

## Jan H.J. Hoeijmakers

### Personal Data

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|--|---|
| Title                                    | Prof. Dr.   |
| First name                               | Jan H.J.  |
| Name                                     | Hoeijmakers   |
| Current position                         | Full Professor, permanent<br>Global Faculty Member of University of Cologne / KPA "Aging-associated Diseases"   |
| Current institution(s)/ site(s), country | Dept. Molecular Genetics, Erasmus Medical Center, Erasmus University Rotterdam, and Princess Máxima Center for Pediatric Oncology, Utrecht, The Netherlands<br>University of Cologne, Germany |
| ORCID                                    | 0000-0003-3526-7795   |

### Qualifications and Career

| Stages            | Periods and Details   |
|-------------------|---|
| Doctorate         | 1975–1979, Prof. Piet Borst, Department Medical Enzymology and Molecular Biology, University of Amsterdam, The Netherlands (Thesis, 1982) |
| Bachelor & Master | Molecular Biology, 1969–1975, Catholic (now Radboud) University, Nijmegen, The Netherlands  |

### Stages of Academic/Professional Career

|                          |   |
|--------------------------|---|
| Group Leader             | 2017–present, Princess Máxima Center for Pediatric Oncology, Utrecht, The Netherlands                             |
| Global Faculty Member    | 2016–present, CECAD / KPA "Aging-associated Diseases", University of Cologne, Germany                             |
| Full Professor (W3)      | 1993–present, Molecular Genetics, Department of Molecular Genetics, Erasmus University Rotterdam, The Netherlands |
| Associate Professor (W2) | 1985–1993, Department of Genetics, Erasmus University Rotterdam, The Netherlands                                  |
| Postdoctoral Fellow      | 1981–1985, Department of Genetics, Prof. Dirk Bootsma, Erasmus University Rotterdam, The Netherlands              |
| Postdoctoral Fellow      | 1979–1980, Medical Microbiology, University of Amsterdam, The Netherlands   |

### Activities in the Research System

#### Institutional Responsibilities (selected)

|              |  |
|--------------|--|
| 2022–present | Initiator, Multi-disciplinary Expertise Center for Rare Genome Instability Disorders, Erasmus Medical Center, Rotterdam, The Netherlands   |
| 2021–present | Initiator/Coordinator, TC-NER (European Joint Programme Rare Diseases Diseases, EU JPRD) "Transcription stress counteracted by nutritional interventions of exceptional importance for rare DNA repair diseases", Erasmus University Rotterdam, The Netherlands / University of Cologne, Germany |
| 2019–present | Chair, Scientific Integrity Committee, Princess Máxima Center for Pediatric Oncology, Utrecht, The Netherlands   |

### Service to the Scientific Community (selected)

|              |   |
|--------------|---|
| 2019         | Organizer, 1st “Nature Conference on Ageing, Health and Rejuvenation”, Rotterdam, The Netherlands                         |
| 2016–present | Scientific Committee Member, Integrity of the Royal Dutch Academy of Arts and Sciences, Amsterdam, The Netherlands        |
| 2015–2021    | Jury Member, Gairdner Prize Foundation, Toronto, Canada   |
| 2015         | Organizer, “DNA Damage Response” Workshop, Amsterdam, The Netherlands   |
| 2014–2022    | Supervisory Board Member, Dutch Cancer Institute, Amsterdam, The Netherlands  |
| 2014–2020    | Committee Member, Medical Sciences Programm on “More Knowledge with Fewer Animals” (MKMD), The Netherlands                |
| 2014         | Organizer, 30 <sup>th</sup> Ernst-Klenk Symposium “DNA Damage - Repair Mechanisms in Aging and Disease”, Cologne, Germany |
| 2014         | Consultant, Nobel Committee for the Nobel Prize in Chemistry for DNA Repair (2015)  |
| 2014         | Committee Member, Ammodo-Prize, Amsterdam, The Netherlands  |
| 2011–present | SAB Member, The AIRC Institute of Molecular Oncology (IFOM ETS), Milan, Italy   |
| 2008–2013    | Site Visit Committee Member, Leibniz-Institute for Aging Research (FLI), Jena, Germany                                    |
| 2007         | Co-Organizer, “Molecular Basis of Aging”, Boehringer Ingelheim Foundation Conference, Titisee, Germany                    |
| 2002–2011    | Site Visit Committee Member, Swiss National Centre of Competence in Research (NCCR), Lausanne, Switzerland                |
| 2002–2008    | Jury Member, Heineken Prize, Amsterdam, The Netherlands   |
| 2014         | Member and later Vice Chair, National Committee for Biotechnology of Animals (Ministry of Agriculture), The Netherlands   |
| 2000–present | SAB Member, Program on Structural Biology of DNA Repair (SBDR) of NIH/NCI, Berkeley, CA, USA                              |
| 1988–present | Co-Organizer, six different International Workshops on DNA Repair, Noordwijkerhout, The Netherlands                       |

