Stellingen behorende bij het proefschrift (uitsluitend procedure Erasmus Universiteit Rotterdam)
Statements accompanying the thesis (Erasmus University Rotterdam procedure only)

Ex Vivo Expanded Adult Human Periosteal Cells for Future Use in Craniofacial Bone Repair

1. Since bone fracture healing occurs mostly via endochrondral ossification, for which the skeletal stem/progenitor cells are delivered by the periosteum, human periosteum-derived cells (hPDCs) are increasingly recommended as a suitable and clinically relevant cell source for applications in bone tissue engineering. (*This thesis*)

2. hPDCs obtained from maxilla, mandible and tibia have different gene/mRNA expression profiles, including of relevant effector or marker genes, which lead to different direct or endochondral bone-forming properties. (*This thesis*)

3. Human platelet lysate can serve as a suitable alternative to fetal bovine serum for expanding hPDCs in cell culture without compromising their bone-promoting abilities. (*This thesis*)

4. Priming of mandibular hPDCs with BMP2 shows more upregulation of genes involved in skeletal system development and fracture repair, yielding also the best bone-forming properties *in vivo* after ectopic implantation when used in combination with a CopiOs collagen-based scaffold. (*This thesis*)

5. Mandibular hPDCs are a promising source of *ex vivo* expandable cells for including these in bone tissue engineering constructs intended for promotion of bone-tissue formation in the craniofacial area. (*This thesis*)

6. The response of cells of the periost and mesenchymal progenitors of muscle to bone injury is mediated by BMP signaling (*adapted from Julien* et al*., J Bone Miner Res. 2022 Aug;37(8):1545-1561*).

7. Essential genes, which can be called “developmental keystone genes,” are not necessarily essential for development. Rather, compared to all the genes, developmental keystone genes exert a disproportional effect on the phenotype (*adapted from Halikas* et al*., J Exp Zool B Mol Dev Evol. 2021 Jan;336(1):7-17*).

8. The overall complexity of cell-cell communication in bone tissue and the systemic and local regulation of bone physiology can often only be addressed in entire vertebrates (*Stein* et al*., J Bone Miner Res. 2023 Jun 14. doi: 10.1002/jbmr.4868. Online ahead of print*).

9. Platelet-rich plasma might suppress cytokine release and limit inflammation (*Lang* et al*., Eur Surg Res. 2018;59(3-4):265-275*).

10. A single BMP is sufficient to induce the cascade of cellular events leading to the formation of new bone at ectopic sites (*Sampath* et al*., Bone. 2020 Nov;140:115548*).

11. "Unless you try to do something beyond what you have already mastered, you will never grow." (*Ralph Waldo Emerson*)