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| ***School/Department:*** | ***Department of Internal Medicine, laboratory for calcium and bone metabolism*** |
| ***Supervisor information:*** | * **Prof. Dr. Hans van Leeuwen** * [**j.vanleeuwen@erasmusmc.nl**](mailto:j.vanleeuwen@erasmusmc.nl) * **Bram C.J. van der Eerden, PhD** * **Email:** [**b.vandereerden@erasmusmc.nl**](mailto:b.vandereerden@erasmusmc.nl) * **Website:** * <https://nl.linkedin.com/in/bram-van-der-eerden-6583a56> * <https://publons.com/researcher/2698444/bram-cj-van-der-eerden/> * **Personal grants:** * 2018-2022: Health~Holland, TKI, * 2016-2020: Horizon2020-MCSA-RISE-2015 * 2012-2016: FP7-PEOPLE-2011-IRSES * **Most important publications (Total publications, 77; H-index, 23)** * Fecher-Trost et al. J Bone Miner Res. 2019;34(4):699-710 * Lodberg et al. FASEB J. 2019;33(5):6001-6010 * Brum et al. JBMR Plus. 2018;2(6):341-350 * Mumtaz et al. Sci Rep. 2018;8(1):16975 * Vermeij et al. Nature. 2016;537(7620):427-431 * Brum et al. Proc Natl Acad Sci U S A. 2015;112(41):12711-6 |
| ***Project Title:*** | **Organ-on-Chip technology to study bone health and disease** |
| ***Abstract:*** | The overall aim of my research group is to understand the mechanisms behind skeletal disorders and discover novel therapeutic targets for the treatment of disturbances in bone and mineral homeostasis.  Contrary to common belief, bone is a highly dynamic organ with many processes taking place, such as continuous bone remodeling, stem cells renewal, hematopoiesis, mineral homeostasis, etc. As a consequence, many diseases are associated with a skeletal phenotype of which osteoporosis and osteoarthritis are the most common, affecting many millions of patients worldwide. Given its complexity and multitude of cell types, it is difficult to study specific processes taking place in the skeleton *ex vivo*. In order to be able to study cell types in detail but closely mimicking the natural environment and to reduce the use of laboratory animals, organ-on-chip (OoC) microfluidics has become the new state-of-the art technology to study cell-cell communication in a physiologically relevant context. To study bone fracture healing, we have successfully generated OoC devices to study crosstalk of mesenchymal stromal cells and endothelial cells, known to crucially interact *in vivo* during the bone regeneration process. These ongoing studies will be expanded towards other processes , such as interaction with the immune system, tendons (making use of stretchable devices to mimic mechanical responses by cells) in collaboration with other teams in and outside Erasmus MC. Once a model is functional it will be used to screen for small molecules to delineate novel mechanisms behind several types of bone conditions, including fracture healing, bone regeneration and osteoporosis. The obtained knowledge will deliver insights into physiologically relevant processes in bone and provide tools to screen for compounds in relation to common and rare bone diseases. |
| ***Requirements of candidate:*** | • Background: Cell biology, molecular biology, creative, punctual, enthusiastic, communicative  • Master degree or MD  • 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:  • English speaking countries & Netherlands: no requirement  • Other countries: IELTS 7.0 (min 6.0 for all subs), TOEFL 100 (min 20 for all subs) |

**2020 CSC-PhD programme information will be shared and updated online:** [**https://www.eur.nl/en/about-eur/erasmus-university-china-center-0/cscscholarship/prospectivephd-candidates**](https://www.eur.nl/en/about-eur/erasmus-university-china-center-0/cscscholarship/prospectivephd-candidates)

**Application to:** [**EuccChinaOffice@eur.nl**](mailto:EuccChinaOffice@eur.nl) **before March 10, 2020**