## Scientific Results

### Category A

Gyenis, A.\* , Chang, J.\* , Demmers, J.J.P.G., Bruens, S.T., Barnhoorn, S., Brandt, R.M.C., Baar, M.P., Raseta, M., Derks, K.W.J., **Hoeijmakers, J.H.J.**, and Pothof, J. (2023). Genome-wide RNA polymerase stalling shapes the transcriptome during aging. **Nat Genet** 55:268–279. doi: 10.1038/s41588-022-01279-6. (open access)

Lans, H., **Hoeijmakers, J.H.J.**, Vermeulen, W.#, and Marteijn, J.A.# (2019). The DNA damage response to transcription stress. **Nat Rev Mol Cell Biol** 20:766–784 doi: 10.1038/s41580-019-0169-4.

Milanese, C.\* , Bombardieri, C.R.\* , Sepe, S., Barnhoorn, S., Payán-Gómez, C., Caruso, D., Audano, M., Pedretti, S., Vermeij, W.P., Brandt, R.M.C., Gyenis, A., Wamelink, M.M., de Wit, A.S., Janssens, R.C., Leen, R., van Kuilenburg, A.B.P., Mitro, N., **Hoeijmakers, J.H.J.**, and Mastroberardino, P.G. (2019). DNA damage and transcription stress cause ATP-mediated redesign of metabolism and potentiation of anti-oxidant buffering. **Nat Commun** 10:4887. doi: 10.1038/s41467-019-12640-5. (open access)

Baar, M.P., Brandt, R.M., Putavet, D.A., Klein, J.D., Derks, K.W., Bourgeois, B.R., Stryeck, S., Rijksen, Y., Willigenburg, H., Feijtel, D.A., van der Pluijm, I., Essers, J., van Cappellen, W.A., van IJcken, W.F., Houtsmuller, A.B., Pothof, J., de Bruin, R.W., Madl, J., **Hoeijmakers, J.H.J.**, Campisi, J., and de Keizer, P.L. (2017). Targeted apoptosis of senescent cells restores tissue homeostasis in response to chemotoxicity and aging. **Cell** 169:132–147. doi: 10.1016/j.cell.2017.02.031. (open access)

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.**# (2016). Restricted diet delays accelerated aging and genomic stress in DNA repair deficient mice. **Nature** 537:427–431. doi: 10.1038/nature19329. (open access)

Marteijn, J.A.\* , Lans, H.\* , Vermeulen, W.# , and **Hoeijmakers, J.H.J.**# (2014). Understanding nucleotide excision repair and its roles in cancer and ageing. **Nat Rev Mol Cell Biol** 15:465–481. doi: 10.1038/nrm3822.

Schumacher, B., Pothof, J., Vijg, J., and **Hoeijmakers, J.H.J.** (2012). The central role of DNA damage in the ageing process. **Nature** 592:695–703. doi: 10.1038/s41586-021-03307-7. (open access)

**Hoeijmakers, J.H.J.** (2009). DNA damage, aging, and cancer. **NEJM** 361:1475–1485. doi: 10.1056/NEJMra0804615.

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., and **Hoeijmakers, J.H.J.** (2006). A new progeria syndrome reveals that genotoxic stress suppresses the somatotroph axis. **Nature** 444:1038–1043. doi: 10.1038/nature05456. (open access)

de Boer, J., Andressoo, J.O., de Wit, J., Huijman, 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.** (2002). Premature aging in mice deficient in DNA repair and transcription. **Science** 296:1276–1279. doi: 10.1126/science.1070174.

