, J. Campisi, P.L. de Keizer.
Targeted Apoptosis of Senescent Cells Restores Tissue Homeostasis in Response to Chemotoxicity and Aging.
Cell 169,132-147(2017) e16. doi: 10.1016/j.cell.2017.02.031.PMID: 28340339

In addition, paradigm-shifting papers on the striking anti-aging effect of alternative nutritional interventions in DNA repair-deficient progeroid mouse mutants and their high relevance for neurodegeneration including Alzheimer and Parkinson disease are in advanced stage.

List of publications J.H.J. HOEIJMAKERS

1. J.H.J. Hoeijmakers, J.H.N. Schel and F. Wanka.
   Structure of the nuclear pore complex in mammalian cells.
   two annular components.
   Exptl.Cell Res. 87: 195-206 (1974).

2. W.J. van Venrooy, P.M. Jansen, J.H.J. Hoeijmakers and M. de Man.
   On the heterogeneity of native ribosomal subunits in Ehrlich ascites tumor cells cultured *in vitro*.
   Europ.J.Biochem. 64: 429-435 (1976).

3. P. Borst, A.H. Fairlamb, F. Fase-Fowler, J.H.J. Hoeijmakers and P.O. Weislogel.
   The structure of kinetoplast DNA.
   In: The Genetic Function of Mitochondrial DNA (C. Saccone and A.M. Kroon, eds.), North-Holland, Amsterdam, 1976, pp. 59-69.

4. P.O. Weislogel, J.H.J. Hoeijmakers, A.H. Fairlamb, C.M. Kleisen and P. Borst.
   Characterization of kinetoplast DNA networks from the insect trypanosoma *Crithidia luciliae*.
   Biochim.Biophys.Acta 478: 167-179 (1977).

5. A.H. Fairlamb, P.O. Weislogel, J.H.J. Hoeijmakers and P. Borst.
   Isolation and characterization of kinetoplast DNA from the bloodstream form of *Trypanosoma brucei*.
   J.Cell Biol. 76: 293-309 (1978).

6. J.H.J. Hoeijmakers and P. Borst.
   RNA from the insect trypanosome *Crithidia luciliae* contains transcripts of the maxi-circle and not of the mini-circle component of kinetoplast DNA.
   Biochim.Biophys.Acta 521: 407-411 (1978).

7. P. Borst and J.H.J. Hoeijmakers.
   Kinetoplast DNA. (A review article).
   Plasmid 2: 20-40 (1978).

8. P. Borst, J.H.J. Hoeijmakers and F. Fase-Fowler.
   Structure and function of kinetoplast DNA: A comment.
   In: Alfred Benzon Symposium. 13: Specific Eukaryotic Genes: Structural Organization and Function, Munksgaard, Copenhagen, 294-298 (1979).

9. P. Borst and J.H.J. Hoeijmakers.
   Structure and function of kinetoplast DNA of the African trypanosomes.
   In: Extrachromosomal DNA: ICN-UCLA Symposia on Molecular and Cellular Biology (D. Cummins, P. Borst, I.B. Dawid, S. Weissmann and C.F. Cox, eds.) Academic Press, New York, vol. 15: 515-531 (1979).

10. A.C.C. Frasch, S.L. Hajduk, J.H.J. Hoeijmakers, P. Borst, F. Brunel and J. Davison.
    The kinetoplast DNA of *Trypanosoma equiperdum*.
    Biochim.Biophys.Acta 607: 397-410 (1980).

11. W. Leon, A.C.C. Frasch, J.H.J. Hoeijmakers, F. Fase-Fowler, P. Borst, F. Brunel and J. Davison.
Maxi-circles and mini-circles in kinetoplast DNA from *Trypanosoma cruzi*.
Biochim.Biophys.Acta 607: 221-231 (1980).

12. J.H.J. Hoeijmakers and P.J. Weijers.
The segregation of kinetoplast DNA networks in *Trypanosoma brucei*.
Plasmid 4: 97-116 (1980).

13. J.H.J. Hoeijmakers, P. Borst, J. van den Burg, C. Weissmann and G.A.M. Cross.
The isolation of plasmids containing DNA complementary to messenger RNA for variant surface glycoproteins of *Trypanosoma brucei*.
Gene 8: 391-417 (1980).

14. J.H.J. Hoeijmakers, A.C.C. Frasch, A. Bernards, P. Borst and G.A.M. Cross.
Novel expression-linked copies of the genes for variant surface antigens in trypanosomes.
Nature 284: 78-80 (1980).

15. P. Borst, F. Fase-Fowler, A.C.C. Frasch, J.H.J. Hoeijmakers and P.J. Weyers.
Characterization of DNA from *Trypanosoma brucei* and related trypanosomes by restriction endonuclease digestion.
Mol.Biochem.Parasitol. 1: 221-246 (1980).

16. P. Borst, A.C.C. Frasch, A. Bernards, J.H.J. Hoeijmakers, L.H.T. van der Ploeg and G.A.M. Cross.
The genes for variant antigens in trypanosomes.
Am.J.Trop.Med.Hyg. 29 (5): 1033-1066 (1980).

17. J.H.J. Hoeijmakers and P.J. Weijers.
The network segregation of the kinetoplast DNA (kDNA) in *Trypanosoma brucei* and *Trypanosoma evansi*.
Arch.Intern.Physiol.Biochemie 88 (5): B283-284 (1980).

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