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| ***School/Department:*** | **Molecular Genetics Department, Biomedical Sciences, Erasmus MC** |
| ***Supervisor information:***  [World no 30 Biomedical Sciences](https://www.natureindex.com/supplements/nature-index-2019-biomedical-sciences/tables/healthcare) | * Prof. Dr. Jurgen Marteijn   (Full Professor on Transcription Stress and DNA damage response)   * [J.Marteijn@erasmusmc.nl](mailto:J.Marteijn@erasmusmc.nl) * [www.genomestability.nl](http://www.genomestability.nl)   **Grants and Prizes:**  **2019:** AMMODO Science award for groundbreaking research (€1.200.000)  **2019:** VICI Grant of Netherlands Organization for Scientific Research (€1.500.000).  **2014:** VIDI Grant of Netherlands Organization for Scientific Research (€800.000).  **2011:** Erasmus MC Fellowship (€ 400.000).  **5 Selected papers:**  **1:** Elongation factor ELOF1 drives transcription-coupled repair and prevents genome instability. Geijer M, …, Marteijn JA. **Nature Cell Biology** (Accepted 2021)  **2:** The DNA damage response to transcription stress Lans H, …, Marteijn JA.. **Nature Reviews Molecular Cell Biology** (2019)  **3:** The core spliceosome as target and effector of non-canonical ATM signalling.  Tresini M, …, Marteijn JA. **Nature** (2015)  **4:** Enhanced chromatin dynamics by FACT promotes transcriptional restart after UV-damage. Dinant C, …, Marteijn JA **Molecular Cell**, (2013).  **5:** UV-sensitive syndrome protein UVSSA recruits USP7 to regulate TCR.  Schwertman P, …, Marteijn JA. **Nature Genetics** (2012). |
| ***Project Title:*** | **The molecular mechanism of DNA damage-induced aging** |
| ***Abstract:*** | Due to the improved life span, age related diseases and discomfort have become a major social and medical issue. It is thus highly relevant to understand the biological processes that could counteract this phenomenon. Accumulation of DNA damage is a major contributor of age-related diseases. DNA damage blocks the transcription process, which is a crucial process for proper cell function. If the DNA damage that blocks transcription is not properly repaired it will result in cellular dysfunction, apoptosis and senescence, finally resulting in DNA damage induced aging. Cells counteract these deleterious effects by transcription-coupled repair (TCR), which removes the DNA damage thereby resolving the transcriptional block. The severe developmental problems and premature aging features of Cockayne syndrome patients - characterized by a hereditary TCR defect - underscore the importance of this process. Our lab is one of the world leading labs in the TCR field, and has recently identified several new repair factors in this pathway including UVSSA and ELOF1. Despite detailed knowledge on the TCR mechanism itself, surprisingly little is known about the last crucial step of TCR; how transcription restarts if the DNA damage is repaired. Using a multi-disciplinary approach of state-of-the-art live cell imaging and proteomic tools, the PhD student will study the molecular mechanism of transcription recovery after DNA repair. In addition, using unbiased CRISP/CAS9 based whole genome screens and advanced quantitative interaction proteomics studies we will identify novel proteins involved in this process. Together this will result in crucial new insights in TCR and will help to counteract the aging process. |
| ***Requirements of candidate:*** | * The candidate should have a Master and experience with molecular/cellular biology. * Our lab offers the PhD candidate state-of-the-art equipment and expertise to address the scientific questions stated above. Our lab consists of a mix of both national and international PhD students and Post-docs and has an infrastructure that ensures intensive supervision during the PhD program. * Scholarship that will, at least, cover subsistence allowance and international air plane ticket (we could help with the scientific part of your scholarship proposal) * English language requirement: IELTS 7.0*(min 6.0 for all subs)*, TOEFL 100*(min 20 for all subs)* |

**English requirements：**

**Please refer to Erasmus University China Center official website for your information** [www.eur.nl/eucc](http://www.eur.nl/eucc)

*Erasmus University China Center -> CSC Scholarship -> “I am a prospective CSC PhD Candidate” -> Table 1*

Please note:

Each institute requires difference level of English, make sure to find the right institute. 2022 CSC-PhD programme information will be shared and updated soon!