\* shared first authorship, # shared corresponding authorship

## Category B

### *Preprints, Reviews, and Commentaries (Non-peer-reviewed, selected)*

Vermeij, W.P.# , and **Hoeijmakers, J.H.J.**# (2021). Base editor repairs mutation found in the premature-ageing syndrome progeria. **Nature** 589:522–524. doi: 10.1038/d41586-020-03573-x. (open access)

Mkrtchyan, G.V., Abdelmohsen, K., Andreux, P., Bagdonaitė, I., Barzilai, N., Brunak, S., Cabreiro, F., de Cabo, R., Campisi, J., Cuervo, A.M., Demaria, M., Ewald, C.Y., Fang, E.F., Faragher, R., Ferrucci, L., Freund, A., Silva-García, C.G., Georgievskaya, A., Gladyshev, V.N., Glass, D.J., Gorbunova, V., de Grey, A., He, W.W., **Hoeijmakers, J.H.J.**, Hoffmann, E., Horvath, S., Houtkooper, R.H., Jensen, M.K., Jensen, M.B., Kane, A., Kassem, M., de Keizer, P., Kennedy, B., Karsenty, G., Laming, D.W., Lee, K.F., MacAulay, N., Mamoshina, P., Mellon, J., Molenaars, M., Moskalev, A., Mund, A., Niedernhofer, L., Osborne, B., Pak, H.H., Parkhitko, A., Raimundo, N., Rando, T.A., Rasmussen, L.J., Reis, C., Riedel, C.G., Franco-Romero, A., Schumacher, B., Sinclair, D.A., Suh, Y., Taub, P.R., Toiber, D., Trebak, J.T., Valenzano, D.R., Verdin, E., Vijg, J., Young, S., Zhang, L., Bakula, D., Zhavoronkov, A., and Scheibye-Knudsen, M. (2020). ARDD 2020: from aging mechanisms to interventions. **Aging** 12:24484–24503. doi: 10.18632/aging.202454. (open access)

### *Public Outreach Activities (selected)*

|              |   |
|--------------|---|
| 2024         | Podcast Cambridge Philosophical Society: “DNA damage, cancer and aging, the unexpected impact of nutrition on medicine” |
| 2024         | FORBES, “Why do we age? DNA damage – a likely cause”  |
| 2023–present | Revision of the Global Nutritional Guidelines for CS and TTD Diseases and Related Disorders                             |
| 2018         | Podcast Series European Society of Human Genetics. #E11.1 “The ageing process”  |

### **Academic Distinctions**

|            |  |
|------------|--|
| 2023       | Elected Member, Academy for Health and Lifespan Research (USA)   |
| 2022       | Elected Member, 2 <sup>nd</sup> phase of Oncode Institute, The Netherlands   |
| 2020       | Ammodo Research Team Award to “Guardians and Caretakers of the Genome”, together with other members of the Department of Molecular Genetics, Erasmus University Rotterdam, The Netherlands |
| 2019       | Environmental Mutagenesis and Genetics Society Award (50 <sup>th</sup> Anniversary)  |
| 2018       | Knowledge Ambassador of the City of Rotterdam, The Netherlands   |
| 2017       | Olav Thon Foundation’s International Research Award, Oslo, Sweden  |
| 2017       | Elected Member, 1 <sup>st</sup> phase Oncode Institute, The Netherlands  |
| 2016, 2008 | ERC Advanced Grants  |
| 2015       | ERC Proof of Concept Grant   |
| 2013       | Royal Distinction Knight in the Order of the Dutch Lion  |
| 2012       | Mendel Medal on the occasion of the 190 <sup>th</sup> anniversary of Mendel’s birth  |
| 2011       | Cancer Research Prize, Charles Rodolphe Brupbacher Stiftung, shared with Bert Vogelstein (Zurich)  |
| 2011       | Academy Professor, Royal Academy of Sciences of The Netherlands (KNAW)   |
| 2011       | Koningin Wilhelmina Research Prize, Dutch Cancer Society   |
| 2008       | Seneca Medaille, Industry Club for Aging Research Prize, Düsseldorf, Germany   |
| 2001       | Josephine Nefkens Prize, Rotterdam, The Netherlands  |
| 2000       | Descartes-Huygens Award, The Hague, The Netherlands  |
| 2000       | Van Gogh Prize, Dutch Science Organization, The Netherlands  |
| 2000       | EC-Descartes Award for European collaboration on DNA repair, Brussels, Belgium   |
| 2000       | Elected Member, Royal Academy of Arts and Sciences (KNAW, section ‘Medicine’, Department ‘Physics’)  |
| 1999       | Spinoza Prize, Dutch Science Organization, The Hague, The Netherlands  |
| 1995       | Louis Jeantet Prize for Medical Research in Europe, Geneva, Switzerland  |
| 1995       | Elected Member, European Molecular Biology Organization (EMBO)   |
| 1986       | Snoo van t’Hoogerhuys’ Prize, Utrecht, The Netherlands   |
| 1983       | Harold Quintus Bosz Prize, Utrecht, The Netherlands  |